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# EPA Superfund
# Record of Decision:

**FLETCHER'S PAINT WORKS & STORAGE**
**EPA ID: NHD001079649**
**OU 01**
**MILFORD, NH**
**09/30/1998**

EPA 541-R98-124
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# RECORD OF DECISION

US Environmental Protection Agency
Region 1

FLETCHER'S PAINT WORKS
AND
STORAGE FACILITY SUPERFUND SITE
Milford, New Hampshire

CERCLIS No. NHD001079649

September 30, 1998

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## DECLARATION FOR THE RECORD OF DECISION

**Fletcher's Paint Works and Storage Facility Superfund Site**
**Milford, New Hampshire**
**CERCLIS No. NHD001079649**

### STATEMENT OF PURPOSE

This decision document presents the selected remedial action for the Fletcher's Paint Works and Storage Facility Superfund Site (Site) located in Milford, New Hampshire, which was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 42 USC 9601 et seq., as amended, and to the extent practicable, the National Oil and Hazardous Substances Contingency Plan (NCP), 40 CFR Part 300 et seq., as amended. The Director of the Office of Site Remediation and Restoration has been delegated the authority to approve this Record Of Decision (ROD).

The State of New Hampshire has not concurred on the selected remedy as of the signing of this ROD. It is anticipated that the State will concur shortly.

### STATEMENT OF BASIS

This decision is based on the Administrative Record which has been developed in accordance with Section 113(k) of CERCLA and which is available for public review at the Wadleigh Memorial Library in Milford, New Hampshire and at the US EPA - Region I Office of Site Remediation and Restoration Records Center in Boston, Massachusetts. The Administrative Record Index (Appendix C to the ROD) identifies each of the items comprising the Administrative Record upon which the selection of the remedial action is based.

### ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to the public health or welfare or to the environment.

### DESCRIPTION OF THE SELECTION REMEDY

This ROD sets forth the selected remedy for Operable Unit One at the Fletcher's Paint Site, which involves the excavation and on-site treatment of principal threat wastes which consist of primarily PCB contaminated soils, the replacement of those treated soils at the Site, and placement of a soil and asphalt cover over the residual low level threat wastes. The selected remedy also includes monitored natural attenuation of the contaminated groundwater in the overburden and bedrock aquifers and institutional controls to prevent future ingestion of contaminated groundwater, as well as restrictions on the use and assess to the subsurface soils at the Elm Street Site. The selected remedy is a comprehensive approach for this operable unit which addresses all current and potential future risks caused by soil and groundwater contamination. Specifically, Operable Unit One includes the areas referred to as the Elm Street Site, the Mill Street Site, the drainage ditch and the plume of groundwater contamination that exists from the Mill Street Site to the Souhegan River. The remedial measures will prevent the future leaching of PCBs from the low level residual waste, into groundwater in excess of drinking water standards and will allow for restoration of the Site to beneficial uses.

The selected remedy includes these major components:

Soil

Phase 1 - Mill Street Site Cleanup:

To address the current and future risks associated with dermal contact or ingestion of the contaminated surface and subsurface soils at the Mill Street Site, the activities would include:

- Excavation of approximately 1,500 yd 3 of surface soils (0 to 1 foot) at the Mill Street Site to a depth of 1 foot, wherever PCB concentrations are greater than 1 mg/kg PCB.

To address the future risks associated with ingestion of contaminated groundwater at the Mill Street Site as a result of leaching, the activities include:

- Excavation of approximately 12,000 yd 3 of subsurface soils at the Mill Street Site (1 to 20 feet (bedrock) below surface), approximately 3,000 yd 3 of which are located below the water table, wherever PCB concentrations remain that exceed 1 mg/kg PCB; or excavation of soils to a PCB concentration at which leaching models and/or soil column testing show that infiltration through the remaining PCB soil concentrations will not result in future groundwater concentrations in excess of the 0.5 ug/l MCL groundwater concentration for PCBs. The determination of a subsurface soil cleanup level other than 1 mg/kg PCB, will be in the sole discretion of the EPA.

- Water collected from the dewatering of the excavated soils and water collected as a result of lowering of the water table to conduct the excavation, will be either treated on-site in a mobile unit and appropriately discharged to the Souhegan River or sent off-site to a treatment facility.

- Treatment of approximately 13,500 yd 3 of excavated soils by ex-situ thermal desorption. The thermal desorption unit would be located on the Elm Street property. This property is currently secured with a fence. Consideration may be given to the use of the former Fletcher's Paint Works building on the Elm Street Site as storage to stage and screen the contaminated soils prior to treatment. Liquid PCB condensate produced from the thermal desorption process will be disposed of off-site at an appropriate facility.

- Demolition and disposal of the Fletcher's Elm Street, building prior to, or following thermal desorption activities. The manufacturing portion of this building was used to store paint pigments and chemicals. While these were removed in the 1993 removal action, gross contamination still exists in this facility and therefore some of the debris will have to be disposed of at an appropriate landfill facility. Consideration may be reviewed for use of these materials as fill material on the Site. Decontamination of building material, if warranted, and off-site disposal will be conducted in accordance with TSCA.

- Off-site disposal of all soil and debris that is either oversized or cannot be treated through the thermal desorption unit. All contaminated soil and debris will be disposed of in accordance with TSCA disposal regulations.

- Backfilling of the treated soils back onto the Mill Street Site and restoration of the property consistent with the anticipated future use of the Site. Specifically, the majority of the Mill Street Site will be paved, physically re-aligning Mill Street. The pavement will reduce infiltration of precipitation, control erosion and promote drainage away from the residential properties.

- Regrading and repair of the storm drainage ditch system, as necessary, to promote surface water flow away from the Site. Erosion control measures shall be incorporated into the final drainage system to prevent erosion or debris from restricting future storm water flow from the Mill Street Site or filling in of the drainage ditch.

Phase 2 - Elm Street Site Cleanup.

To address the current and future risks associated with dermal contact or ingestion of the contaminated surface and subsurface soils on the Elm Street Site, the activities would include:

- Excavation of approximately 2,800 yd 3 of surface soils at the Elm Street Site to a depth of 1 foot, wherever PCB concentrations are greater than 1 mg/kg PCB.

- Excavation of approximately 1,000 yd 3 of subsurface soils, within the utility corridor(s), at the Elm Street Site at depths between 1 and 10 feet, wherever PCB concentrations are greater than 25 mg/kg PCB. Final location of the utility corridor(s) within the Site will be determined during design.

- Excavation of approximately 11,600 yd3 of remaining subsurface soils, with the exception of the "hot spot" materials described below, from 1 foot to the seasonally low water table, wherever PCB concentrations remain that exceed 100 mg/kg; or to a PCB concentration at which leaching models and/or soil column testing show that infiltration through the remaining PCB soil concentrations will not result in future groundwater concentrations in excess of the 0.5 ug/l MCL groundwater concentration for PCBs. The determination of a subsurface soil cleanup level other than 100 mg/kg PCB, will be in the sole discretion of the EPA.

- Excavation and off-site disposal in an appropriate landfill of the EB-03 "hot spot", a semi-solid stain (polyamide and polyurethane) material. This material is not amenable to the thermal desorption process, as the material is comprised of polyurethane, alkyd resins, etc., which may affect the performance of the thermal desorption unit. (The actual volume of this material is estimated to be 1,000-2,000 yd3, and is considered part of the subsurface excavation volume describe above.)

- Removal and disposal of the 5 underground storage tanks located on the Fletcher's Elm Street property. (This could take also place during Phase 1, if appropriate)

- Treatment of the approximately 15,400 yd 3 of excavated soils by ex-situ thermal desorption. The thermal desorption unit would be preferably located on the Fletcher's Elm Street property. This may involve the placement of the mobile unit at one or more locations on the property during the excavation and treatment operations. Liquid PCB condensate produced from the thermal desorption process will be disposed of off-site at an appropriate facility.

- Backfilling of the treated soils on-site.

- Final grading of and placement of a 10 inch soil cover over the treated soils, or placement of treated soils within the top foot, which can demonstrate PCB concentrations less than or equal to 1 mg/kg PCB. Asphalt would be placed on areas designated for parking, consistent with the final grading plans and the future anticipated use of the Site. The asphalt covering will promote drainage and further minimize infiltration through the residual contamination at the Site. Restoration and landscaping of the remaining areas, not covered by asphalt. Erosion control measures will be incorporated into the final grading to prevent erosion of the cover materials off-site and into the Souhegan River.

- Institutional controls, in the form of deed restrictions would be implemented to prevent unauthorized access into the subsurface. Deed restrictions would also have to implemented to restrict future use of the Site, or the modification of the cover or surface drainage structures in ways inconsistent with this remedy or the anticipated future use of the Site.

Groundwater

- Establish a Groundwater Management Zone (GMZ) under NH's Comprehensive Groundwater Policy. The GMZ sets plume boundaries within which groundwater will be monitored over time to ensure that the contaminant concentrations are decreasing; to ensure that the remaining contamination has not migrated beyond the established plume boundaries or impacted the Souhegan River, and that the remedial action cleanup is working and remaining effective over time. Institutional controls would have to be implemented to restrict the use of the groundwater within the GMZ, while contaminant concentrations are in excess of drinking water standards. Further action may be necessary consistent with the NH Comprehensive groundwater Policy.

- Interim Groundwater Cleanup Levels must be achieved within the GMZ and maintained for a period of three consecutive years. A risk assessment will, be performed on residual groundwater contamination to determine protectiveness of the remedy. If EPA determined the remedy is not protective, the remedial action shall continue until protective levels are achieved and not exceeded for three years or until the remedy is deemed protective or is modified.

**SPECIAL FINDINGS**

Issuance of the ROD embodies specific determinations made by the Regional Administrator pursuant to CERCLA. Under 121 (d)(4)(D) of CERCLA, the Regional Administrator hereby invokes the equivalency waiver for the New Hampshire closure requirements (Env-Wm 708.02)

Further, an interim remedy waiver pursuant to CERCLA 121 (d)(4)(A) is being invoked for the RCRA and TSCA storage limitations for the RI/FS generated wastes since the wastes currently stored on the Site is interim in nature and the final remedy will comply with all ARARs for final disposition of the waste.

**DECLARATION**

The selected remedy is protective of human health and the environment, attains or waives Federal and State requirements that are applicable or relevant and appropriate for this remedial action and is cost-effective. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technology, to the maximum extent practicable, and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

The selected remedy is a comprehensive approach for the first operable unit, which includes both source control and management of migration components. The source control portion of the remedy includes excavation and the on-site treatment of PCB contaminated soil by ex-situ thermal desorption. Institutional controls will be employed to limit the surficial future uses of the Elm Street Site to activities deemed recreational, while allowing limited access for utility maintenance within the designated utility. Institutional Controls will be employed to limit future excavation into the subsurface soils at the Elm and Mill Street sites, where PCB concentrations will remain which are protective to groundwater from leaching, but which are in excess of protective human health standards. The management of migration portion of the remedy relies on natural attenuation to restore the contaminated groundwater to its beneficial uses. Treatment will not be utilized to restore the contaminated groundwater because it was determined not to be warranted or cost effective considering the conditions and type of contaminants found at the Site. Active groundwater restoration would not afford a significant cleanup time advantage and, with institutional controls to prevent consumption of groundwater in the interim, the selected remedy is as protective of public health as active restoration. The overall estimated net-present worth cost of the selected remedy is $14,731,975.

OSWER Directive 9355.7-02 states that five-year reviews will be conducted at sites where cleanup levels will take five or more years to achieve (policy review) or where institutional controls are necessary to achieve protectiveness (statutory review). Since the management of migration portion of the remedy will require more than five years to complete, and groundwater and land-use restrictions are necessary, a review will be conducted within five years after commencement of this remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

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**FLETCHER'S PAINT WORKS AND STORAGE FACILITY SUPERFUND SITE**
**ROD DECISION SUMMARY**
**September 1998**

## 1. SITE NAME, LOCATION AND DESCRIPTION

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The Fletcher's Paint Works and Storage Facility Superfund Site consists of approximately 12 acres of land in the town of Milford, Hillsborough County, New Hampshire. The Site is divided into two operable units. The first operable unit, which is the subject of this Record of Decision (ROD), specifically consists of areas referred to as the Elm Street Site, the Mill Street Site and the drainage ditch as well as the plume of groundwater contamination that exists from the Mill Street site to the Souhegan River (Referred to as the "Site"). The second operable unit consists of the Keyes Municipal Well Field and the Souhegan River, both of which will be the subject of a future Record of Decision. A more complete description of the Site can be found in Section 1, pages 1 through 9 of the Remedial Investigation Report.

### A. General Site Description and Land Use

The Fletcher's Paint Site is located in a residential and light commercial/industrial area in Milford, within the Souhegan River Valley, immediately west of the town center (See Figure A). The First Operable Unit of the Fletcher's Paint Site is comprised of three general areas: (1) Fletcher's Paint Works, located at 39 Elm Street, and referred to as the "Elm Street Site"; (2) the former Fletcher's Paint Storage Facility on the northern side of Mill Street, immediately west of the Cottage Street intersection, referred to as the "Mill Street Site"; and (3) the drainage ditch/culvert system that flows northward from the Mill Street Pond, along the Hampshire Paper Company property to Draper Mobil property, where it then flows beneath Elm Street and the Elm Street site, and discharges into the Souhegan River. All three areas of the Site are located within 700 feet of each other. See Figure 1.

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The Elm Street Site

The Elm Street Site occupies approximately 70,600 square feet and is situated along the southern bank of the Souhegan River (See Figure B). The property is characterized by a single story brick and cinder block building (approximately 24,500 sq. ft.), situated in the southeast third of the property. The brick portions of the building were built in the 1800's. The cinder block addition was built in the 1970's, when Fletcher's Paint moved the manufacturing operations from the front eastern portion of the brick building to the now larger addition. The majority of the Elm Street site is located within the 100-year flood plain of the Souhegan River. Elm Street (also called Route 101 A ) borders the site to the south and an old cemetery borders the Elm Street site to the east.

A total of 5 underground storage tanks exist on the Elm Street site, including two tanks beneath the main parking area, two tanks beneath the sidewalk in front of the Fletcher building and a single tank that is centrally located along the bank of the Souhegan River. The tanks, located beneath the parking area, stored VMP Naptha and Mineral Spirits for the paint operations. The single tank on the river bank was installed as part of the Fletcher's Paint Spill Prevention Control and Containment Plan and was used to collect rainwater from the property. The contents of the two tanks under the sidewalk are unknown. The tanks could possibly have been used to store heating oil or paint operation solutions, as they are located in front of the part of the building which housed the manufacturing of the paint before the addition was built.

Five discharge pipes extend out from the banks of the site, discharging to the Souhegan River. These pipes are outlets for the town storm drainage system and for runoff from the Fletcher building. A formerly used process water supply well is located in the northwest corner of the building.

The Mill Street Site

The Mill Street site is an approximately 10,000-square-foot parcel located on Mill Street, 700 feet south of the Elm Street site. (See Figure C) This property housed grain elevators and a grist mill. The Fletcher's Paint Site stored paint related materials in two buildings which were located on the property. One building was destroyed by fire and the other storage building was demolished by the EPA during a 1993 removal action.

Residential areas are located south and west of the site. Commercial areas are located to the north, east and west of the site. A railroad right-of-way borders the Mill Street site to the north, and is used to transport propane and gravel and other materials into and out of Milford. The Mill Street Pond is located approximately 250 feet southwest of the site.

The Drainage Ditch/ Culvert System

The drainage ditch/culvert system extends from the Mill Street Pond to the Souhegan River. The flow is carried under Mill Street from the pond, under the Draper Energy Coal Yard, along the Hampshire Paper Company property, where it enters a culvert system behind the Mobil station. The culvert channels the flow under Cottage Street and Elm Street, then under the Elm Street site, where it discharges to the Souhegan River.

Keyes Field and Souhegan River

A 10 acre municipal recreation area, called Keyes Field, is located along Keyes Drive, and is the subject of a second operable unit at the Site. Keyes Drive encompasses the western portion of the Elm Street Site. The Keyes Field consists of tennis and basketball courts, ball fields, a playground, and a community swimming pool. The pool and playground areas are used heavily by children of all ages. The ball fields and tennis courts are also used by local sport leagues and high school extracurricular sports.

The Souhegan River runs adjacent to the Elm Street Site and the Keyes Field and is used for recreational swimming and fishing.

**B. Geologic Characteristics**

Overburden

Overburden deposits in the study area consist primarily of glacial outwash deposits, composed of stratified fine to coarse sand and gravel, underlain by glacial till. The stratified sands and gravels have a minimal content of fine materials, i.e., silt and clay, and are generally noncohesive. The glacial outwash deposits, commonly called "stratified drift," form the highest yield component of the overburden aquifer in the site area. These deposits are consistently underlain by the upper till, characterized by a matrix of olive gray fine sand. The upper till ranges in thickness from 0 to 35 feet and is found in most cases to overlie a slightly more compact till. The lower till is approximately 2 to 5 feet in thickness, and contains a higher percentage of silt and clay along with angular rock fragments.

In addition to the natural deposits identified above, surface fill is prevalent in the study area. At the Elm Street site, various fill materials have extended the property over time, pushing back the Souhegan River from its former position adjacent to Elm Street, to its current position several hundred yards away from Elm Street. The parking area and a portion of the former manufacturing facility at the Elm Street site is situated on top of an old municipal burning dump, which operated from 1927 until 1945. The dump material typically consists of approximately 10 feet of decayed wood, brick fragments, broken glass, oxidized metal, and slag in an ash-like matrix. Additional sand and gravel fill overlies the burning dump materials,
A zone of boulders was identified beneath portions of the Mill Street site that may represent the interface between backfill and native materials. This boulder zone occurred at an approximate depth of 10 feet and was not detected anywhere else in the study area.

The thickness of overburden deposits changes greatly over the study area, varying with bedrock topography. From the Mill Street site, extending north along the eastern side of the drainage ditch, overburden is generally 20 feet thick. Overburden thickness on the eastern side of the drainage ditch is between 50 and 75 feet. Overburden is 60 to 70 feet thick below the Keyes Park and on the north side of the Souhegan River.

Soil

A number of soil types characterize the ground surface within the Fletcher's Paint Site study area. The primary soil units are excessively drained, rapidly permeable and very rapidly permeable soils with very low available water capacity.

Bedrock

The Fletcher's Paint Site is underlain by bedrock which occurs at depths between approximately twenty and seventy feet below ground in the study area. It is competent bedrock with little weathering, having a thin (less than one foot) layer of weathered rock at the bedrock surface and few high-angle fractures. The bedrock surface includes an area of high elevations in the vicinity of the Mill Street and Elm Street sites and an area of low elevations extending to the west from the vicinity of the nursing home to Keyes

Park. A relatively steep bedrock slope separates these two areas.

**C. Hydrogeologic Characteristics**

The Milford area is characterized by three unconfined aquifers which provide the majority of the area's municipal water supply needs. These aquifers, composed primarily of stratified sand and gravel, are generally oriented west to east, parallel to the Souhegan River and Great Brook.

In addition to these unconfined overburden aquifers, there are fractured bedrock aquifers. Both bedrock wells and overburden wells provide domestic water supplies in the Milford area.

The Fletcher's Paint Site study area is situated along the southeastern extent of the Milford-Souhegan Aquifer. Depth to ground water across the site varies from approximately four feet below the ground surface near Mill Street Pond to approximately twenty feet at the Elm Street site and twelve feet at Keyes Park. The saturated thickness also varies across the study area from approximately ten feet near the Mill Street site to twenty feet beneath the Elm Street site and fifty-five feet beneath the Keyes Park.

The base of the Milford-Souhegan Aquifer is locally defined by a discontinuous veneer of clayey silt with gravel (lower glacial till) that ranges in thickness from zero to four feet. At locations where the lower glacial till is discontinuous, such as the eastern half of the Elm Street site and the Mill Street site, direct hydraulic communication exists between the bedrock and overburden aquifers. Some hydraulic communication may also exist in areas where the lower glacial till is present.

Generally ground water flow is toward the Souhegan River and flows in a north-northwest direction from the Mill Street site and a north-northeast direction across the Elm Street site and Keyes Park. This lateral flow is consistent with regional interpretations that suggest the river is the primary ground water discharge point associated with this part of the Milford-Souhegan Aquifer.

Vertical flow in both the overburden and bedrock aquifers is generally upward in the immediate vicinity of the Souhegan River and prevails downward in the vicinity of the Mill Street Site.

**II. SITE HISTORY AND ENFORCEMENT ACTIVITIES**

**A. Land Use and Response History**

Fletcher's Paint was in operation from approximately 1948 until 1991 as a manufacturer and retail distributor of paints and stains for mostly residential uses. The paints were primarily water-based latex paints and organic-based solvent paints. The company's annual production was 25,000 to 35,000 gallons. Following the closure of the Fletcher's Paint Works, a consignment shop has operated in the front brick portion of the building. Parking for this consignment shop is limited as a result of the 1991 fence installation. The Mill Street site sits vacant following the 1993 shed demolition removal action.

Land use at the Elm Street site prior to 1949 included agricultural farming in the 1800's (as part of the Crosby Farm), hide storage for the nearby tannery, a turn of the century blacksmith and carriage painting business, an armory (1913 to 1926), the town burning dump (1929 to 1947), and an automotive dealership (1920 to 1949). The Mill Street site contained two sheds that were used by Fletcher Paint as warehouses for bulk paint pigments for over twenty-five years. Previously, they had been used for grain storage. One of the buildings was reportedly destroyed by fire, prior to EPA's involvement at the site.

On February 1, 1983, the New Hampshire Office of Waste Management (NHOWM) conducted an inspection of the Fletcher Paint Works. The facility was classified as a waste generator and was noted to be out of compliance with the New Hampshire Department of Public Health regulations. The facility never returned the notification forms requested. However, no further action was taken and, upon a follow-up inspection on July 7, 1985, NHOWM determined that the Paint Works facility was no longer considered a generator of hazardous waste.

The 1984 detection of volatile organic compounds (VOCs) in the nearby Keyes Well by the New Hampshire Department of Environmental Services ("NHDES"), formerly known as the New Hampshire Water Supply and Pollution Control Commission, triggered the removal of the Keyes Well from service and prompted a series of investigative activities to determine the contaminant source. During a Preliminary Assessment conducted in 1985, EPA inspected the facility and found in the Fletcher's Paint Works parking lot approximately fifty drums stacked on their sides several drums high. On the southeastern edge of the parking lot, approximately 150 drums containing alkyl resins were adjacent to the building. The majority of these drums were bulging. rusty, and dented, and the ground beneath the drums was stained. A third area of drum storage located near the southeast edge of the building contained approximately fifty drums of inorganic pigmenting agents used in the manufacture of paint. In addition, twenty to thirty drums were found stacked outside the storage building on Mill Street. Most of those drums were open. empty, and stored on their side without benefit of a liner or other containment system.

From May, 1988, to October, 1988, EPA conducted removal activities at both the Elm Street and Mill Street locations. At Elm Street, the main activities performed by EPA were the staging. sampling, analysis and disposal of 863 drums of hazardous substances and the covering of the contaminated soils of the parking lot with geotextile fabric and fill. At Mill Street, EPA covered contaminated soils, inventoried bags of pigment in the storage shed, and disposed of 12 bags of asbestos contained in the shed. The Fletcher Paint Works and Storage Facility Superfund Site was proposed for inclusion on the National Priorities List on June 24, 1988, and finalized on March 30, 1989. In November and December of 1991, EPA conducted a second removal, installing a fence at the Elm Street portion of the Site and removing laboratory containers found in the building on that portion of the Site.

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A third Removal action was completed be EPA at the Mill Street and Elm Street sites during the summer of 1993. The Removal Action included characterization and disposal of wastes found in the Elm Street and Mill Street buildings, demolition and disposal of the Mill Street building (see Figure D), and repair of the caps on both the Mill street and Elm Street properties.

Approximately 500 bags of dry paint pigments, 100 cardboard drums of dry resins, and numerous various-sized containers of unknown materials were found in the Mill street building Approximately 327 drums of hazardous substances, 750 bags of paint pigments 10 bags of friable asbestos and 2,500 small containers of miscellaneous substances were removed from the Elm Street building. A total of 512 drums and 99 wrangler boxes were disposed of during this action. The materials were categorized into 26 different waste streams including oxidizers, peroxides, cyanides, lead, chlorinated organics, acids, organic solids, inorganic solids and PCBs.

The Elm Street cap was repaired, and re-graded with 64 tons of crushed stone and 132 tons of 3/4 inch washed stone. A geotextile liner was placed at the Mill Street site where the shed was formerly located, and 3 to 6 inches of sand fill and 6 to 8 inches of topsoil were placed over the liner. The Mill Street site was then hydro-seeded.

In April of 1996 EPA completed a Remedial Investigation/Feasibility Study (RI/FS), which began in the summer of 1990. The RI and other studies reveal that soils, sediments, surface waters and groundwater are contaminated with volatile and semi-volatile organic compounds. metals, PCBs, and pesticides. In addition, the studies show that the Souhegan River has surface water and sediment contamination, as well as potential impact to certain fish and biota within the river as a result of the contamination.

In December, 1995, EPA Region I made the decision to split the Keyes Well Field and the Souhegan River into a second operable unit in order to conduct further investigations of the contamination at those locations. In a future RI/FS, EPA will complete the investigations into the groundwater contamination in the Keyes Field area and conduct a feasibility study on alternatives to address the contamination in the River. An April 1998 Ecological Risk Assessment reported the contamination of the sediments, surface water and biota in the river and concluded that there is a chronic health risk to the biota in the river as a result of the contaminated sediments. As part of Operable Unit Two, EPA will determine whether the Keyes Field and Souhegan River require further remedial action.

A more detailed description of the Site history can be found in the Remedial Investigation Report in Section 1, Table 1-1 and in pages 5 through 8.

**B. Enforcement History**

In 1990 the EPA referred a complaint to the Department of Justice seeking recovery of costs incurred in the 1988 and 1991 removals from three potentially responsible parties (PRPs). Settlement of the complaint has been reached.

In the summer of 1995, General Electric (GE), a potentially responsible party at the Site, conducted a fourth removal. Pursuant to a Unilateral Administrative Order issued on July 13, 1995, under Section 106 of CERCLA, GE removed PCB contaminated soil from surface soil, under lawns, and on the dirt driveways of three residential properties across from the Mill Street site to protect residents from the risks of direct exposure to PCBs. Many of the residents chose to be included in a voluntary relocation program during this action. A 10 foot wide paved apron was added to the Mill Street site at the end of the action to prevent further degradation and wear of the edge of the cap and Mill Street itself was re-paved to direct surface water runoff toward the Fletcher Paint property and away from the residences.

In August of 1996, GE performed a voluntary soil cleanup of the small piece of land east of, and adjacent to the Fletcher Paint building. This small piece of land was found to have low levels of PCB contamination. General Electric voluntarily removed the contaminated soils as well as additional soil to enable a Korean War Memorial to be built on that location.

On October 11, 1996, EPA issued General Notice to four remaining PRPs, which include the Town of Milford.

On July 10, 1998 a proposed Consent Decree in United States v. The Town of Milford. No. 98-430-B (D.N.H.) was lodged with the United Stated District Court for the District of New Hampshire. Subsequently a notice was published in the Federal Register (Vol 63 No. 142) on Friday July 24, 1998, opening the Proposed Consent Decree for comment for thirty (30) days from publication. In this action, the United States sought, pursuant to Section 107 (a) of CERCLA, 42 U.S.C. 9607 (a), recovery of costs concerning the First Operable Unit of the Fletcher's Paint Site, and the subject of this Record of Decision. The Town of Milford currently owns a portion the site (the Keyes Drive), and previously has operated a burning dump on another portion of the site. In the Proposed Consent Decree, the Town of Milford, New Hampshire, agrees to pay the United States, $62,139.00, for past and future response costs incurred for the First Operable Unit at the Site; to provide various in-kind services, including replacement piping material, which is valued at $ 16,675.00, and perform future routine maintenance on the Site; to provide access to portions of the Site owned or controlled by the Town of Milford; and to covenant not to sue the United States. This settlement does not address any potential liability for the Second Operable Unit at the Site.

## III. COMMUNITY PARTICIPATION

Throughout the Site's history, community interest and involvement has been high. EPA has kept the community and other interested parties appraised of the Site activities through six informational public meetings, numerous personal contacts, nine fact sheets, and press releases.

During February, 1993, EPA released a community relations plan which outlined a program to address community concerns and keep citizens informed and involved in activities during remedial activities. On September 25, 1991, EPA held an informational meeting at the Hampshire Hill Sports & Fitness Club to describe the plans for the Remedial Investigation and Feasibility Study. On August 17, 1994 EPA held an informational meeting at the Hampshire Hill Sports & Fitness Club to discuss the results of the Remedial Investigation.

In the fall of 1995 EPA held an informational public meeting at the Town Hall to discuss potential community related impacts from the various cleanup alternatives that were under review as part of the Feasibility Study ("FS"). As a result of this meeting, which was well attended, EPA met with specific public and business representatives to further discuss and resolve some of the potential community impacts.

In April of 1996 EPA released the Feasibility Study report. In June 10 1996 EPA held a public informational meeting to reiterate the results of the Remedial Investigation and present the various cleanup alternatives for the site. At the request of the Milford Selectmen, EPA specifically did not release the Proposed Plan concurrently with the FS, to allow the Town to review and comment on the potential alternatives prior to EPA finalizing the Proposed Plan.

In December, 1996, EPA made the Administrative Record available for public review at EPA's offices in Boston and at the Wadleigh Public Library in Milford, New Hampshire. EPA published a notice and brief analysis of the Proposed Plan in the Milford Cabinet on January 8, 1997, and made the Proposed Plan available to the public at the Wadleigh Public Library.

On January 14, 1997, EPA held an informational meeting to discuss the results of the Remedial Investigation and the cleanup alternatives presented in the Feasibility Study and to present the Agency's Proposed Plan. From January 14 through April 21, 1997, the Agency held a ninety day public comment period (an extension of sixty days was granted in addition to the initial thirty-day comment period) to accept public comment on the alternatives presented in the FS and the Proposed Plan and on any other documents previously released to the public. On January 29, 1997, the Agency held a public hearing to discuss the Proposed Plan and to accept any oral comments. A transcript of this meeting and a summary of all comments and the Agency's response to comments are included in the Responsiveness Summary in Appendix B..

## IV. SCOPE AND ROLE OF OPERABLE UNIT ONE RESPONSE ACTION

As discussed in Section II above, several removal actions have been performed at the Site to protect human health and the environment, to remove hazardous substances and to stabilize the contaminated soils. The remedial action authorized by this ROD addresses the remaining contaminated soil and groundwater for

Operable Unit One. The selected remedy was developed by combining components of different source control and management of migration alternatives to obtain a comprehensive approach for remediation. In summary, the remedy provides for source control through soil excavation with on-site treatment using an ex-situ thermal desorption technology, replacement of the treated soils, and installation of a soil cover over the Elm Street Site as well as an asphalt over portions of the both Elm Street and Mill Street sites. Management of migration will be achieved through monitored natural attenuation and the use of institutional controls. The implementation of the remedy for Operable Unit 1 can occur independently of future investigations and remedial actions relating to Operable Unit 2, the Keyes Well Field and the Souhegan River.

This remedial action will address the following principal threats to human health and the environment posed by the Site: current and future human exposure to contaminated surface soils through dermal contact and incidental ingestion, future human exposure to contaminated subsurface soils through dermal contact and incidental ingestion, as well as the future ingestion of contaminated ground water; and prevents the leaching of and continued migration of contaminants through the soils into the groundwater at levels that would exceed drinking water standards.

**V. SUMMARY OF SITE CHARACTERISTICS**

Significant soil, surface water, sediment and groundwater contamination is present at the Fletcher's Paint Site. Major sources of the soil and groundwater contamination were eliminated when drums were removed during the EPA's 1988 Removal Action. Temporary caps were also placed at the Mill Street and Elm Street sites during this time period since high levels of residual contamination remained in the soil as a result of the historical surface spills and improper handling and storage of drums on the properties.

Groundwater contamination is present at both the Elm Street and Mill Street Sites. Groundwater at the Mill Street Site exhibits the highest levels of groundwater contamination found at the Site and is the source area for a large plume of groundwater contamination which extends from Mill Street to the Souhegan River.

At the Elm Street Site, a significant area of groundwater contamination exists as a result of leaching from a hot spot of polyurethane resins within the subsurface. Groundwater flow is generally toward the Souhegan River and flows in a north-northwest direction from the Mill Street Site and a north-northeast direction across the Elm Street Site and Keyes Field. The lateral flow is consistent with regional interpretations that suggest that the river is the primary groundwater discharge point associated with the Milford-Souhegan Aquifer. A small portion of the groundwater flow at the Mill Street Site was observed to flow Southwest, toward the Mill Street Pond. Vertical gradients are generally downward in the area of the Mill Street site and invert to an upward direction as the Souhegan River is approached.

Chapter 2 of the Feasibility Study contains an overview of the Remedial Investigation. The Remedial Investigation was carried out in two phases, the first phase (Phase 1A) was conducted between October 1991 and February 1992; and the second phase (Phase 1B) were conducted between October 1993 and January 1994. The significant findings of the Remedial Investigation are summarized below.

**A. Fletcher's Paint Elm Street Site**

Soil

The Elm Street portion of the Fletcher's Paint Works was the location for the manufacturing and operation of the paint business, including the storage of the materials in drums, as well as the retail outlet. The Elm Street site is also the location of the former town burning dump. PCBs. while not extensively used in the paint operations, were identified as the primary contaminant at the Site. The Paint Works used and resold some of the "scrap pyranol" (which contained various mixtures of PCBs, trichlorobenzene and trichloroethylene) for other non-paint related purposes such as a dust suppressant, heating oil and as a compound for the roofing cement industry. The Fletcher's Paint Works also used the scrap pyranol to suppress the dust at the Elm Street facility.

The RI investigations revealed that in addition to overall surficial PCB contamination in the soils as a result of the dust suppression, temporary drum storage and related activities at the Site, the highest and deepest concentrations of PCB contamination directly correspond to former drum storage areas of the site. To a lesser extent, other hazardous materials found at the site during the RI included volatile organic compounds (VOCs) such as xylenes, ethylbenzenes and toluene, metals such as lead, chromium, antimony and barium, and semivolatile organic compounds (SVOCs) such as phthalates and polycyclic aromatic hydrocarbons (PAHs), all relating most likely to the paint operations. In the deeper materials and debris, that comprised of the former burning dump, metals and PAHs (formed as a result of incomplete combustion) were found. (See Figures 2 through 6).

The most prevalent hazardous substance found at the site was PCBs. Four different PCB Arochlors were detected in the Contract Lab Program ("CLP") analysis of soil and groundwater samples collected from the Elm Street site: Arochlors 1242, 1248, 1254 and 1260. The most frequently identified mixture at the Elm street site were the Arochlors 1242 and 1248 in the Phase 1A investigation and 1248 and 1254 in the Phase 1B investigation; Arochlor 1260 was only identified once. Arochlors are industrial mixtures of specific PCB congeners. Arochlor compounds are thermally and chemically stable compounds with excellent dielectric properties. They have been used in nominally closed systems such as heat transfer liquids, hydraulic fluids, lubricants and in open ended systems such as surface coatings, inks, adhesives, pesticides, extenders and for micro encapsulation of dyes of carbonless paper (Merck & Co., 1989). Trichloroethylene (TCE) and 1,2,4-Trichlorobenzene (TCB) are compounds typically used with the PCB industrial Arochlor mixtures, as a cleaning solvent and carrier fluid. In general, where high levels of PCBs are found at the site, TCE and TCB are also found. (See Figure 7).

In general three major areas of contamination were identified on the Elm Street property: 1) the EB-15 area, which is just west of the warehouse portion of the Paint Works, and behind the older brick portion 2) EB-03 area, adjacent to the river bank, and 3) the EB-02 /EB-17 area west and north of the Fletcher's Paint building.

The area in the vicinity of location EB-15, (See Figure 6), just west of the Elm Street building, and centrally located on the Elm Street Site, represents the major area of surface contamination at the Elm Street site. This is one area that was used to store drums during the years of paint operations. The near-surface sample (one to two and one-half feet)from this location exhibited the highest concentrations of TCE (50 ug/kg), 1.2,4-TCB (8,800 ug/kg), 4-nitrophenol (860 ug/kg), and percent level PCBs (14,000 mg/kg -total PCBs by field data and 5,000 mg/kg 1248 PCB by CLP). PCB concentrations at this location generally decreased with depth, however PCBs were found at depth, with field data indicating 940 mg/kg PCBs detected in the soils from 9 to 11 feet below the surface and 640 mg/kg PCBs detected in the soils 19 to 20.5 feet below grade, and essentially at the water table. Just below the water table, the field data indicated that the PCB concentrations dropped to 11 mg/kg at 24 feet below grade.

Subsurface soil sampling at location EB-20A, located under the Fletcher's Paint warehouse addition, indicated that concentrations of PCBs (13mg/kg PCB 1248) were detected from 26 to 30 feet below grade. At 12 to 14 feet, 2.6 mg/kg PCB 1248 was detected. The near surface sample, 0 to 4 feet, at EB-20A contained 6.2 mg/kg PCBs 1248 and 1254. Soil samples were obtained at EB-20A by drilling through the concrete floor of the warehouse portion of the paint facility. The area that currently houses the warehouse portion of the paint facility (and has since it was built in the mid 1970's) was formerly the area of the driveway and drum storage location. Also detected at EB-20A was TCE at 46 ug/kg from 12 to 14 feet and 3 ug/kg at 26 to 30 feet. This location is also close to the location of the culvert system located at similar depths within the Elm Street site, and beneath the former Fletcher's Paint Works building.

At EB-03, the subsurface soil sample collected at eleven to thirteen feet and in close proximity to a resin-like material, exhibited concentrations of volatile aromatics of 1.9 mg/kg toluene, 21 mg/kg ethylbenzene, and 20 mg/kg xylenes. PCB concentrations at this location were 6,700 mg/kg and 7,900 mg/kg (dup) 1242 from 9 to 10.5 feet. PCBs at a concentration of 1,900 mg/kg were detected from 11 to 13 feet. The vertical extent of the measured PCB contamination in this area reaches a maximum depth of 46.5 feet, with the highest concentrations found in the top 15 feet. All concentrations below 25 feet were below 1 mg/kg PCB. At the EB-04 location, northwest of EB-03, lower levels of PCBs were found at depths correlating to the contamination found at depth at EB-03.

A yellowish crystalline material and a brownish, viscous, resin-like substance were encountered during the Phase 1A drilling at both the EB-03 A and EB-03B locations. These materials extend from a depth of approximately 5 feet to 11 feet below the surface. These materials were analyzed using Fourier Transform Infrared Spectoscopy (FTIR) to determine the overall chemical composition of the materials. The FTIR spectrum of the yellowish crystalline material was identified as a urethane or polyurethane; the spectrum for the brownish, viscous material was identified as a polyamide resin.

Also at the EB-03 location, Aroclor 1248 and the higher molecular weight PAHs were detected in the soil sample collected at seven to nine feet, in materials determined to be consistent with the burning dump debris. The materials that were used to define the extent of the burning dump included ash, burnt wood, broken glass, metal fragments and ceramic fragments. The thickness of the former burning dump materials varies, ranging from 2 feet at EB-22 to 8 feet at EB-17.

PAH contamination found at the Site indicated that two different types of PAH contamination were observed, contamination due to combustion by-products and contamination due to petroleum products and/or paint related manufacturing chemicals. The majority of the PAH contamination found at the site were the high molecular weight, three and four ring PAHs and are associated with incomplete Combustion products. The PAH contamination relating to paint operations were found in near surface samples and included the two ring PAHs such as naphthalene, phenols and alkyl-substituted phenols, and phthalates.

- The subsurface soils from EB-17, located behind the Elm Street building and, to a lesser extent, soils from EB-02A, showed elevated concentrations of volatile aromatics, PAHs, phthalates, pesticides, and PCBs. The contamination at this location was observed in the deeper soils (twenty-seven to twenty-nine feet), which corresponds with possible burning dump debris, however, additional sources for this contamination include debris within the overlying fill surficial releases of contamination and migration from off-site sources through the drainage ditch/culvert system into surrounding site soils.

- Inorganics were observed in soils from EB-18B (seventeen to eighteen and one-half feet); Barium, chromium, lead, and zinc, as well as several other inorganic elements, were observed at elevated (above background) concentrations in this sample. The locations and depths of the elevated concentrations were found in an area consistent with the mapped location of the former burning dump. However, these metals, as well as many others, are extensively used in paint formulations. Lower concentrations of the inorganics mentioned above were observed in surface and near-surface soils in the vicinity of EB-02A and EB-15, and in deep soils from EB-02A and B and nearby EB-17. This area of contamination is not well defined and could be associated with the numerous former storage areas at the site.

Groundwater

- At the Elm Street site, ground water appears to be most contaminated in the area of the Site along the river, at monitoring well ("MW') 03B, which is screened from eleven to twenty-one feet. Data from this well indicate extremely elevated concentrations of volatile aromatic compounds (55,000 ug/l xylenes, 4,100 ug/l toluene and 8,400 ug/l ethylbenzene).

- Also at MW-03B, total phenols at 2,927 ug/l and 5,987 ug/l were found during Phase 1B. The high phenols in the groundwater is believed to be associated with the paint-related polyurethane and polyamide paint resins that were found at depth at EB-03.

- PCBs were found in the groundwater at MW-04C, MW-02B and MW-20A during Phase 1B at concentrations of 0.78 ug/l, 0.74 ug/l, and 1.7 ug/l, respectively.

- Low levels of TCE contamination (5-84ug/l) were found in the groundwater monitoring well at the Elm Street Site. The location and depths of the TCE contamination indicate that the contamination is not likely from surficial releases, but rather from the TCE contamination at the Mill Street Site, which has migrated into the Elm Street Site.

- Hydraulically upgradient, and immediately South of the Elm Street site, VOC and PAH contamination was detected in the groundwater monitoring wells at both the Mobil and Gulf Service station. These gasoline stations have had prior releases, which have impacted their properties.

Figures 2 through 6, and Figures 8 and 9, show the PCB contamination at the Fletcher's Elm Street property, the geology of the site with depth and the extent of TCE groundwater contamination found during the RI. Table 1 shows the field data collected and analyzed for PCBs for the Elm Street soil borings.

**B. Fletcher's Paint Mill Street Site**

Soil

At the Mill Street site, contamination was detected in surface soils, subsurface soils, and groundwater. The major contaminants include chlorinated VOCs (primarily TCE), volatile aromatic hydrocarbons (primarily xylenes), PAHs, PCBs, TCB and metals (primarily lead). Surface soil and near surface soil contamination consists primarily of PCBs and to a lesser extent TCB, PAHs and metals. The area just east of the former storage shed, where the highest concentrations of contaminants, and especially PCBs, were found, is known to have been a former drum storage and staging area, as well as an area where contents of drums were transferred from one drum to another. PCB contamination was also observed in building surface samples collected from the east wall of the wooden storage shed, immediately adjacent to the known drum storage area.

- The area in the vicinity of EB-21C, EB-12 and EB-07A, located on the western portion of the Mill Street Site, represents the major area of near surface contamination at the Mill Street site. The vast majority of the PCBs found at the Mill Street Site are situated within the top four feet. While PCB concentrations decrease rapidly with depth across the site, PCBs were found at depths to the water and below during the field studies. Data from EB-12 and EB-21C indicate that PCBs have migrated through the unsaturated zone into the saturated zone, though PCB concentrations found continue to decrease with depth. Table 2 shows the estimated mass of PCBs at Site. PCBs are considered a dense non-aqueous phase liquid (DNAPL), characterized as highly viscous liquids, compared to other, less viscous DNAPL chemicals such as the chlorinated solvents TCE and PCE, The primary reason believed for the infiltration of the PCBs at the Mill Street Site, was the initial surficial release of PCBs, most likely combined with other compounds, as a liquid material. This material, being dense, but highly viscous, spread laterally and vertically through the unsaturated the saturated zones leaving residual contamination. The PCBs would have continued to penetrate in this fashion until the volume and mass of the material was no longer sufficient to overcome the gradient required for further, deeper penetration into the subsurface. While the high concentrations of PCBs found in the hallow surface soils are indicative of residual DNAPL, free phase DNAPL was never identified in any soil sampling or exploratory boring event during the RI.

The near-surface sample (one to three feet) from the EB-12 location exhibited very high levels of PCBs, found at 26,700 mg/kg (CLP) and 110,000 mg/kg (field data). Arochlors 1242 and 1248 were the primary arochlors found at this location. Other samples of contaminated soil, taken from near surface soils from this general location for various treatability studies, indicated PCB concentrations of approximately 88,000 mg/kg (GE treatability study - Maxymillion Technologies - ex-situ thermal desorption), 35,5000 mg/kg (EPA treatability study, IT technologies, ex-situ thermal desorption) and 60,000 mg/kg (EPA treatability study - CF Systems, solvent extraction). TCE, xylenes and trichlorobenzene were also found at high levels in the near surface sods at this location, 1,2,4-TCB detected in EB-21C at 64 and 69 mg/kg (dup) from 0 to 4 feet, was the highest observed during this investigation at the Fletcher's Paint Site. The concentrations generally appeared to decrease with depth. Elevated PCB concentrations in this area, 9,400 mg/kg and 9,600 mg/kg (dup) Arochlor 1248 from 0 to 4 feet, 780 mg/kg from 8 to 10 feet and 190 mg/kg from 12 to 14 feet, also suggests that the majority of the PCB contamination exists in the upper soils with a trend toward decreasing lateral and vertical concentrations.

- PAHs were detected in the near-surface samples, SS-01, SS-02, SS-03, SS-12, and S-09. At SS-01, SS-02, and SS-03, PAH contamination generally decreased with depth. The higher molecular weight PAH contamination appears to be from nearby asphalt surfaces.

- While most of the observed concentrations of inorganics. in soil samples collected during the Mill Street investigation were consistent with background levels, elevated levels of lead and barium were found in soil samples from underneath the former storage shed at the NEU Street site during the 1993 removal action, and subsequently were removed. Paint pigment removed from the storage shed during the 1993 removal action were found to contain high levels of lead, chromium, antimony, and iron oxides.

Groundwater

A major source of groundwater contamination is prevalent at the Mill Street site. Groundwater contamination at the Mill Street site includes TCE, TCB, PCBs and a flocculent material, all of which were all identified at extremely high concentrations.

- There are 4 overburden monitoring wells associated with the Mill Street site, of which one, MW-07A is the only well located on the Fletcher's property itself One shallow bedrock monitoring well, MW-21C, is also located within the suspected source area of the Mill Street site. The highest concentration detected at the Mill Street site were in monitoring well, MW-21C, a shallow bedrock well, where 5,700 ug/l TCE, 270 ug/l PCB and 140 ug/l TCB were detected.

- GE's consultant, ESE, conducted additional sampling in 1995 of both MW-21C and MW-07A using an even lower flow volume per minute than was used in the RI, Phase 1B investigations, to determine the nature of the contaminant in the mobile phase. Laboratory analysis was performed on raw water samples collected from each location, as well as on aliquots of each sample that were filtered or centrifuged prior to analysis. While not consistent with the EPA protocol for low flow sampling and analysis, the rationale behind the sampling and analysis was that for PCBs, centrifugation and filtration would be expected to remove colloids and particles too large to migrate while at the same time provide representative samples which would obtain mobile PCBs (those dissolved in the water as well as those sorbed to mobile colloidal particles).

The results of the 1995, GE sampling round for MW-07A include: 77.8 ug/l PCB (raw water), 58.9 ug/l PCB (centrifuged water), and 35.0 ug/l PCB (filtered water). The results for MW21C include: 229 ug/l PCB (raw water), 182 ug/l PCB (centrifuged water) and 131 ug/l PCB (filtered water).

As stated in ESE's June 1995 Focused Feasibility report prepared on behalf of GE, "The results of the analysis of samples collected at the site [both Elm and Mill Street], with the exception of MW07, concentrations of PCBs in groundwater have decreased from previous sampling results." "Further reductions in concentrations are evident in centrifuges and filtered samples. Based on these results, it is apparent that removal of particulate matter from samples, via centrifuging or filtering, results in a reduction of the concentrations of PCBs, indicating that a portion of the PCBs in the samples may be attributed to PCBs adsorbed onto particulate matter or the filter. A portion of these particles are immobile, and the true dissolved-phase concentration of PCBs is in the range indicated by results for the centrifuged and filtered samples. Concentrations at Mill Street are indicative of site conditions that are different than Elm Street."

A flocculent-type (precipitate) material was observed in groundwater from MW-07A and MW-21C during the RI investigations. An FTIR analysis of the material from MW-07A indicated the presence of polydimethyl siloxanes, polyvinyl stearate, acrylic and hydrocarbons. These materials are used in paint formulations. The presence of this flocculent material was not observed in either well MW07A or MW21C during the GE/ESE 1995 sampling event. In November of 1997, GE conducted a sampling and analysis of the flocculent material, and reported the findings to the EPA on May 25, 1998. (See Table 3). The collected was divided into a top yellow-tan colored sample and a bottom flocculent sample, since ten minutes after sampling, the flocculent material settled to the bottom of the bailer. The GE report states that "the water was removed from the bottom of the well using a Waterra TM pump and was visually checked for the presence of DNAPL that may have not been picked up by the bailer. There was no evidence of DNAPL in the groundwater. Following purging, the groundwater did not contain suspended material nor was there visual evidence of DNAPL." GE's reported the findings of the analysis as follows:

Top sample(yellow-tan groundwater): The top sample contained TCE at 72 ug/l, and 46 ug/1 PCBs. The report notes that this concentration of PCBs may not be representative of the concentrations of PCBs in the groundwater in the formation, as it may be influences by fine particulate material in the bailer sample which may not have settled out completely.

Bottom sample (flocculent material ): The bottom sample contained 77 ug/l TCE, and 1,780 ug/l PCB. GE reported that the PCBs present on the flocculent material and in the groundwater are Arochlor 1242 and are only slightly altered from the initial chemical composition.

The suspended material in the bottom sample was consistent with the materials found by the EPA during the RI. The data from this materials (from both GE and EPA's analyses)indicate that the flocculent materials formed as a result of reduced (soluble) iron in the groundwater, in combination with the dense paint related compounds, entered the well and became oxidized by atmospheric oxygen that can diffuse and enter the standing water in the well. Following removal of the flocculent material by purging, no suspended material was observed, demonstrating that if the flocculent material is present in the groundwater around the well, it is not mobile within the formation. The mobility of the flocculent materials within the well screen is limited as a result of low interstitial groundwater velocity relative to the settling velocity of the particles. However, the mobility of these same chemical compounds in the groundwater around the well, which have not yet oxidized to form a precipitated flocculent is not known.

The flocculent materials contained extremely high PCB concentrations (1,780 ug/1) when compared to the solubility limit for Arochlor 1242 (100 ug/l [Montgomery and Welkom, 1990]). Because of the limited extent of PCB found in the soils at MW07A, where the majority of the contamination is in the top 4 feet, and concentrations fall below 1 mg/kg at the water table, the extremely high PCB concentration in the flocculent material is likely due to the absorption of the PCBs at the surface into the other, paint related materials, which were also likely released as liquids onto the soil surface, and the ultimate migration of those compounds through the subsurface.

Figures 10, 11 and 12 show the PCB contamination at the Fletcher's Mill Street Site, the geology of the site with depth. Figures 8 and 9 show the extent of the TCE contamination in the groundwater for the shallow overburden and shallow bedrock wells. Table 4 shows the field data collected and analyzed for PCBs at the Mill Street soil borings.

**C. Drainage Ditch/Culvert System**

Surface water and sediment related to the Mill Street Pond and drainage ditch/culvert system were collected and analyzed to determine the role this system had in surface transport mechanisms. This system connects the Mill Street Pond to the Souhegan River.

- PCBs were detected in the sediments from the pond, drainage ditch, and culvert system at concentrations ranging from 240 mg/kg to 3.7 mg/kg. Lead and chromium were found in the drainage ditch system, in the area identified as a residential garden. Low levels of PCBs and pesticides were also found within the garden area. The residents using the garden were given the sampling results and future protocols on the proper washing and handling of the vegetables grown in the soils were discussed. The garden, at this time, is no longer used by the residence.

- PAHs were found in the sediments of the Mill Street pond (SED-13) and in the surface soils adjacent to the American Legion parking lot. The concentrations of PAHs decreased significantly with distance from surrounding asphalt surfaces.

- Phenol, and 4-methylphenol were detected in the Mill street Pond sediments and surface waters as well as in the drainage ditch sediment locations. Pentachlorophenol was detected in the Mill Street Pond and also during the groundwater monitoring in well locations, MW08A(1ug/l),MW08B(2ug/l) and Res-01 (5ug/l).

- The presence of high levels of VOCs in the catch basins within the storm drainage culvert system, with no apparent upgradient detections, indicates that a localized petroleum release under investigation by the NHDES was entering the culvert system and discharging downgradient of the system in the Souhegan river. Sampling of the outfall from the culvert system (OF-5) into the river also indicated the presence of VOCs, but at a four fold reduction in concentration. The outfall to the River currently is being monitoring and an absorbent boom is maintained at the outfall to catch any further petroleum release.

**D. Souhegan River**

The RI included investigations into the nature and extent of contamination of the Souhegan River. Future remedial actions, if any, for the Souhegan River would be included as part of Operable Unit Two, and is not included in this ROD. The surface water and sediment data has been included in this ROD to give a better understanding of the chemical contamination at the Site, its surroundings, and the potential fate and transport of the chemicals found on the properties described as part of this ROD.

Sediments

- Moderately high levels of PCBs (49 mg/kg) were present in the Souhegan River sediments adjacent to the Elm Street site, and concentrations appear to decrease with distance downstream of the site. Sediment samples downstream at the dam were not collected. Deposition from a former Fletcher employees indicates that drums containing PCBs may have fallen into the river, when drums were stored along the banks in the vicinity of EB-03. In addition, a fairly steep slope extends from the Fletcher's property into the river allowing PCB contaminated soils to erode into the river, as is evident by the detection of PCB contamination all along the bank and immediately adjacent sediments.

- Lead and chromium were also found in samples of Souhegan River sediments adjacent to the Elm Street site, with concentrations also decreasing with distance downstream of the site.

- Elevated total xylenes concentrations (11 and 14 mg/kg) were detected in the Souhegan River sediment location SED-11, adjacent to the Elm Street site and the location of the EB03 boring, where the paint related resins and high VOCs were found in both the sods and groundwater.

- The highest concentrations of phenolic compounds (phenol and pentachlorophenol) were detected at SED-09 adjacent to the Elm Street Culvert discharge point. The concentrations at the river location are likely the result of contaminants migrating from the Elm Street site as well as from the Mill Street Pond and drainage ditch.

- Elevated PAH concentrations were detected in river sediments adjacent to the Elm Street site at SED-11 and SED-09. PAH concentrations decrease steadily downstream with distance from the Elm Street site. However, levels of PAHs immediately upgradient of SED-11 (e.g., SED-01) were comparable to the levels adjacent to the Elm Street site. Therefore, the Elm Street site does not appear to be impacting PAH concentrations in the Souhegan River upgradient of the Elm Street Culvert discharge point near SED-09.

Surface Water

- The only surface water sampling location with reported PCB concentrations was SW-03 (0.41 Ig/L). This sample was unfiltered and was collected approximately 300 feet downstream of the Elm Street site.

- The only surface water sampling locations with reported lead concentrations were SW-11 and SW-09. The origin of these detected concentrations is likely from the Elm Street site and the Elm Street Culvert.

A complete discussion of site characteristics can be found in the Remedial Investigation Report in Section 4 at pages 1 through 69 and in Section 5 at pages 1 through 57.

**VI. SUMMARY OF SITE RISKS**

A Final Baseline Human Health Risk Assessment (BHRA), reported in section 6 of the RI (July, 1994), an amended BHRA, reported in Appendix A of the FS (April, 1996), as well as a Preliminary Ecological Assessment (July, 1994) were performed to estimate the probability and magnitude of potential adverse human health and environmental effects from exposure to contaminants associated with the Site.

The public health risk assessment followed a four step process: 1) contaminant identification to identify those hazardous substances which, given the specifics of the site were of significant concern; 2) exposure assessment to identify actual or potential exposure pathways, characterized the potentially exposed populations, and determined the extent of possible exposure; 3) toxicity assessment to consider the types and magnitude of adverse health effects associated with exposure to hazardous substances, and 4) risk characterization to integrate the three earlier steps to summarize the potential and actual risks posed by hazardous substances at the site, including carcinogenic and non-carcinogenic risks. The results of the public health risk assessment for the Site are discussed below followed by the conclusions of the environmental risk assessment.

Thirty-five contaminants of concern, found in Table 5, were selected for evaluation in the risk assessment (1994 BHRA). These contaminants constitute a representative subset of the more than sixty contaminants identified at the Site during the Remedial Investigation. The thirty-five contaminants of concern were selected to represent potential site related hazards based on toxicity, concentration, frequency of detection, mobility and persistence in the environment. A summary of the health effects of each of the contaminants of concern can be found in Appendix A, Toxicity Profiles, of the 1994 BHRA.

Potential human health effects associated with exposure to the contaminants of concern were estimated quantitatively or qualitatively through the development of several hypothetical exposure pathways. These pathways were developed to reflect the potential for exposure to hazardous substances based on the present uses, potential future uses, and location of the Site. Future land use for the Elm Street Site is expected to be recreational, with a designated utility worker area, and future land use at the NO Street Site is expected to commercial. The following is a brief summary of the exposure pathways evaluated. A more thorough description can be found in the BHRA and in the amended BHRA, Appendix A of the FS.

Surface Soils

There are 3 locations at the Site were potential exposures to surface soils could occur: 1) surface soil at the Mill Street Site, 2) surface soil at the Elm Street Site and 3) surface soil along the drainage ditch. Exposure to surface soils in all areas could occur under the current commercial land use, when adults and children trespass and come in direct contact with contaminants in the surface soils through incidental ingestion, direct contact , or the inhalation of particulates. Surface soil is considered to be from the surface to 1 foot in depth.

In the future, the Town of Milford has indicated that it expects the Elm Street Site to become a part of the Keyes Field Recreation Area, with the primary purpose of this area being additional parking to the 10 acre recreation field. The Elm Street site would also potentially house a concession stand and restroom facility and provide additional access for the children to reach the main playing areas. Residential properties are located approximately 20 feet from the Mill Street Site and abut the Elm Street Site on the western side of the Keyes Drive. Children routinely cut across the Elm Street Site on their way to the nearby elementary schools, and to access the Keyes Field or access the Souhegan River. Potentially exposed populations for the future use include adults and children who visit the property for recreational purposes. The exposure pathways would be the same as was used for the current use scenario. This future recreational use designation for the Elm Street Site would not limit the Town to the above stated purposed, but would however, limit the Town to the future use of the property in ways consistent with recreational activities.

The current and future use of the Mill Street Site is as a commercial area. The Mill Street Site is located extremely close to residential properties. Current and future use exposed populations include adults and children who visit the property for recreational activities. The exposure pathways include direct contact and incidental ingestion of the contaminated soils and inhalation of particulates. The samp exposure pathways were evaluated for the drainage ditch.

For all scenarios, dermal contact and incidental ingestion of soils were evaluated for adults and children ages one to six years. The EPA recommended values for incidental sod ingestion of 100 mg/day for adults and 200 mg/day for children, and values of exposed skin surface area of 5,800 cm2 for adults and 2,000 cm2 for children were used to determine the risks associated with surface soil exposure. The exposure frequency was assumed to be 140 days per year over a 30 year residency (six and twenty-four years, respectively for adults and children). Refer to Table 6 for specific exposure parameters.

The potential surface soil exposure route of garden crop ingestion was considered only for the drainage ditch surface soils for adults, because gardening (at the time the risk assessment was conducted) was taking place along the ditch at one residential location. For this exposure pathway, uptake of contaminants into garden crops was modeled. The potential exposure pathways quantified, included ingestion of above-ground crops such as tomatoes and lettuce and root vegetables such as carrots. Refer to Table 6 for the specific exposure parameters.

Although some site areas are adequately covered by grasses and other vegetation which limit particulate emissions, other areas are not vegetated. Because no inhalation toxicity value existed for airborne PCBs, potential exposures via inhalation of particulates emitted from surface soils were qualitatively evaluated.

Subsurface Soils

The amended BHRA, 1996, evaluated exposures in the Elm Street Site and at the Draper Energy Property(which is part of the Mill Street Site), to subsurface soils which could be displaced to the surface during excavations related to utility work, recreational building or amenities, or commercial related excavation work(Draper Energy). No current exposures to subsurface soils on the Elm Street Site and on the Draper Energy Coal Yard are occurring, and thus these exposures were not evaluated. The change in future land use at the Elm Street Site and on the Draper Energy Coal Yard from future residential (assumed in the 1994 BHRA), to future recreational (assumed in the amended HBRA, 1996) was due to a reassessment of the land use by the Town of Milford, NH (Lee Mayhew, Town Administrator, May 1, 1995). The results of the 1996 BHRA are presented in this ROD. At the Elm Street Site and the Draper Energy Coal Yard, it was assumed that a young child or adult could be exposed to subsurface soils that were brought to the surface during excavation. Exposure routes included incidental ingestion and dermal contact with contaminated soils. The exposure parameters used, were identical to those used for contact with the surface soils.

No current exposures to subsurface soils in the Mill Street Site are occurring. The Town of Milford reassessed the use of the Mill Street Site and concluded that it would be used as a right of-way to expand Mill Street, giving a greater buffer between the residents along Mill Street and the road itself (Lee Mayhew, town Administrator, may 1, 1995). Thus future exposures to subsurface soils at the Mill Street Site changed from residential exposures assumed in the 1994 BHRA, to no exposure assumed in the 1996 BHRA. Therefore, exposures to subsurface sods were not assessed.

Groundwater

Although groundwater from beneath the site is not currently in use, residential wells could be dug in this area, or a municipal supply well could be reinstated in the future. Potential exposure pathways for future residential exposure to contaminants in groundwater include ingestion, dermal contact and inhalation. Only the risks for groundwater ingestion by adults were quantified, using an ingestion rate of 2 liters per day for a 30 year residency period. Dermal exposure and inhalation to groundwater were not quantitatively evaluated because of the uncertainties associated with quantifying these exposure routes. The inhalation exposure was qualitatively evaluated by assuming that the exposure dose from inhalation while showering was equal in magnitude to that received from ingesting 2 liters of groundwater.

Drainage Ditch - Sediments and Surface Water

Adults and children ages 1 to 6 could wade in the drainage ditch because of its close proximity to residences, although there are usually low levels of water within the drainage ditch most of the year. These individuals could contact surface water and sediments. The potential exposure pathways include incidental ingestion of sediments and dermal contact with surface water and sediments. Incidental soil ingestion rates were 100 mg/day for adults and 200 mg/day for children ages 1 to 6, modified by a term "fraction ingested from source" of 10 percent. An exposed body surface area of 2,000 $cm^2$ was applied for children and 5800 $cm^2$ was applied for adults. Incidental ingestion and dermal contact with sediments were evaluated for a child (one to six years old) and for an adult who may be exposed 100 days per year for six and twenty-four years, respectively.

Risk Estimates

For each pathway evaluated, an average and a reasonable maximum exposure estimate was generated corresponding to exposure to the average and the maximum concentration detected in that particular medium. The table following this discussion summarizes the risks at the Site, for each exposure pathway. Risks associated with inhalation of various contaminants were evaluated qualitatively. Excess lifetime cancer risks were determined for each exposure pathway by multiplying the exposure level with the chemical specific cancer factor, Cancer potency factors have been developed by EPA from epidemiological or animal studies to reflect a conservative "upper bound" of the risk posed by potentially carcinogenic compounds. That is, the true risk is unlikely to be greater than the risk predicted. The resulting risk estimates are expressed in scientific notation as a probability (e.g. $1 \times 10^{-6}$ for 1/1,000,000) and indicate, using this example, that an average individual is not likely to have greater that a one in a million chance of developing cancer over 30 years as a result of site-related exposure as defined to the compound at the stated concentration. Current EPA practice considers carcinogenic risks to be additive when assessing exposure to a mixture of hazardous substances.

The hazard index was also calculated for each pathway as EPA's measure of the potential for non-carcinogenic health effects. A hazard quotient is calculated by dividing the exposure level by the reference dose (RfD)) or other suitable benchmark for non-carcinogenic health effects for an individual compound. Reference doses have been developed by EPA to protect sensitive individuals over the course of a lifetime and they reflect a daily exposure level that is likely to be without an appreciable risk of an adverse health effect. RfDs are derived from epidemiological or animal studies and incorporate uncertainty factors to help ensure that adverse health effects will not occur. The hazard quotient is often expressed as a single value (e.g. 0.3) indicating the ratio of the stated exposure as defined to the reference dose value (in this example, the exposure as characterized is approximately one third of an acceptable exposure level for the given compound). The hazard quotient is only considered additive for compounds that have the same or similar toxic endpoint and the sum is referred to as the hazard index (HI). (For example: the hazard quotient for a compound known to produce liver damage should not be added to a second whose toxic endpoint is, kidney damage).

Risk summaries for the contaminants of concern in each medium were evaluated to reflect present and potential future exposures corresponding to the average and the RME scenarios. Risk summaries for the contaminants of concern, which included: the ingestion of and dermal contact with surface soil at the Site; the ingestion and dermal contact with the subsurface soils at the Elm Street Site and the Draper Energy portion of the Mill Street Site; the ingestion of and dermal contact with surface soil and sediment and surface water in the drainage ditch; the ingestion of garden vegetables grown near the drainage ditch, and the ingestion of groundwater, are found in Tables 6 through 24.

FLETCHER'S PAINT SITE SUMMARY OF RISKS

| Exposure Scenario | Noncarcinogenic Hazard Indices | | | | | Carcinogenic Risks | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Average | Average Totals | Maximum | Maximum Totals | COCs with HI>1 (max cone) | Average | Average Totals | Maximum | Maximum Totals | COCs with cancer risks > 1x10^-6 (mix conc) |
| Surface Soil (Mill Street and Elm Street) | | | | | | | | | | |
| Incidental Ingestion -Adults | 1.1 | | 11.9 | | PCBs | 7E-05 | | 6E-04 | | PAHs,PCBs,As |
| Incidental Ingestion - Children 1 to 6 | 11.3 | | 112.5 | | PCBs | 2E-04 | | 2E-03 | | PAHs,PCBs. As |
| Total Soil Ingestion Risks | | 12.4 | 124 | | | 2E-04 | | 2E-03 | | |
| Dermal Contact - Adults<br>PCBs | 13.6 | | 132.5 | | | 7E-04 | | 7E-03 | | |
| Dermal Contact - Children 1 to 6 | 21.8 | | 223 | | | 3E-04 | | 3E-03 | | PCBs |
| Total Self Dermal Risks | | 35.4 | | 356 | | | 1E-03 | | 1E-02 | |
| TOTAL SURFACE SOIL RISKS (MILL/ELM STREETS) | | 47.8 | | 479 | | | 1E-03 | | 1E-02 | |
| Subsurface Soil (1-10ft)(ELM STREET)- Future | | | | | | | | | | |
| Incidental Ingestion - Adults | 21.8 | | 41 | | PCBs | 4E-04 | | 2E-03 | | PCBs,As |
| Incidental Ingestion - Children 1 to 6 | 75.4 | | 385.7 | | PCBs | 1E-03 | | 5E-03 | | PCBs,As |
| Total Subsurface Soil Ingestion Risks | | 97.2 | | 426.7 | | | 1E-03 | | 7E-03 | |
| Dermal Contact - Adults | 95 | | 475 | | | 5E-03 | | 3E-02 | | PCBs |
| Dermal Contact Children 1 to 6 | 155 | | 750 | | | 2F-03 | | 1E-02 | | PCBs |
| Total Subsurface Soil Dermal Risks | | 250 | | 1225 | | | 7E-03 | | 4E-02 | |
| TOTAL FUTURE SUBSURFACE SOIL RISKS | | 347 | | 1652 | | | 8E-03 | | 5E-02 | |

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Risk Summary

Exposure pathways described previously for the site, and the resulting incremental risk estimates are calculated separately for adults and children ages 1 to 6, and then are summed for total lifetime risks. Below is a breakdown of the risk estimates for the Fletcher's Paint Site.

Surface Soils: Risks to surface soils are presented in Tables 7-9 of the ROD. Exposure pathways for surface soil include incidental ingestion and dermal contact. Cancer risks for adults and children exposed to surface soils at the Elm Street Site, Mill Street Site, and the Draper Energy property exceeded 1 x 10 -6 in all cases. The total lifetime incremental cancer risk for the average case scenario for incidental ingestion of soils f6r children and adults combined is 2 x 10 -4 while for maximum concentrations, the total lifetime cancer risk is 2 x 10 -3 . For potential dermal contact of soils for both children and adults combined, the estimated total lifetime incremental cancer risks are 1 x 10 -3 for the average scenario and 1 x 10 -2 for the reasonable maximum exposure (RME) scenario, The highest individual estimated cancer risks are for Aroclor 1248 and for Aroclor 1254. Although risks are not calculated for inhalation of particulates, risks associated with inhalation maybe similar to those associated with soil ingestion. The total surface soil incremental cancer risk for the incidental ingestion and dermal contact with surface soils is 1 x 10 -3for the average scenario and 1 x 10 -2 for the maximum scenario. Both the average and maximum incremental cancer risk estimates exceed EPA's acceptable risk range of 10 -6 to 10 -4.

Hazard quotients were not derived for PCBs in the 1994 BHRA because a reference dose ("RfD") for Arochlor 1254 did not exist at the time. Hazard quotients were mistakenly omitted from the 1996 amended BHRA and have been added into the risk tables in this ROD. These additional HQs further support previous risk management conclusions based on the 1994 and 1996 BHRA as to which media pose potential risks to human health. The noncancer hazard indices for incidental ingestion is 12.4 for average concentrations and 124 for the RME scenario for children and adults combined. PCBs are the major contributor to these hazard indices. For dermal contact, the hazard index is 21.8 for the average and 223 for the RME scenario. The major contributor to the hazard indices are PCBs. The total HI including dermal contact and ingestion pathways, is 47.8 for the average case and 479 for the RME scenario. These values greatly exceed EPA's acceptable noncancer risk range of a total hazard index of 1 to 10.

The results of the Lead Uptake Model for children ages 0 to 6 were evaluated. Predicted blood lead levels for this age group do not exceed a level of concern, defined as greater than 5 percent of the population exceeding a 10ug/dL increase in blood lead as a result of site exposures.

Subsurface Soils (Elm Street and Draper Energy): Risks to subsurface soils are presented in Tables 11 - 13 in the ROD. Exposures pathways to subsurface soils in the Elm Street Site and evaluated in the 1996 amended BHRA include incidental ingestion and dermal contact with soil. Cancer risks for adults and children exposed to subsurface soils at the Elm Street Site exceeded 1 x 10 -6 in all cases. The total lifetime incremental cancer risk for the average case scenario for the incidental ingestion by children and adults combined is 1 x 10 -3 while for maximum concentrations, the total lifetime cancer risk is 7 x 10 -3. For potential dermal contact of soils for both children and adults combined, the estimated total lifetime incremental cancer risks are 7 x 10 -3 for the average scenario and 4 x 10 -2 for the RME scenario. The highest individual estimated cancer risks are for Aroclor 1242, Aroclor 1248 and for Aroclor 1254. Although risks are not calculated for inhalation of particulates, risks associated with inhalation may be similar to those associated with soil ingestion. The total subsurface soil incremental cancer risk for all pathways and at receptors is 8 x 10 -3 for the average scenario and 5 x 10 -2 for the maximum scenario. Both the average and maximum incremental cancer risk estimates exceed EPA's acceptable risk range of 10 -6 to 10 -4.

Hazard quotients were not derived for PCBs in the 1994 BHRA because a reference dose ("RfD") for Arochlor 1254 did not exist at the time. Hazard quotients were mistakenly omitted from the 1996 amended BHRA and have been added into the risk tables in this ROD. These additional HQs further support previous risk management conclusions based on the 1994 and 1996 BHRA as to which media pose potential risks to human health. The noncancer hazard indices for incidental ingestion for adults and children combined is 97.2 for the average scenario and 427 for the RME scenario. PCBs are responsible for the majority of the HQ For dermal contact, the hazard index for adults and children combined is 250 for the average and 1225 for the RME scenario. The total HI for subsurface soils for all receptors combined and for a pathways is 347 for the average case and 1652 for the RME scenario. These HIs greatly exceed EPA's acceptable noncancer risk range of a total hazard index of 1 to 10.

Groundwater: Risks to groundwater are presented in Table 24 in the ROD. In the future, residential wells could be installed at the Fletcher's Paint Site, therefore future risks associated with ingestion of groundwater were calculated.

The estimated total incremental cancer risks are 1 x 10 -3 for the average scenario and 3 x 10 -2 for the RME scenario. The highest individual estimated cancer risks are for benzene, and PCBs. The contribution of the inhalation pathway from groundwater to the total risk was qualitatively evaluated in the risk assessment by assuming the exposure from inhalation was approximately equivalent to the exposure risk from the ingestion of 2 liters per day of groundwater. Thus the total risk from groundwater is about double the risk from ingestion. This approach was adopted by EPA Region 1 due to the uncertainty in inhalation models at the time. Both the average and maximum incremental cancer risk estimates exceed EPA's acceptable risk range of 10 -6 to 10 -4.

Hazard quotients were not derived for PCBs in the 1994 BHRA because a reference dose ("RfM") for Arochlor 1254 did not exist at the time. Hazard quotients were mistakenly omitted from the 1996 amended BHRA and have been added into the risk tables in this ROD. These additional HQs further support previous risk management conclusions based on the 1994 and 1996 BHRA as to which media pose potential risks to human health. Noncancer hazard indices for adult residents are 18 for the average case scenario and 381 for the RME scenario. PCBs are the only contributor to the HI for the average case. For the RME scenario, the individual hazard quotients for ethylbenzene, toluene, manganese and PCBs exceed 1, with PCBs being the major contributor to the risk. for the RME scenario. These HIs greatly exceed EPA's acceptable noncancer risk range of a total hazard index of 1 to 10.

Drainage Ditch: Risks for exposure to surface water and sediment in the drainage ditch for adults and children combined, are presented in Tables 15 through 23 in this ROD. Exposures to contaminants in surface soil, sediments and surface water in the area of the drainage ditch could occur via incidental ingestion and dermal contact for adults and children ages 1 to 6. Ingestion of garden vegetables could also contribute to exposures for individuals gardening near the ditch.

Estimated lifetime cancer risks associated with ingestion of surface soils in the drainage ditch for adults and children combined are 3 x 10 -5 for the average case scenario and 1 x 10 -4 for the RME scenario. The contaminants of concern with individual cancers risks of greater than 1 x 10 -6 are PAHS, PCBs and arsenic. The compounds contributing the majority of the potential cancer risk in drainage ditch surface soils are carcinogenic PAHs. Dermal contact with the drainage ditch surface soils for adults and children combined, results in a lifetime cancer risk of 5 x 10 -6 for the average case scenario and 2 x 10 -3 for the RME scenario. Dermal risks were only calculated for Aroclors 1248 and 1254. Although risks are not calculated for inhalation of particulates, risks associated with inhalation may be similar to those associated with sod ingestion.

Ingestion of garden vegetables grown in drainage ditch soils results in cancer risks of 3 x 10 -5 for the average case and 1 x 10 -4 for the RME scenario for adults.

The total incremental cancer risks through all exposure routes and across all receptors to the surface soils in the drainage ditch are 7 x 10 -5 for the average scenario and 2 x 10 -4 for the maximum scenario.

Incidental ingestion of drainage ditch soils for adults and children combined, results in a hazard index of 1.1 for the average scenario and 4.4 for the RME scenario. Although no individual chemical hazard quotient exceeds 1, both antimony and chromium (for children) have a calculated hazard quotient of 1. Dermal contact to surface soils for both adults and children combined results in a hazard index of 0.16 for the average case and 0.82 for the RME scenario. The total hazard index for exposure to surface soils in all pathways for all receptors combined is 1.7 for the average case and 6.9 for the RME scenario.

Estimated lifetime cancer risks associated with ingestion of sediments in the drainage ditch for children and adults combined, are 2 x 10 -6 for the average case scenario and 1 x 10 -5 for the RME scenario. Dermal contact with the drainage ditch surface soils for both adults and children combined, result in a lifetime cancer risk of 4 x 10 -6 for the average case scenario and 1 x 10 -5 for the RME scenario. Dermal risks were only calculated for Aroclors 1249 and 1254. The total HI for the drainage ditch sediments for all pathways is 6 x 10 -6 for the average case and 2 x 10 -5 for the RME scenario. The total hazard index for ingestion and dermal contact with drainage ditch sediments for all receptors combined is 0.2 for the average case and 0.6 for the RME scenario.

The estimated lifetime cancer risks associated with dermal contact of the surface waters in the drainage ditch are 9 x 10 -9 for the average case scenario and 2 x 10 -8 for the RME scenario.

The total incremental cancer risks for exposure to the surface water, sediment and soils in the drainage ditch are 7 x 10 -5 for the average scenario and 2 x 10 -4 for the maximum scenario. After consideration and review of the conservative nature of the assumptions used in calculating the risk estimates, these cancer risk estimates are determined to be acceptable and reasonably within the bounds of the EPA's acceptable risk range of 10 -6 to 10 -4.

The total hazard index for exposure to all medium in the drainage ditch is 1.9 for the average case and 7.5 for the RME, After review of the conservative nature of the assumptions used in estimating these risks, these HI's are considered to be within EPA Region 1 acceptable risk range.

Summary:

There are uncertainties and limitations associated with the BHRA including, data collection, exposure assessment, toxicity assessment and risk characterization, the details of which are described in Section 2.6.4 of the FS. These uncertainties resulted in the selection of conservative exposure parameters and model inputs which resulted in conservative estimates of potential site related risks. Because of the uncertainties, the Fletcher's Paint site Baseline risk Assessment is not an absolute estimate of risks to human health resulting from exposure at the Fletcher's Paint Site. Rather, it is a conservative analysis that is a rough measure of the potential for adverse health effects to occur, based on the postulated exposures scenarios.

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment. Exposure to the following media was determined to exceed EPA's cancer risk range of concern: surface soils at the Elm Street and

Mill Street locations, subsurface soil at Elm Street Site and the Draper Energy Portion of the Mill Street Site, and groundwater. The compounds contributing to the majority of the potential cancer risk in Elm Street and Mill Street soils are PCBs. The compounds contributing to the majority of the potential cancer risk in ground water are benzene, 1,2-dichloroethane, trichloroethene, and PCBs.

As can be seen in the Risk Summary Table, which follows this discussion, hazard indices exceed 1 for surface soils at the Elm Street and Mill Street Sites, subsurface soils at the Elm Street Site, for total exposures to surface soil near the drainage ditch (RME case scenario) and for ground water ingestion in the future. The contaminants contributing to the majority of the potential noncarcinogenic effects in ground water are ethylbenzene, manganese and PCBs.

**ECOLOGICAL RISK ASSESSMENT**

A Preliminary Ecological Risk Assessment was conducted as part of the Phase 1A RI to assess the potential site contamination risks to the dominant biota and major ecosystems found in the vicinity of the Site. The primary objectives of the preliminary ecological risk assessment were to document the baseline ecological conditions at the Site and in the surrounding local study area, and evaluate the need for supplemental field studies to fully characterize the biological communities of the study area that may have been or could have been affected by site-derived contamination. The findings of this study were reported as part of the Phase 1A RI, in the March 15, 1994 Final Report for the Preliminary Ecological Risk Assessment at the Fletcher's Paint Site.

From a toxicity and bioaccumulation perspective, the contaminants and four exposure zones of greatest potential ecological concern, and warrant further ecological consideration are:

- On-site surface soils - inorganics, PCBs and pesticides
- Mill Street Pond - inorganics, PCBs, Pesticides and PAHS
- Drainage Ditch - Inorganics, PCBs, Pesticides, PAHS
- Souhegan River - Inorganics, PCBs Pesticides and PAHS

As a result of the Preliminary Ecological Risk Assessment Evaluation, the Souhegan River Study area was separated from the OU1 study area, and will be further investigated as part of OU2 activities. The conclusion from the Preliminary Ecological Risk Assessment was that there were areas of the site which held potential for ecological impacts as a result of site-related contamination, and that the potential risks should be quantified by computing analyte-specific hazard quotients (HQs) and aggregate hazard indices (Ms) for each pairing of ecological receptors and exposure zones. As part of the future risk assessment for the benthic community of the river, a quantitative benthic invertebrate survey was recommended, together with a characterization of benthic substrate features and sediment contamination, in order to supplement quantitative risk estimates risk estimates to be developed for the benthic community, by using NOAA sediment guidelines to calculate inferential risk quotients. Food chain exposure models were recommended to calculate HQs and HIs for a selection of aquatic, wetland, and/or terrestrial faunal indicator species. As part of OU2, field studies were completed in 1995 and a Final Ecological Risk Assessment Report for the Souhegan River was completed in April of 1998.

## VII. DEVELOPMENT AND SCREENING OF ALTERNATIVES

### A. Statutory Requirements/Response Objectives

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences, including: a requirement that EPA's remedial action, when complete, must comply with all federal and more stringent state environmental standards, requirements, criteria or limitations unless a waiver is invoked; a requirement that EPA select a remedial action that is cost-effective and that utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and a preference for remedies in which treatment which permanently and significantly reduces the volume, toxicity or mobility pf the hazardous substances is a principal element over remedies not involving such treatment. Response alternatives were developed to be consistent with these Congressional mandates.

Based on preliminary information relating to types of contaminants, environmental media of concern, and potential exposure pathways, remedial action objectives were developed to aid in the development and screening of alternatives. These remedial action objectives were developed to mitigate existing and future potential threats to public health and the environment. These response objectives were:

1. Prevent the ingestion of groundwater contaminated in excess of drinking water standards (MCLs/MCLGs) or, in their absence, which produces an incremental cancer risk greater than 10-6, for each carcinogenic compound. Also prevent ingestion of contaminated groundwater which produces an incremental cancer risk level greater than 10 -4 to 10 -6 for all carcinogenic compounds together.

2. Prevent ingestion of groundwater contaminated in excess of drinking water standards for each non-carcinogenic compound which produces a hazard quotient greater than 1 and a total hazard index of 1 to 10.

3. Restore the groundwater to drinking water standards or, in their absence, the more stringent of an incremental cancer risk of greater than 10 -6, for each carcinogenic compound, or a hazard quotient of 1 for each non-carcinogenic compound. Also restore the aquifer to the more stringent of (1) a total incremental cancer risk level of 10 -4 to 10 -6 for all carcinogenic compounds; or (2) a hazard index of 1 to 10.

4. Prevent contact with soil contamination through ingestion or dermal contact which produces an incremental cancer risk of greater than 10 -6 for each carcinogenic compound. Also prevent dermal contact with and ingestion of contaminated soil which produces a total incremental cancer risk level of 10 -4 to 10 -6 for all carcinogenic compounds.

5. Prevent contact with soil contamination which, through ingestion or dermal contact, produces a hazard quotient greater than 1 for each non-carcinogenic compound and a total hazard index of 1 to 10.

6. Prevent the leaching of contaminants from the soil to the groundwater that would result in groundwater contamination in excess of drinking water standards.

7. Prevent or mitigate the release of contaminants to the Souhegan River in excess of surface water standards.

### B. Technology and Alternative Development and Screening

CERCLA and the NCP set forth the process by which remedial actions are evaluated and selected. In accordance with these requirements, a range of alternatives was developed for the site. With respect to source control, the RI/FS developed a range of alternatives in which treatment that reduces the toxicity, mobility, or volume of the hazardous substances is a principal element. This range included an alternative that removes or destroys hazardous substances to the maximum extent feasible, eliminating or minimizing to the degree possible the need for long term management, This range also included alternatives that treat the principal threats posed by the Site but vary in the degree of treatment employed and the quantities and characteristics of the treatment residuals and untreated waste that must be managed; alternative(s) that involve little or no treatment but provide protection through engineering or institutional controls; and a no action alternative.

With respect to groundwater response action, the FS developed a limited number of remedial alternatives that attain site specific remediation levels within different time frames using different technologies;

and a no action alternative.

As discussed in Chapter 3.4 of the FS, soil and groundwater treatment technologies were identified, assessed and screened on implementability, effectiveness, and cost. These technologies were combined into source control (SC) and management of migration (MOM) alternatives. Chapter 3.4 of the Feasibility Study presented the remedial alternatives developed by combining the technologies identified in the previous screening process in the categories identified in Section 300.430(e) (3) of the National Contingency Plan ("NCP"). The purpose of the initial screening was to narrow the number of potential remedial actions for further detailed analysis while preserving a range of options. Each alternative was then evaluated in detail in Chapters 4.2 and 4.3 of the FS.

In summary, of the 30 source control and 39 management of migration remedial alternatives screened in Chapters 3.4, 35 were retained as possible options for the cleanup of the Site. From this screening, remedial options were combined, and eight (8) source control and six (6) management of migration alternatives were selected for detailed analysis.

**VIII. DESCRIPTION OF ALTERNATIVES**

A. Source Control (SC) Alternatives Analyzed

The source control alternatives analyzed for the Site include:

SC Alternative 1: No action
SC Alternative 2: Limited action/Institutional controls
SC Alternative 3: Containment
SC Alternative 4: Off -site disposal of soils at a chemical waste landfill
SC Alternative 5: Off- site incineration
SC Alternative 6: Thermal desorption
SC Alternative 7: Stabilization/Solidification
SC Alternative 8: Solvent Extraction

Each of the eight source control alternatives are summarized below. A more complete, detailed presentation of each alternative, along with comparison to the nine NCP criteria, are found in Section 4.2 of the FS.

<u>Source Control 1: No-Action</u>

Under this alternative, no actions would be taken to address the threat to public health and the environment from soil contamination found at the Site. The no action alternative would not result in the attainment of the interim cleanup levels for soils or groundwater in the near future. The contaminated soils would remain a threat to human health through dermal contact and ingestion for a very long time, greater than 100 years, and until natural processes reduce the concentrations of the contaminants in the soil. Contaminants would continue to migrate to surface waters, ground water and sediments, and exposures could take place as the temporary cover at Elm Street erodes without continued maintenance.

The only costs associated with this alternative would be for mandated reviews every five years, to determine if the alternative remains protective to human health; this alternative would not provide protection for human health or the environment. EPA must include a no action alternative to serve as a baseline against which to compare the other alternatives.

| | |
|---|---|
| Estimated time for design and construction: | None |
| Estimated time for operation: | Indefinitely, however monitoring costs are estimated over 30 years |
| Estimated capital cost (1996 dollars): | $ 0 |
| Estimated 0&m (present worth): | $ 4,000 per year for 30 years |
| Estimated total cost sc-1 (present worth for 30 years at 7% interest): | $ 51,000 |

<u>Source Control 2: Limited Action/Institutional Controls</u>

The implementation of the Limited Action/Institutional Controls alternative would involve taking legal and physical measures to restrict access to and the use of the Fletcher's Paint Site, repairing and maintaining the existing temporary caps, as necessary, and conducting long-term monitoring of the soils, sediments, surface waters and groundwater. Physical measures would include building a fence around both the Elm Street and Mill Street Sites and utilizing the current fencing as much as possible. Land use restrictions would have two purposes:

- Restricting access to the Fletcher's Paint site in order to prevent direct human exposure through dermal contact or ingestion to contaminants in the soil, and
- Restricting future land use at the Fletcher's Paint site to prevent, or limit, residential, recreational and industrial development and prohibiting excavation, drilling, or otherwise intrusive activities at the Site.

The contaminated soils would remain a threat to human health through dermal contact and ingestion for a very long time, greater than 100 years, and until natural processes reduce the concentrations of the contaminants in the soil. Contaminants would continue to migrate to surface waters, ground water and sediments, and exposures could take place as the temporary cover at Elm Street erodes without continued maintenance. If imposed, deed restrictions would be retained at the Fletcher's Paint site until future reviews indicated that the Site no longer posed a human health threat.

Repair and maintenance of the existing caps would also occur under this alternative. The caps, installed and repaired during several of the previous removal actions at the Site, consist of a permeable liner, soil, stone dust, and gravel.

| | |
|---|---|
| Estimated time for design and construction: | 1-3 months |
| Estimated time for operation and maintenance: | 30 years of long-term monitoring and cap maintenance |
| Estimated capital cost (1996 dollars): | $ 96,000 |
| Estimated 0 & m. (present worth): | $ 42,000 per year for 30 years |
| Estimated total cost sc-2 (present worth for 30 years at 7% interest): | $ 600,000 |

<u>Source Control-3: Containment</u>

This alternative includes the removal of the top three feet of soil from both the Elm Street and Mill Street Sites in order to install a cap that would protect human health and the environment by eliminating exposure to the contaminated soils, promoting drainage, and minimizing infiltration; and which would be complimentary of the existing natural grade. The actions that would be required under this alternative include:

- Removal of the top three feet of contaminated soils for off-site disposal or treatment.
- Covering of the remaining highly contaminated soils with a protective, impermeable cap to prevent direct contact with the contaminated soils and to prevent infiltration and the leaching of contaminants from the soils into the groundwater in excess of the interim cleanup levels.
- Installation of a vertical underground barrier, called a slurry wall, at the Mill Street area to keep contaminants from migrating away from the Site, and to reduce the amount of groundwater extracted from the Mill Street property and requiring treatment at the surface.
- Installation of an extraction well at the Mill Street Site, within the slurry wall area, to prevent groundwater from migrating out of the contained area. Operation of a groundwater treatment system to treat the extracted groundwater. (Costs for this treatment would be considered with the groundwater "MOM" alternatives).
- Disposal of the excavated soils off-site to either an approved hazardous waste landfill or an approved hazardous waste incinerator.
- The re-routing of the Town's storm water drainage system around the capped areas of the Elm Street Site.
- Use of institutional controls such as deed restrictions to restrict the use of the Site, to prevent activities that could damage the integrity of the cap and allow direct contact with the soil contamination under the cap.

The cap required, a Resource Conservation and Recovery Act ("RCRA") Subtitle C Cap. would consist of several layers of natural (sand, gravel, clay) and man-made materials (synthetic liners) to form an impermeable barrier over the contamination to prevent infiltration. A slurry wall would be installed around the Mill Street Site to keep groundwater from mounding and carrying contamination away from the Site: While not required, the slurry wall would be cost-effective at limiting the amount of groundwater removed from the area over time, which would then require treatment at the surface. The excavated soil would be transported by rail car either to an approved hazardous waste landfill or approved hazardous waste incinerator, Future Site access and use would be restricted to prevent damage to the cap that could release contamination or allow direct contact with the contamination.

| | |
|---|---|
| Estimated time for design and construction: | 13 months |
| Estimated time for operation: | 30 years |
| Estimated capital cost (1996$): | $ 6.7 million for off-site disposal and $13.1 million for off-site incineration of the excavated soils |
| Estimated 0 & m (Present Worth): | $ 42,000 per year for 30 years |
| ESTIMATED TOTAL COST SC-3 (Present worth for 30 years at 7% interest): | $ 7.2 million, - with off-site landfilling of excavated soils; and<br>$ 13.6 million with off-site incineration of the excavated soils. |

SC Alternative 4: Off-Site Disposal of Soils at a Chemical Waste Landfill

Under this alternative, soils would be excavated which exceed soil cleanup levels for risk-based protection at both Elm and Mill Street sites. The excavated soils would be disposed of at a Toxic Substances Control Act (TSCA) approved landfill and/or a RCRA Subtitle D landfill (depending upon PCB concentration). Containment of the remaining contaminated soils at the Site would be consistent with one of three options detailed for the long-term protection of groundwater. The existing storm sewer at the Elm Street Site would be replaced and/or re-routed and clean soils would be used to backfill the Site prior to surface restoration consistent with the expected future uses of the Sites, Specifically, the activities included under this alternative include:

- Removal of the surface soils at both Elm and Mill Street Sites in the top foot (0-1 foot) wherever PCB concentrations are greater than 1 mg/kg.
- At the Elm Street Site, removal of the subsurface soils to a depth of 10 feet (1 to 10 feet) wherever PCB concentrations are greater than 1 mg/kg.
- For all soils deeper than one foot at the Mill Street Site, and deeper that 10 feet at the Elm Street Site, three long-term management options were developed for the long-term protection of the groundwater:

Option 1, Containment and Capping - Concentrations remaining in the soils would be greater than 500 mg/kg PCB.

Elm Street - Leave the remaining contaminated soils in place; backfill to a depth that would allow construction of an impermeable RCRA composite cap; construct an RCRA, Subtitle C composite cap to minimize infiltration of precipitation through the contamination and into the groundwater; and, implement institutional controls as necessary to allow for future limited access to the site.

Mill Street - Leave the remaining contaminated soils in place; backfill to a depth that would allow construction of an impermeable RCRA composite cap; construct a RCRA Subtitle C composite cap to minimize infiltration of precipitation through the contamination and into the ground water; construct a hydraulic containment system consisting of a ground water extraction well and a slurry wall; and, implement institutional controls as necessary to allow for future limited access to the site. Groundwater extraction from within the slurry wall system would be considered part of the management of migration alternative selected to complement the source control action.

Option 2, Partial Removal and Capping - Concentrations remaining in the soils would be less than 500 mg/kg PCB.

Elm Street - Excavate all PCB-contaminated soils with concentrations greater than 500 mg/kg PCBs and dispose of them in an off-site TSCA-approved chemical landfill. Over the remaining soils, backfill to a depth which would allow construction of an impermeable single-barrier cap; and, construct a single-barrier cap (RCRA Subtitle D) to minimize infiltration of precipitation through the contamination and into the ground water.

Mill Street - Excavate all PCB-contaminated soils with concentrations greater than 500 mg/kg and dispose of in an off-site TSCA-approved chemical landfill. Over the remaining soils, backfill to a depth which would allow construction of an impermeable single-barrier cap; construct a single-barrier cap (RCRA Subtitle D) to minimize infiltration of precipitation through the contamination and into the groundwater; construct a hydraulic containment system consisting of a groundwater extraction well and a slurry wall; and, implement institutional controls as necessary to allow for future limited access to the site. Groundwater extraction from within the slurry wall system would be considered part of the management of migration alternative selected to complement the source control action.

Option 3, Additional Excavation and Soil Cover - Concentrations remaining in the soils would be less than those capable of leaching into the ground water and causing future contamination in excess of the PCB ground water standard.

Elm Street - Excavate all soils to a concentration at which leaching models and/or column testing show that infiltration through the remaining PCB soil concentrations will not result in future ground water concentrations in excess of the 0.5 Ig/l Maximum Contaminant Level (MCL) groundwater concentration for PCBs. For the Elm Street Site, 100 mg/kg PCB is used as the value representing the PCB concentration which can remain in the subsurface and not impact the groundwater in the future above drinking water standards. Backfill the excavation with clean fill.

Mill Street - Excavate all soils to a concentration of 1 mg/kg PCB, or to a concentration at which leaching models and/or column testing show that infiltration through the remaining PCB soil concentrations will not result in future ground water concentrations in excess of the 0.5 Ig/l MCL ground water concentration for PCBs. Backfill the excavation with clean fill.

- Disposal of excavated soils off-site by rail car to a TSCA-approved landfill (for soils with PCB concentrations greater than 50 mg/kg) and/or a RCRA Subtitle D landfill (for soils with PCB concentrations less than 50 mg/kg), depending upon PCB concentration.

- Backfill of the excavated areas with clean fill and containment of both Elm Street and Mill Street, consistent with one of the three options described above.

- Restoration of the surface of the Sites, consistent with the expected future uses.

- Placement of restrictions on the future use of the Site, to prevent damage to cover materials; and implementation of long-term monitoring consistent with the institutional controls and long-term monitoring described in detail in SC-2.

Estimated time for design and construction: 24 to 29 months, depending on the containment option selected

Estimated time for operation: 30 years (long-term monitoring).

| Option | Capital Cost (1996$) | O&M Cost (1996$) | | | SC-4 Total Net Present Value* (1996$) |
|---|---|---|---|---|---|
| | | Annual Cost | Years of Operation | O&M Net Present Value | |
| Base Case | $11,122,700 | $36,830 | 30 | $472,897 | $11,595,597 |
| Option 1 | | | | | |
| Elm Street | $510,600 | $5,200 | 30 | $66,768 | $577,368 |
| Elm Street | $375,200 | $5,200 | 30 | $66,768 | $441,968 |
| Option 2 | | | | | |
| Elm Street | $1,248,000 | $5,200 | 30 | $66,768 | $1,314,768 |
| Elm Street | $2,021,900 | $5,200 | 30 | $66,768 | $2,088,699 |
| Option 3 | | | | | |
| Elm Street | $2,786,600 | - | - | - | $2,786,600 |
| Elm Street | $4,487,900 | - | - | - | $4,487,900 |

NOTE: * - The Base Case Costs and the costs for one of the "Containment Options" for both Elm Street and Mill Street are added to determine the Total Present Value of the Alternative for the selected criteria. The containment option selected for Elm Street and Mill street do not have to be the same. Dewatering costs ($500,000) would also need to be added if groundwater treatment is not selected as part of the management of migration portion of the remedy.

SC Alternative 5: Off- Site Incineration

This alternative involves the same activities and long-term management options as described in alternative 4 above, except that the excavated materials would be sent to an off-site hazardous materials incinerator instead of an off-site chemical waste landfill.

Soils that exceed soil cleanup levels for risked-based protection to a depth of one foot at the Mill Street Site and down to 10 feet at the Elm Street Site would be excavated and sent to a TSCA-approved incinerator for treatment and disposal. The existing Elm Street storm sewer would be re-routed and/or replaced; and, the Site would be backfilled with clean fill. The three long-term management options presented in Alternative 4 would be the same, with the exception that any excavated soils would be sent to an incinerator rather than disposed of at a landfill.

Institutional controls restricting the future uses of the Site to prevent damage to the containment materials would be implemented consistent with those previously described in Alternative SC-2.

Estimated time for design and construction: 22 to 27 months, depending on the containment option selected

Estimated time for operation: 30 years (long-term monitoring)

| Option | Capital Cost (1996$) | O&M Annual Cost | Cost Years of Operation | (1996$) O&M Net Present Value | SC-5 Total Net Present Value (1996$) |
|---|---|---|---|---|---|
| Base Case | $23,834,100 | $36,830 | 30 | $472,897 | $24,306,997 |
| Option 1 | | | | | |
| Elm Street | $506,000 | $5,200 | 30 | $66,768 | $572,768 |
| Mill Street | $375,100 | $5,200 | 30 | $66,768 | $441,868 |
| Option 2 | | | | | |
| Elm Street | $2,606,500 | $5,200 | 30 | $66,768 | $2,673,268 |
| Mill Street | $4,877,400 | $5,200 | 30 | $66,768 | $4,944,168 |
| Option 3 | | | | | |
| Elm Street | $7,477,100 | - | | - | $7,477,100 |
| Mill Street | $8,974,300 | - | | - | $8,974,300 |

NOTE:* - The Base Case Costs and the costs for one of the "Containment, Options" for both Elm Street and Mill Street are added to determine the Total Present Value of the Alternative for the selected criteria. The containment option selected for Elm Street and Mill street do not have to be the same. Dewatering costs ($500,000) would also need to be added if groundwater treatment is not selected as part of the management of migration portion of the remedy.

SC Alternative 6: Thermal Desorption

The use of Thermal Desorption to reach cleanup levels in the Site soils is currently EPA's preferred alternative. The discussion of the preferred alternative includes details which differ slightly from the SC-6- thermal desorption alternative detailed in the FS and in the Proposed Plan. The FS alternative for SC-6 Thermal Desorption included the same activities and long-term management options as described in alternative SC-4 above, except that the excavated soils would be treated on-site by ex-situ(above ground) thermal desorption instead of being sent off site to a landfill (SC-4) or incinerator (SC-5).

Under the SC-6 alternative, soils that exceed soil cleanup levels for risked-based protection to a depth of one foot at the Mill Street Site and down to 10 feet at the Elm Street Site would be excavated and treated by on-Site, ex-situ thermal desorption to remove PCB contamination. The treated soils would be returned to the Site. The PCB concentrate would be incinerated off-site at a TSCA-approved incinerator. Any soils that cannot be treated by thermal desorption would be disposed of off-site in a TSCA-approved chemical waste landfill or a RCRA-approved Subtitle D landfill (depending upon PCB concentration). The existing Elm Street storm sewer system would be re-routed and/or replaced. The three long-term management options presented in Alternative SC-4 would be the same, with the exception that any excavated soils would be treated by the on-Site thermal desorber rather than disposed of at a landfill or incinerator

Institutional Controls restricting the future uses of the Site to prevent damage to the containment materials would be implemented consistent with those previously described in Alternative SC-2.

Estimated time for design and construction: 26 to 31 months, depending on the containment option selected

Estimated time for operation: 30 years (long-term monitoring)

| Option | Capital Cost (1996$) | O&M Cost (1996$) Annual Cost | Years of Operation | O&M Net Present Value | SC-6 Total Net Present Value (1996$) |
|---|---|---|---|---|---|
| Base Case | $10,920,700 | $36,830 | 30 | $472,897 | $11,393,597 |
| Option 1 | | | | | |
| Elm Street | $506,000 | $5,200 | 30 | $66,768 | $572,768 |
| Mill Street | $375,100 | $5,200 | 30 | $66,768 | $441,868 |
| Option 2 | | | | | |
| Elm Street | $1,099,700 | $5,200 | 30 | $66,768 | $1,166,468 |
| Mill Street | $1,680,600 | $5,200 | 30 | $66,768 | $1,747,368 |
| Option 3 | | | | | |
| Elm Street | $2,193,200 | - | | - | $2,193,200 |
| Mill Street | $4,957,600 | - | | - | $4,957,600 |

NOTE: * - The Base Case Costs and the costs for one of the "Containment Options" for both Elm Street and Mill Street are added to determine the Total Present Value of the Alternative for the selected criteria. The containment option selected for Elm Street and Mill street do not have to be the same. Dewatering costs would also need to be added if groundwater treatment is not selected as part of the management of migration portion of the remedy.

<u>SC Alternative 7: Stabilization/Solidification</u>

This alternative would involve the same steps and long-term management options as alternative SC-4 except that excavated soil would be treated through stabilization/solidification technologies prior to placement back into the Site.

Under this alternative, the soils that exceed soil cleanup levels for risked-based protection to a depth of one foot at the Mill Street Site and down to 10 feet at the Elm Street Site would be excavated and treated by on-Site solidification/ stabilization to contain the PCB contamination. Solidification/ Stabilization would occur when a binding agent, such as Portland cement, asphalt, or fly ash, is added to the contaminated soil to encase the contaminants, forming a solid material. The solidified soils would be returned to the Site and an engineered, impermeable cap would be constructed over the solidified soils to limit access to the soils and prevent infiltration of precipitation. Any soils that could not be treated by solidification/ stabilization would be disposed of off-site in a TSCA-approved chemical waste landfill or a RCRA-approved Subtitle D landfill (depending upon PCB concentration). The existing Elm Street storm sewer would be re-routed and/or replaced. The three long-term management options presented in Alternative SC-4 would remain the same, with the exception that any excavated soils would be treated by the on Site solidification/stabilization unit rather than disposed of at a landfill.

Institutional controls restricting the future uses of the Site to prevent damage to the cap materials would be implemented consistent with those previously described in Alternative SC-2.

Estimated time for design and construction: 24 to 29 months, depending on the containment option selected

Estimated time for operation: 30 years (long-term monitoring)

| Option | Capital Cost (1996$) | O&M Cost (1996$) Annual Cost | Years of Operation | O&M Net Present Value | Total Net Present Value (1996$) |
|---|---|---|---|---|---|
| Base Case | $7,283,100 | $36,830 | 30 | $472,897 | $7,755,997 |
| Option 1 | | | | | |
| Elm Street | $510,600 | $5,200 | 30 | $66,768 | $577,368 |
| Mill Street | $376,100 | $5,200 | 30 | $66,768 | $442,868 |
| Option 2 | | | | | |
| Elm Street | $860,800 | $5,200 | 30 | $66,768 | $927,568 |
| Mill Street | $1,191,200 | $5,200 | 30 | $66,768 | $1,2457,968 |
| Option 3 | | | | | |
| Elm Street | $1,581,600 | - | | - | $1,581,600 |
| Mill Street | $3,122,300 | - | | - | $3,122,300 |

NOTE: * - The Base Case Costs and the costs for one of the "Containment Options" for both Elm Street and Mill Street are added to determine the Total Present Value of the Alternative for the selected criteria. The containment option selected for Elm Street and Mill street do not have to be the same. Dewatering costs would also need to be added if groundwater treatment is not selected as part of the management of migration portion of the remedy.

<u>SC Alternative 8: Solvent Extraction</u>

This alternative would involve the same activities and long-term management options as described in alternative SC-4 above, except that the excavated materials would be treated on-site by solvent extraction, instead of being transported to an off-site chemical waste landfill.

Soils that exceed soil cleanup levels for risked-based protection to a depth of 1 foot at the Mill Street Site and down to 10 feet at the Elm Street Site would be excavated and treated on-site using solvent extraction. Solvent extraction of the contaminated soils involves adding a liquid solvent to wash PCBs from the excavated soil. The washing process separates contaminates into treated solids, water and the solvent containing the contamination. The treated soils would be placed back into the Site. The concentrated contaminants would be sent off-site to an approved hazardous waste incinerator. Any soils that cannot be treated by solvent extraction would be disposed of off-site in a TSCA-approved chemical waste landfill or a RCRA-approved Subtitle D landfill (depending upon PCB concentration). The existing Elm Street storm sewer would be re-routed and/or replaced. The three long-term management options presented in Alternative 4, would be the same, with the exception that any excavated soils would be treated using solvent extraction rather than disposed of at a landfill.

Institutional controls restricting the future uses of the Site to prevent damage to the containment materials would be implemented consistent with those previously described in Alternative SC-2.

Estimated time for design and construction: 29 to 35 months, depending on the containment option selected

Estimated time for operation: 30 years (long-term monitoring)

| Option | Capital Cost (1996$) | O&M Cost (1996$) Annual Cost | Years of Operation | O&M Net Present Value | SC-8 Total Net Present Value (1996$) |
|---|---|---|---|---|---|
| Base Case | $10,386,500 | $36,830 | 30 | $472,897 | $10,859,397 |

| | | | | | |
|---|---|---|---|---|---|
| Option 1 | | | | | |
| Elm Street | $510,600 | $5,200 | 30 | $66,769 | $577,269 |
| Mill Street | $375,100 | $5,200 | 30 | $66,768 | $441,868 |
| Option 2 | | | | | |
| Elm Street | $1,064,900 | $5,200 | 30 | $66,768 | $1,131,669 |
| Mill Street | $1,611,000 | $5,200 | 30 | $66,768 | $1,677,768 |
| Option 3 | | | | | |
| Elm Street | $2,077,900 | - | | - | $2,077,900 |
| Mill Street | $4,696,500 | - | | - | $4,696,500 |

* - The Base Case Costs and the costs for one of the "Containment Options" for both Elm Street and Mill Street are added to determine the Total Present Value of the Alternative for the selected criteria. The containment option selected for Elm Street and Mill street do not have to be the same. Dewatering costs would also need to be added if groundwater treatment is not selected as part of the management of migration portion of the remedy.

**B. Management of Migration (MOM) Alternatives Analyzed**

Management of Migration alternatives address contaminants that have migrated into and with the groundwater from the original source of contamination. At the Site, contaminants have migrated from the Mill Street and Elm Street properties into the groundwater and to the Souhegan River. The Management of Migration alternatives evaluated for the Site include:

MOM Alternative 1: No action
MOM Alternative 2: Limited action
MOM Alternative 3: Air Stripping
MOM Alternative 4: Granular Activated Carbon
MOM Alternative 5: U/V Oxidation
MOM Alternative 6: Treat at Milford Wastewater Treatment Facility

Each of the six management of migration alternatives are summarized below. A more complete. detailed presentation of each alternative, along with comparison to the nine NCP criteria, are found in Section 4.3 of the FS.

MOM-1: No-Action

No activity would occur under this alternative. Contaminants would remain in the groundwater and slowly move through groundwater and discharge into the Souhegan River. If soils are addressed under one of the source control alternatives described previously (except no action and limited action), thereby eliminating or controlling the source of the groundwater contamination, then the VOC contamination in the overburden groundwater would persist for 20 to 25 years, while the PCB contamination in the overburden groundwater would persist for more than 100 years. Groundwater restoration time frames are expected to take even longer within the bedrock, and are dependent on the full extent of the contamination within the bedrock. If soils are not addressed, thereby leaving the source of the groundwater contamination in place, the time frame for groundwater restoration to drinking water standards would be much longer. EPA must include a no action alternative to serve as a baseline against which to compare the other alternatives.

| | |
|---|---|
| Estimated time for design and construction: | No Construction Activity |
| Estimated time for operation: | 30+ years<br>(5 year reviews) |
| Estimated capital cost (1996 dollars): | $0 |
| Estimated O & m (present worth): | $4,000 per year |
| Estimated total cost mom-1 (present worth over 30 years at 7% interest): | $51,000 |

MOM-2: Limited Action/ Institutional Controls

This alternative involves the use of monitored natural attenuation and institutional controls to reach cleanup levels in the groundwater at the Site. This is EPA's preferred alternative. Under this alternative, restrictions would be imposed on the use of the groundwater as a drinking water supply for as long as drinking water standards are exceeded. No treatment would occur under this alternative. Contaminants would remain in the groundwater, slowly moving through groundwater to either be reduced to cleanup levels through natural processes or discharged into the Souhegan River. If soils are addressed under one of the source control alternatives described previously (except no action and limited action), thereby eliminating or controlling the source of the groundwater contamination, then the VOC contamination in the overburden groundwater would persist for 20 to 25 years, while the PCB contamination in the overburden groundwater would persist for more than 100 years. Groundwater restoration time frames are expected to take even longer within the bedrock, and are dependent on the full extent of the contamination within the bedrock. If soils are not addressed, thereby leaving the source of the groundwater contamination in place, the time frame for groundwater restoration to drinking water standards would be much longer.

Institutional controls would be implemented in the form of restrictions imposed on the use of the groundwater as a drinking water supply as long as concentrations in the groundwater remain above drinking water standards. Long-term monitoring of the groundwater would be conducted to determine if contaminant concentrations are declining, and to ensure that the contamination is not migrating away from the Site area or impacting the Souhegan River. Monitoring would continue for as long as the contamination levels exceeded the Interim Cleanup Levels. Five (5) year reviews would be conducted to ensure that the restrictions imposed on the use of the groundwater were effective in controlling the human health risk posed by ingestion of the contaminated groundwater.

| | |
|---|---|
| Estimated time for design and construction: | No Construction Activity |
| Estimated time for operation and maintenance: | 30+ years<br>(5 year reviews) |
| Estimated capital cost (1996 dollars): | $0 |
| Estimated O & m (present worth): | $200,000 per year |
| Estimated total cost mom-2 (present worth over 30 years at 7% interest): | $2,55 million |

MOM-3: Groundwater Treatment using Air Stripping

Under this alternative, groundwater would be pumped from several site locations to a central treatment unit. The contaminated groundwater would be treated with an on-site air-stripping tower. Air stripping occurs when air is forced through contaminated waters, and the contamination moves from the water into the air. The captured air emissions are then sent through a filter system (granular activated carbon) that collects the volatile organic chemicals. The spent filter would be sent off-site for recycling or disposal. The treated water would be discharged to the Souhegan River.

Institutional controls would be implemented in the form of restrictions imposed on the use of the groundwater as a drinking water supply as long as concentrations in the groundwater remain above drinking water standards. Long-term monitoring of the groundwater would be conducted to determine if the contamination levels are decreasing, are migrating away from the site area or impacting the Souhegan River. Monitoring would continue for as long as the contamination levels exceeded the interim cleanup levels. Five (5) year reviews would be conducted to ensure that the restrictions imposed on the use of the groundwater were effective in controlling the human health risk posed by ingestion of the contaminated groundwater.

The time frame for the groundwater to reach the cleanup levels is dependent on the source control action selected and implemented. The time to reach groundwater cleanup levels using a groundwater extraction system was estimated using a MODFLOW-based model utilizing groundwater concentrations and the desired cleanup levels. Various pumping rates were also analyzed. If the contaminated soils are addressed under one of the source control alternatives described previously (except no action and limited action), thereby eliminating or controlling the source of the groundwater contamination, then, the VOCs in the groundwater in the overburden, may reach cleanup levels in 5 to 10 years. While the time frame cannot be estimated for TCB and PCBs using this model, they are expected to take many more years to reach their groundwater cleanup levels, and could take up to 100 years depending on the ability of these contaminants to move through the aquifer and be captured by the treatment system. Since PCBs and to a lesser extent TCB are more resistant to the flow of groundwater, the pump and treat alternative has a much lower impact in the removal of those types of contaminants than for the more readily removed contaminants at the Site (VOCs). PCBs, while not typically mobile in groundwater, may move with the particulate materials also found in the groundwater at the Mill Street Site. Any mobile PCB material would be removed readily with the VOCs during the pump and treat operation.

If the contaminated soils are not addressed, thereby leaving the source of the groundwater contamination in place, the time frame for groundwater restoration to drinking water standards would be greater than 100 years,

Future studies will be undertaken during design, to further investigate the groundwater contamination in the bedrock and the impacts of the contamination on the ability of and the estimated time frame of the groundwater within the bedrock to reach drinking water standards in the future. Regardless, groundwater contamination in the bedrock would be expected to take significantly longer to reach cleanup levels, as compared to the overburden.

| | |
|---|---|
| Estimated time for design and construction: | No Construction Activity |
| Estimated time for operation and maintenance: | 10 years (operation of the pump and treat system in the overburden) |
| Estimated capital cost (1996 dollars): | $490,000 per year |
| Estimated 0 & m (present worth): | $450,000 per year |
| Estimated total cost mom-3 (present worth over 30 years at 7% interest): | $3.77 million |

<u>MOM-4: Groundwater Treatment using Granular Activated Carbon</u>

Under this alternative, groundwater would be pumped from several site locations to a central treatment unit. The contaminated groundwater would be treated by filtering the groundwater through granular activated carbon. Chemicals cling to the surface of the carbon material, thereby removing contaminants from the water. The spent carbon can then be sent off-site for recycling or disposal. The treated water would be discharged to the Souhegan River.

Institutional controls would be implemented in the form of restrictions imposed on the use of the groundwater as a drinking water supply as long as concentrations in the groundwater remain above drinking water standards. Long-term monitoring of the groundwater would be conducted to determine if the contamination levels are decreasing, are migrating away from the site area or impacting the Souhegan River. Monitoring would continue for as long as the contamination levels exceeded the interim cleanup levels. Five (5) year reviews would be conducted to ensure that the restrictions imposed on the use of the groundwater were effective in controlling the human health risk posed by ingestion of the contaminated groundwater.

The time frame for the groundwater to reach the cleanup levels is dependent on the source. control action selected and implemented. The time to reach groundwater cleanup levels using a groundwater extraction system was estimated using a MODFLOW-based model utilizing groundwater concentrations and the desired cleanup levels. Various pumping rates were also analyzed. If the contaminated soils are addressed under one of the source control alternatives described previously (except no action and limited action), thereby eliminating or controlling the source of the groundwater contamination, then, the VOCs in the groundwater in the overburden may reach cleanup levels in 5 to 10 years. While the time frame cannot be estimated for TCB and PCBs using this model, they are expected to take many more years to reach their groundwater cleanup levels, and could take up to 100 years depending on the ability of these contaminants to move through the aquifer and be captured by the treatment system. Since PCBs and to a lesser extent TCB are more resistant to the flow of groundwater, the pump and treat alternative has a much lower impact in the removal of those types of contaminants than for the more readily removed contaminants at the Site (VOCs). PCBs, while not typically mobile in groundwater, may move with the particulate materials also found in the groundwater at the Mill Street Site. Any mobile PCB material would be removed readily with the VOCs during the pump and treat operation.

If the contaminated soils are not addressed, thereby leaving the source of the groundwater contamination in place, the time frame for groundwater restoration to drinking water standards would be greater than 100 years.

Future studies will be undertaken, to further investigate the contamination in the bedrock and the impacts of the contamination on the ability of and the estimated time frame of the groundwater within the bedrock to reach drinking water standards in the future. Regardless, groundwater contamination in the bedrock would be expected to take significantly longer to reach cleanup levels, as compared to the overburden.

| | |
|---|---|
| Estimated time for design and construction: | No Construction Activity |
| Estimated time for operation and maintenance: | 10 years (operation of the pump and treat system in the overburden) |
| Estimated capital cost (1996 dollars): | $370,000 per year |
| Estimated 0 & m (present worth): | $480,000 per year |
| Estimated total cost mom-4 (present worth over 30 years at 7% interest): | $3.84 million |

MOM-5: Groundwater Treatment using U/V Oxidation

Under this alternative, groundwater would be pumped from several site locations to a central treatment unit. The contaminants in the groundwater would then be destroyed by exposing the contaminated groundwater to ultraviolet light and chemicals such as ozone and peroxide. The treated water would be discharged to the Souhegan River.

Institutional controls would be implemented in the form of restrictions imposed on the use of the groundwater as a drinking water supply as 16ng as concentrations in the groundwater remain above drinking water standards. Long-term monitoring of the groundwater would be conducted to determine if the contamination levels are decreasing, are migrating away from the site area or impacting the Souhegan River. Monitoring would continue for as long as the contamination levels exceeded the interim cleanup levels. Five (5) year reviews would be conducted to ensure that the restrictions imposed on the use of the groundwater were effective in controlling the human health risk posed by ingestion of the contaminated groundwater.

The time frame for the groundwater to reach the cleanup levels is dependent on the source control action selected and implemented. The time to reach groundwater cleanup levels using a groundwater extraction system was estimated using a MODFLOW-based model utilizing groundwater concentrations, and the desired cleanup levels. Various pumping rates were also analyzed. If the contaminated soils are addressed under one of the source control alternatives described previously (except no action and limited action), thereby eliminating or controlling the source of the groundwater contamination, then the VOCs in the groundwater in the overburden may reach cleanup levels in 5 to 10 years. While the time frame cannot be estimated for TCB and PCBs using this model, they are expected to take many more years to reach their groundwater cleanup levels, and could take up to 100 years depending on the ability of these contaminants to move through the aquifer and be captured by the treatment system. Since PCBs and to a lesser extent TCB are more resistant to the flow of groundwater, the pump and treat alternative has a much lower impact in the removal of those types of contaminants than for the more readily removed contaminants at the Site (VOCs). PCBs, while not typically mobile in groundwater, may move with the particulate materials also found in the groundwater at the Mill Street Site. Any mobile PCB material would be removed readily with the VOCs during the pump and treat operation.

If the contaminated soils are not addressed, thereby leaving the source of the groundwater contamination in place, the time frame for groundwater restoration to drinking water standards would be greater than 100 years.

Future studies will be undertaken, to further investigate the contamination in the bedrock and the impacts of the contamination on the ability of and the estimated time frame of the groundwater within the bedrock to reach drinking water standards in the future. Groundwater contamination in the bedrock would, however, be expected to take significantly longer to reach cleanup levels, as compared to the overburden.

| | |
|---|---|
| Estimated time for design and construction: | No Construction Activity |
| Estimated time for operation and maintenance: | 10 years (operation of the pump and treat system in the overburden) |
| Estimated capital cost (1996 dollars): | $620,000 per year |
| Estimated 0 & m (present worth): | $440,000 per year |
| Estimated total cost mom-5 (present worth over 30 years at 7% interest): | $3.82 million |

MOM-6: Groundwater Treatment at the Milford Water Treatment Facility

Under this alternative, groundwater would be pumped from several site locations to the Milford Publicly Owned Treatment Works (POTW) for treatment. The treated water would be discharged to the Souhegan River. At this time, it is understood that the Milford POTW may not be able to accept the contaminated groundwater from the Site due to the chlorine-containing compounds. However, this alternative was developed and included for review should the future conditions change and discharge from the Site to the POTW be allowed.

Institutional controls would be implemented in the form of restrictions imposed on the use of the groundwater as a drinking water supply as long as concentrations in the groundwater remain above drinking water standards. Long-term monitoring of the groundwater would be conducted to determine if the contamination levels are decreasing, are migrating away from the site area or impacting the Souhegan River. Monitoring would continue for as long as the contamination levels exceeded the interim cleanup levels. Five (5) year reviews would be conducted to ensure that the restrictions imposed on the use of the groundwater were effective in controlling the human health risk posed by ingestion of the contaminated groundwater.

The time frame for the groundwater to reach the cleanup levels is dependent on the source control action selected and implemented, The time to reach groundwater cleanup levels using a groundwater extraction system was estimated using a MODFLOW-based model utilizing groundwater concentrations and the desired cleanup levels. Various pumping rates were also analyzed. If the contaminated soils are addressed under one of the source control alternatives described previously (except no action and limited action), thereby eliminating or controlling the source of the groundwater contamination, then, the VOCs in the groundwater in the overburden may reach cleanup levels in 5 to 10 years. While the time frame cannot be estimated for TCB and PCBs using this model, they are expected to take many more years to reach their groundwater cleanup levels and could take up to 100 years depending on the ability of these contaminants to move through the aquifer and be captured by the treatment system. Since PCBs and to a lesser extent TCB are more resistant to the flow of groundwater, the pump and treat alternative has a much lower impact in the removal of those types of contaminants than for the more readily removed contaminants at the Site (VOCs). PCBs, while not typically mobile in groundwater, may move with the particulate materials also found in the groundwater at the Mill Street Site. Any mobile PCB material would be removed readily with the VOCs during the pump and treat operation.

If the contaminated soils are not addressed, thereby leaving the source of the groundwater contamination in place, the time frame for groundwater restoration to drinking water standards would be greater than 100 years.

Future studies will be undertaken, to further investigate the contamination in the bedrock and the impacts of the contamination on the ability of and the estimated time frame of the groundwater within the bedrock to reach drinking water standards in the future. Regardless, groundwater contamination in the bedrock would be expected to take significantly longer to reach cleanup levels, as compared to the overburden.

| | |
|---|---|
| Estimated time for design and construction: | No Construction Activity |
| Estimated time for operation and maintenance: | 10 years (operation of the pump and treat system in the overburden) |
| Estimated capital cost (1996 dollars): | $620,000 per year |
| Estimated 0 & M (present worth): | $310,000 per year |
| Estimated total cost MOM-6 (present worth over 30 years at 7% interest): | $2.85 million |

**IX. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES**

Section 121(b)(1) of CERCLA presents several factors that at a minimum EPA is required to consider in its assessment of alternatives. Building upon these specific statutory mandates, the NCP articulates nine evaluation criteria to be used in assessing the individual remedial alternatives.

A detailed analysis was performed on the alternatives using the nine evaluation criteria in order to select a Site remedy, The following is a summary of the comparison of each alternative's strength and weakness with respect the nine evaluation criteria. These criteria are summarized as follows:

Threshold Criteria

The two threshold criteria described below must be met in order for the alternatives to be eligible for selection in accordance with the NCP.

1. Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced or controlled through treatment, engineering controls, or institutional controls.

2. Compliance with applicable or relevant and appropriate requirements (ARARs) addresses whether or not a remedy will meet all of the ARARs or other Federal and State environmental laws and/or provide grounds for invoking a waiver.

Primary Balancing Criteria

The following five criteria are utilized to compare and evaluate the elements of one alternative to another that meet the threshold criteria.

3. Long-term effectiveness and permanence addresses the criteria that are utilized to assess alternatives for the long-term effectiveness and permanence they afford, along with the degree of certainty that they will prove successful.

4. Reduction of toxicity, mobility, or volume through treatment addresses the degree to which alternatives employ recycling or treatment that reduces toxicity, mobility, or volume, including how treatment is used to address the principal threats posed by the Site.

5. Short term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until cleanup goals are achieved.

6. Implementability addresses the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

7. Cost includes estimated capital and Operation Maintenance (O&M) costs, as well as present-worth costs.

Modifying Criteria

The modifying criteria are used as the final evaluation of remedial alternatives after EPA has received public comment on the RI/FS and Proposed Plan.

8. State acceptance addresses the State's position and key concerns related to the preferred alternative and other alternatives, and the State's comments on ARARs or the proposed use of waivers.

9. Community acceptance addresses the public's general response to the alternatives described in the Proposed Plan and RI/FS report.

Following the detailed analysis of each individual alternative, a comparative analysis, focusing on the relative performance of each alternative against the nine criteria, was conducted. This comparative analysis can be found in Tables 4.4.1-1 and 4.4.2.-1 of the Feasibility Study, and attached to the ROD as Tables 25 and 26.

The section below presents the nine criteria and a brief narrative summary of the alternatives and the strengths and weaknesses according to the detailed and comparative analysis. Only those alternatives which satisfied the first two threshold criteria were balanced and modified using the remaining seven criteria.

Comparative Analysis of Source Control Alternatives

The comparative analysis of the eight source control alternatives is presented below for each of the NCP evaluation criteria, except State and community acceptance.

Protection of Human Health and the Environment Alternatives SC-4, Off-site Disposal, and SC-5, Off-site Incineration, would provide the greatest protection of both current and future human health and the environment by requiring the excavation of all soils to a depth of 1 foot at Mill Street and down to 10 feet at Elm Street with contaminant concentrations greater than the soil cleanup levels for risk-based protection. Removal of the contaminated soils to these depths would reduce risks associated with exposure to contaminants from direct contact with and ingestion of soils. The amount of soils deeper than 1 foot at Mill Street and 10 feet at Elm Street to be excavated for Alternatives SC-4 and SC-5 would depend upon which of the three long term management options was selected. All of the excavated soils for these alternatives would either be disposed of or treated off-site. After excavation, the areas would either be capped with a RCRA composite cap, capped with a single membrane liner, or backfilled with clean soil.

Alternatives SC-6, Thermal Desorption, SC-7, Solidification/Stabilization, and SC-8, Solvent Extraction, would provide slightly less protection of current and future human health and the environment because the contaminated soils would be treated on-Site and placed back in the excavation after treatment. These treated soils, while protective of human health and the environment, would have detectable levels of contamination whereas the clean backfill used for Alternatives SC-4 and SC-5 would not. Treatment of the contaminated soils to a depth of one foot at Mill Street and down to 10 feet at Elm Street would reduce risks associated with exposure to contaminants from direct contact with and ingestion of soils.

Alternatives SC-4, SC-5, SC-6, SC-7, and SC-8 would remediate the risks to human health and environment from the soils at a depth of greater than 1 foot at Mill Street and 10 feet at Elm Street using one of the following three long-term management options:

- Option 1 - Containment and Capping - Construction of a RCRA composite cap over the soils contaminated at a depth of greater than one foot at Mill Street and 10 feet at Elm Street and a hydraulic containment system at Mill Street.

- Option 2 - Partial Removal and Capping - Excavation of the soils at a depth greater than 1 foot at Mill Street and 10 feet at Elm Street that contain PCB concentrations greater than 500 mg/kg and treatment or disposal with the other soils, installation of a single barrier cap, and construction of a hydraulic containment system at Mill Street.

- Option 3 - Additional Excavation and Soil Cover - Excavation of the soils at a depth greater than 1 foot at Mill Street and deeper than 10 feet at Elm Street that could cause an exceedance of the PCB Maximum Contaminant Level ("MCL") in ground water, and off-site treatment in a TSCA incinerator or disposal in a RCRA landfill.

Option 3 provides the greatest protection of human health and the environment because it removes all the PCB-contaminated soil that could cause an exceedance of the PCB MCL. By removing the PCB contamination in soils in excess of that capable of exceeding the PCB MCL. Option 3 limits human exposure to PCB contamination through the ingestion of ground water in excess of the MCL and prevents migration of the contamination from the Elm Street Site to the Souhegan River where both human and ecological receptors might come into contact with it.

Option 2 would provides less protection of human health and the environment than Option 3 because it would leave soils deeper than 1 foot at Mill Street and 10 feet at Elm Street contaminated with less than 500 mg/kg in place. This option would require installation of a single barrier cap over the contamination at Elm Street and a single barrier cap with a hydraulic containment system at Mill Street. The caps at both Elm Street and Mill Street would minimize the infiltration of precipitation but soils deeper than 10 feet contaminated with less than 500 mg/kg PCBs would be left slightly above and in contact with the ground water table. The cap and hydraulic containment system at Mill Street would capture contaminated ground water but soils deeper than 1 foot contaminated with less than 500 mg/kg PCB would again be left in place.

Option 1 would provide significantly less protection of human health and the environment than Options 2 or 3 because it would leave all contamination below 1 foot at Mill Street and 10 feet at Elm Street in place. This option would require the installation of a RCRA C composite cap over the remaining contaminated soils at both Elm Street and Mill Street, as well as a hydraulic containment system at Mill Street. The cap at Elm Street would minimize the infiltration of precipitation but high concentrations of PCBs would be left slightly above and in contact with the ground water table. The cap and hydraulic containment system at Mill Street would capture contaminated ground water, but all soil contaminants deeper than 1 foot would be left in place

Alternative SC-3, Containment, would protect human health and the environment by requiring the excavation of approximately the top three feet of contaminated soils at both the Elm and Mill Street Sites, followed by the installation of a RCRA C composite cap over the contamination in order to limit human and environmental contact with the contaminants. A hydraulic containment system would also be installed at the Mill Street Site. These caps would reduce risks associated with exposure to contaminants from direct contact with and ingestion of soils. Capping the soil contamination that exceeds the cleanup levels for risk-based protection reduces the potential for dermal contact with and ingestion of the contaminated soils. However, as with Options 1 and 2 above, Alternative 3 would leave high concentrations of PCBs above and in contact with the ground water table. The contaminants could then potentially migrate from the Site into the river, where they would pose a risk to human health and the environment. Because this alternative neither removes nor treats the soils deeper than approximately 3 feet, it is considered to be less protective than Alternatives SC-4 through SC-8.

Alternative SC-2, Limited Action/Institutional Controls, would provide a limited amount of protection to human health and the environment by requiring repair of the geotextile membrane that is currently installed over the contamination and by physically and legally restricting the use of the Site, to prevent exposure, access and damage to the cap. Those areas of the Site not currently capped (edges of the Keyes Drive, the banks of the Souhegan River and the Draper Energy property) would require the addition of cover soils and regular maintenance to minimize direct contact and incidental ingestion exposures. The current cap is temporary and would provide neither long-term protection to human health nor long-term containment of the soils. Contaminants would continue to leach from the soils into the groundwater and Souhegan River, at levels which would exceed drinking water standards.

The SC-1, No Action alternative would not be protective of human health or the environment The no action alternative would not reduce or restrict exposures to the contaminated soils and groundwater at the Site. The risks posed by the contamination to the soils would remain at the current unacceptable levels. Contaminants would also continue to leach from the soils into the groundwater and Souhegan River, at levels which would exceed drinking water standards.

Compliance with ARARs. Federal environmental laws from which ARARs for Alternatives SC-3, SC-4, SC-5, SC-6, SC-7, and SC-8 are derived include TSCA and RCRA. The comparative analysis in the FS was conducted before TSCA 40 CFR, Part 761 was revised. The TSCA PCB Spill Policy would be considered (TBC) during the implementation of the remedial action. The state environmental regulations that are applicable or relevant and appropriate to the alternatives presented above are the State of New Hampshire Air Regulations and New Hampshire Revised Statutes Annotated, Title XXVI, Chapter 289. Each of these alternatives would meet the requirements of these ARARs.

Alternatives SC-1 and SC-2 do not have any federal ARARs because the contaminated soils would be left in place; however, the TSCA PCB Spill Policy would be considered a TBC requirement. The only state environmental regulation that would be considered an ARAR is the State of New Hampshire Air Regulations for fugitive dusts during any excavation or repair of the geotextile liner. Alternatives SC-1 and SC-2 would not meet the intent of the TSCA PCB Spill Policy because they would leave PCBs greater than 1 mg/kg on the Site and would not adequately protect human health and the environment.

A brief discussion of how the alternatives meet these requirements follows:

TSCA: The PCB Disposal Requirements promulgated under TSCA are applicable to Alternatives SC-3 through SC-8 because these alternatives involve storage and disposal of soils and liquids contaminated with PCBs in excess of 50 mg/kg. The PCB-contaminated extract produced from the thermal desorption and solvent extraction treatment (SC-6 and SC-8) as well as contaminated soils in Alternatives SC-3 and SC-5 would be treated off-site in an incinerator meeting the standards of 40 C.F.R. º761.69. Soils generated by Alternatives SC-3 and SC-4 and any soils or debris contaminated with PCBs that cannot be treated or incinerated in Alternatives SC-5 through SC-8 and have a PCB concentration greater than 50 mg/L would be disposed of off-site in a landfill meeting the requirements of 40 CFR º761.75.

In Alternatives SC-6 and SC-8, the PCB-contaminated soils would be treated on-site and placed back in the excavated area with a residual PCB contamination of 1 mg/kg. Placement of soils with PCB levels of approximately 1 mg/kg under a 10-inch soil cover would provide a permanent and protective remedy that satisfies the TSCA Spill Policy, and requirements of the Part 761 landfill regulations. Long-term monitoring of ground water wells may also be instituted, as required by the chemical waste landfill regulations.

For Alternative SC-7, the contaminated soils would be solidified to reduce the mobility of the contaminants. Under the Disposal Requirements, 40 CFR º761.60(a)(4), 761.60(e), soils contaminated with PCBs may be disposed of in an incinerator, chemical waste landfill, or may be disposed of by an alternate method that provides a performance similar to that of incineration. In this case, placement of solidified soils in the excavated pits and construction of an impermeable cap over the Site or a hydraulic containment system would satisfy the requirements of a TSCA landfill. The monitoring of ground water wells would be instituted, as required by the TSCA landfill regulations.

Alternatives SC-3 through SC-8 would also comply with the storage requirements of the PCB Disposal Regulations by the construction of a storage area meeting the standards of 40 CFR º761.65.

Neither SC-1 nor SC-2 would meet the intent of the TSCA PCB Spill Policy because they would leave soils contaminated with greater than 1 mg/kg PCBs on the Site and would not adequately protect human health and the environment.

RCRA: The applicability of Hazardous and Solid Waste Amendments to RCRA (HSWA) regulations as action-specific requirements for disposal depends on whether the wastes are hazardous, as defined under RCRA. The wastes at the Site have not been characterized as RCRA waste but are similar to RCRA waste, therefore RCRA is relevant and appropriate to wastes left in place. HSWA Land Disposal Restrictions do not apply because placement does not occur.

The minimum technology standards for closure of the excavated areas are based on TSCA and RCRA landfill regulations. In this case, landfill requirements may be relevant and appropriate for contamination left on Site. Under the SC-4 through SC-8 alternatives, the capping options are consistent with these closure requirements.

Executive Order 11988, Floodplain Management: This executive order sets forth EPA policy to minimize the impact of floods and preserve the natural and beneficial value of floodplains and provides for consideration of floodplains during remedial actions. All systems in Alternatives SC-3 through SC-8 would be assembled and operated away from the 100-year floodplain. If Alternative SC-3 or Option 1 or 2 for Alternatives SC-4 through SC-8 is chosen for Elm Street, the cap would be constructed with engineering controls to prevent damage from a 100-year flood.

NH Air Regulations: Dust emissions from the Site during Alternatives SC-2 through SC-8 would comply with the Clean Air Act and the State of New Hampshire Air Regulations for dust emissions during excavation and transportation of the contaminated soils. Engineering controls would be used to minimize the fugitive dust emissions, including wetting the soils and using foams.

In Alternative SC-6, the thermal desorption system would discharge between 25 and 75 scfm of treated nitrogen carrier gas to the atmosphere. Air monitoring would be performed to ensure compliance with the New Hampshire air regulations.

In Alternative SC-8, the solvent extraction system is a closed system to minimize air emissions but nitrogen gas does flow through the extractor in order to create an oxygen free environment and to purge any non-condensible gases. Air monitoring would be performed to verify that the NH Ambient Air Levels are met.

NH Cemetery Regulations: Alternatives SC-3 through SC-8 would require demolition of the Fletcher building in order to contain or remove all the contamination at Elm Street. In removing this building the New Hampshire historic regulations would be applicable because of the possibility of affecting the historic cemetery that is adjacent to the building.

Long-Term Effectiveness and Permanence. Alternatives SC-4 and SC-5 would provide the greatest long-term effectiveness and permanence by excavating all soils to a depth of 1 foot at Mill Street and down to 10 feet at Elm Street containing contaminant concentrations greater than soil cleanup levels for risk-based protection. The excavated soils would then be either disposed of or treated off-site. After excavation, clean soil would be backfilled into the area. Removal of the contaminated soils to a depth of 1 foot at Mill Street and 10 feet at Elm Street would reduce risks associated with exposure to contaminants from direct contact with and ingestion of soils. Removing the soil contamination that exceeds the cleanup levels for risk based protection reduces the ingestion and dermal contact risks. The long-term controls required at the Site would be dependant upon which of the long-term management options was selected for the soils deeper than 1 foot at Mill Street and 10 feet at Elm Street. If Option 3 is chosen for both Elm Street and Mill Street using either SC-4 or SC-5, long-term controls would not be required because both alternatives would meet EPA criteria for remediation of PCB contaminated Sites.

Alternatives SC-6 and SC-8 would provide slightly less long-term effectiveness and permanence because the contaminated soils would be treated on Site and placed back in the excavation after treatment. These treated soils, while protective of human health and the environment, would have detectable levels of contamination, whereas clean backfill would not. Treatment of the contaminated soils to a depth of 10 feet would reduce risks associated with exposure to contaminants from direct contact with and ingestion of soils. Treating the soil contamination that exceeds the cleanup levels reduces the total risk due to ingestion of and dermal contact with the soil.

SC-7 would provide only moderate long-term effectiveness and permanence because, while it would reduce the risks from ingestion and dermal contact as effectively as SC-6 or SC-8, implementation of the alternative would not destroy or remove contamination from the Site. One specific concern is the long-term uncertainty associated with the integrity of the solidified material and the possibility that contaminants could leach in the future. Because of the uncertainty with solidification/ stabilization, long-term monitoring and controls would be required for the Site.

Each of these five alternatives (SC-4, SC-5, SC-6, SC-7, SC-8) would achieve long-term effectiveness and permanence for the soils at a depth of greater than 10 feet using one of three options:

- Option 1 - Containment and Capping - Construction of a RCRA composite cap over the soils contaminated at a depth of greater than 1 foot at Mill Street and 10 feet at Elm Street and a hydraulic containment system at Mill Street.

- Option 2 - Partial Removal and Capping - Excavation of the soils at a depth greater than one foot at Mill Street and 10 feet at Elm Street that contain PCB concentrations greater than 500 mg/kg and treatment or disposal with the other soils, installation of a single barrier cap, and construction of a hydraulic containment system at Mill Street.

- Option 3 - Additional Excavation and Soil Cover - Excavation of the soils at a depth greater than one foot at Mill Street and deeper than 10 feet at Elm Street that could cause an exceedance of the PCB MCL in ground water, and off-site treatment in a TSCA incinerator or disposal in a RCRA landfill.

Option 3 provides the greatest protection of human health and the environment because it removes all the PCB-contaminated soil that could cause an exceedance of the PCB MCL. By removing the PCB contamination in soils in excess of that capable of exceeding the PCB MCL. Option 3 limits human exposure to PCB contamination through the ingestion of ground water in excess of the MCL and prevents migration of the contamination from the Elm Street Site to the Souhegan River where both human and ecological receptors might come into contact with it. Therefore Option 3 would not require extensive long-term monitoring and controls.

Option 2 would provides less protection of human health and the environment than Option 3 because it would leave soils deeper than 1 foot at Mill Street and 10 feet at Elm Street contaminated with less than 500 mg/kg in place. This option would require installation of a single barrier cap over the contamination at Elm Street and a single barrier cap with a hydraulic containment system at Mill Street. The caps at both Elm Street and Mill Street would minimize the infiltration of precipitation but soils deeper than 10 feet contaminated with less than 500 mg/kg PCBs would be left slightly above and in contact with the ground water table. The cap and hydraulic containment system at Mill Street would capture contaminated ground water but soils deeper than one foot contaminated with less than 500 mg/kg would again be left in place. Because contamination would be left on Site, institutional controls would be required. Option 1 would provide significantly less protection of human health and the environment than Options 2 or 3 because all contamination below one foot at Mill Street and 10 feet at Elm Street would be left in place. This option would require the installation of a RCRA C composite cap over the remaining contaminated soils at both Elm Street and Mill Street, as well as a hydraulic containment system at Mill Street. The cap at Elm Street would minimize the infiltration of precipitation but high concentrations of PCBs would be left slightly above and in contact with the ground water table. The cap and hydraulic containment system at Mill Street would capture contaminated ground water but all soil contaminants deeper than 1 foot would be left in place. Because contamination would be left on Site, long-term monitoring and controls would be required.

Alternative SC-3 would provide less long-term effectiveness and permanence than the other alternatives discussed thus far. The concern with SC-3 is that it would only remove contamination from the top 3 feet of soils and would leave high concentrations of PCBs above and in contact with the ground water table. The contaminants could then potentially migrate from the Site into the river, where they would pose a risk to human health and the environment. Because this alternative neither removes nor treats the soils to 10 feet, it is considered to be significantly less effective than SC-4 through SC-8.

Neither SC-1 nor SC-2 would provide long-term effectiveness and permanence. SC-1 would not remove or cover any of the contamination that is on Site and therefore leaves the Site in its current state. SC-2 does cover the contamination but, as can be seen by the continued migration of contamination, it is not an effective long-term alternative.

Reduction of Toxicity, Mobility, or Volume through Treatment Alternatives SC-5, SC-6, and SC-8 provide reductions in toxicity, mobility, and volume through the treatment and ultimate destruction of the contaminants. SC-5 requires the excavation and off-site incineration of the contaminated soil. The incineration would oxidize the contaminants to carbon dioxide, water and hydrochloric acid. SC-6 requires the excavation and thermal desorption of the contaminated soils. Thermal desorption would volatilize the contaminants and then condense them separately from the soil. The condensed contaminants would then be incinerated at an off site TSCA incinerator. Similarly, SC-8 separates the contaminants from the soils using solvent extraction and incinerates the separated contaminants in an off-site TSCA incinerator.

The amount of contamination removed and treated from the Site using one of the three alternatives discussed above depends on the option chosen for the remediation of soils deeper than 10 feet at Elm

Street and deeper than 1 foot at Mill Street. The estimated total volume of contaminated soil for the base case at both Elm Street and Mill Street is 24,000 CY. Assuming an average PCB concentration of 1,300 mg/kg, if the PCB-contaminated soils are removed to a cleanup level of 1 mg/kg, these alternatives are estimated to remove and treat 37,000 kg of contaminants for the base case.

Depending on the option chosen for the remediation of the remaining soils, the reduction of toxicity, mobility, and volume would increase. If Option 1 is chosen, there would be no increase in the reduction of toxicity, mobility, or volume through treatment because the remaining soils would be capped and left in place. Option 3 represents the largest increase in reduction of toxicity, mobility, or volume because all of the remaining soil with PCB concentrations that could impact ground water would be removed. The estimated total volume of contaminated soil for Option 3 at Elm Street and Mill Street is 5,300 yd 3 and 12,000 yd 3. The resulting total contaminant removal for this option would be 10,000 kg. If Option 3 is chosen, all remaining soils with PCB concentrations greater than 500 mg/kg would be excavated and a single barrier cap installed. Option 3 would result in an additional 1,600 yd 3 from Elm Street and 3,200 yd 3 from Mill Street being removed, resulting in the additional removal of approximately 6,000 kg of PCBs.

Alternative SC-7, Solidification/Stabilization would immobilize the contamination from the excavated soil but would have no effect on the contaminant toxicity, and would increase the contaminant volume through the addition of binding agents by approximately 20 to 25 percent. Capping of the remaining contaminants or excavation and treatment of the remaining contaminants would reduce the mobility of the contaminants. However, while the mobility would be decreased the level of toxicity would remain the same and the contaminant volume would increase due to the addition of binding agents.

The other four alternatives, SC-1, SC-2, SC-3, and SC-4, would not affect the toxicity, mobility, or volume of the contamination through treatment, with the exception of SC-3, which would result in the removal of soils from the top 3 feet to install the cap. If those soils are incinerated rather than landfilled, SC-3 will result in the reduction of the toxicity, mobility, and volume of a portion of the contamination. SC-4 would remove the contamination from the Site but would dispose of the contaminated soil in a TSCA-approved landfill. SC-3 would contain the vertical migration of the contaminants through the installation of a cap over the contamination.

Short-Term Effectiveness. One of the major uncertainties for Alternatives SC-3 through SC-8 is the protection of the community and Site workers while the soils are being excavated. The concern is caused by the proximity of the residents to the Site, the high volume of vehicular traffic on Elm Street (approximately 20,000 vehicles per day), and the high concentration of PCBs in the soils. To limit this risk during excavation, wetting agents and other engineered controls would be used to reduce the particulate emissions from the Site. However, the actual air emissions that would result from the excavation is uncertain and air monitoring would be performed to ensure that the community and Site workers were not exposed to undue risks. In order to minimize the risk to workers, trained personnel would operate the system. The risk to residents, and/or inconvenience to the residents could also be minimized by relocating some of the residents on Mill Street during the excavation of the Mill Street area. Adjacent portions of Keyes Field may also need to be temporarily closed during the remedial action if air monitoring demonstrates an exceedance.

Additional short-term risks would be presented by Alternatives SC-4 and SC-5 due to the need to transport the contaminated soils off Site for disposal and incineration, respectively.

Alternative SC-2 would present minimal risks to the community while the geotextile membrane was being installed. Risks to the workers would be similar to Alternatives SC-4 through SC-5 and activities associated with these alternatives may require the workers to use Level C protection.

To ensure protection of the environment, all remedial alternatives would be constructed and operated above the 100-year floodplain level. This measure would prevent accidental flooding if the water level of the Souhegan River rose substantially. All caps would have engineering controls for protection. In addition, storm water collection systems would be designed to collect runoff from the Site in order to minimize the spread of contamination.

Implementation. In general, Alternatives SC-4 through SC-8 should be both technically and administratively implementable. However, two issues do pose a potential concern regarding the ability to implement these alternatives as described. Because the Sites are small, space consideration is the largest consideration in implementing any of the alternative. Use of a portion of the adjacent Keyes Field, with the Town's permission, may be considered if all operations cannot be conducted solely on the Site itself. Consideration of the use of Keyes Field would be focused on staging of clean fill, equipment and construction offices, as necessary. Also related to this issue is the potential inconvenience of closing all or portions of Mill Street, Elm Street and the Keyes Drive even temporarily during the excavation.

Another issue for implementing the alternatives at the Mill Street Site is the active railway that borders the Mill Street Site. A representative from Boston & Maine Railroad met with the EPA and members of the local businesses, and discussed allowable modification of the rail spurs running through the Mill Street Site in order to allow the remedial action to take place while continuing to operate one rail spur at all times. Discussions with the railroad would need to continue through the remedial design and action to ensure the safe implementation of any of the alternatives.

An additional concern for Alternatives SC-6 through SC-8 is the ability to treat the soils to the PCB cleanup level. Each of these technologies is considered innovative technologies, and has somewhat limited operating experience. Because of the limited experience and the variability between Sites, treatability studies may be required for each of these alternatives.

Alternatives SC-1 through SC-3 would be technically easy to implement. However, there are administrative considerations that may impact their overall implementability. Among these considerations are the potential for future use restrictions to be imposed as a result of the continued existence of contamination at the Fletcher's Paint Site and potential liabilities associated with the continued presence of PCBs in the subsurface.

Cost

Comparative Cost of Source Control Alternatives

| Alternative | Capital Cost (a) ($1996) | O & M Cost (a) ($1996) | Total Cost (a) ($1996) | | |
|---|---|---|---|---|---|
| SC-1 No Action | ---- | $51,000 | $51,000 | | |
| SC-2 Limited Action | $96,000 | $460,000 | $600,000 | | |
| SC-3 Containment and Off-site Disposal | $6,700,000 | $540,000 | $7,240,000 | | |
| SC-3 Containment and Off-site Incineration | $13,000,000 | $540,000 | $13,500,000 | | |
| SC-4 TSCA Landfill (Base Case) | $11,000,000 | $470,000 | $11,500,000 | | |
| Option 1 - Elm St. | $510,000 | $67,000 | $290,000 | | |
| Option 1 - Mill St. | $370,000 | $67,000 | $100,000 | | |
| Option 2 - Elm St. | $1,200,000 | $67,000 | $1,270,000 | | |
| option 2 - Mill St. | $2,000,000 | $67,000 | $2,070,000 | | |
| Option 3 - Elm St. | $2,800,000 | | $2,800,000 | | |
| Option 3 - Mill St. | $4,500,000 | | $4,500,000 | | |
| | | | | Range of Costs for SC-4, depending on long-term management options selected | $11,890,000 to $18,800,000 |
| SC-5 TSCA Incinerator (Base Case) | $24,000,000 | $470,000 | $24,500,000 | | |
| Option 1 - Elm St. | $510,000 | $67,000 | $290,000 | | |
| Option 1 - Mill St. | $370,000 | $67,000 | $100,000 | | |
| Option 2 - Elm St. | $2,600,000 | $67,000 | $2,670,000 | | |
| Option 2 - Mill St. | $4,900,000 | $67,000 | $4,970,000 | | |
| Option 3 - Elm St. | $7,500,000 | //// | $7,500,000 | | |
| Option 3 - Mill St. | $9,000,000 | //// | $9,000,000 | | |
| | | | | Range of Costs for SC-5, depending | $24,890,000 to |
| SC-6 Thermal Desorption (Base Case) | $11,000,000 | $470,000 | $11,500,000 | | |
| Option 1 - Elm St. | $510,000 | $67,000 | $290,000 | | |
| Option 1 - Mill St. | $370,000 | $67,000 | $100,000 | | |
| Option 2 - Elm St. | $1,100,000 | $67,000 | $1,170,000 | | |
| Option 2 - Mill St. | $1,700,000 | $67,000 | $1,770,000 | | |
| Option 3 - Elm St. | $2,200,000 | //// | $2,200,000 | | |
| Option 3 - Mill St. | $5,000,000 | //// | $5,000,000 | | |
| | | | | Range of Costs for SC-6, depending on long-term management options selected | $11,890,000 to $18,700,000 |
| SC-7 Solidification/Stabilization (Base Case) | $7,300,000 | $470,000 | $7,770,000 | | |
| Option 1 - Elm St. | $510,000 | $67,000 | $290,000 | | |
| Option 1 - Mill St. | $380,000 | $61,000 | $100,000 | | |
| Option 2 - Elm St. | $960,000 | $67,000 | $927,000 | | |
| Option 2 - Mill St. | $1,200,000 | $67,000 | $1,270,000 | | |
| Option 3 - Elm St. | $1,600,000 | //// | $1,600,000 | | |
| Option 3 - Mill St. | $3,100,000 | //// | $3,100,000 | | |
| | | | | Range Costs for SC-7, depending, on long-term management options selected | $8,160,000 to $12,470,000 |

| | | | |
|---|---|---|---|
| SC-8 Solvent Extraction (Base Case) | $10,000,000 | $470,000 | $10,500,000 |
| Option 1 - Elm St. | $510,000 | $67,000 | $290,000 |
| Option 1 - Mill St. | $370,000 | $67,000 | $100,000 |
| Option 2 - Elm St. | $1,100,000 | $67,000 | $1,170,000 |
| Option 2 - Mill St. | $1,600,000 | $67,000 | $1,670,000 |
| Option 3 - Elm St. | $2,100,000 | //// | $2,100,000 |
| Option 3 - Mill St. | $4,700,000 | //// | $4,700,000 |

Range of Costs for SC-8, depending an long-term management option selected — $10,890,000 to $17,300,000

Note:

Cost shown for Options is the amount to be added to the base case cost
////// No associated cost
(a): Total NPV at a 7% interest rate; discount factor used dependant upon time required to complete remediation.

Management of Migration Alternatives

Comparative Analysis of Management of Migration Alternatives

A summary of the individual evaluation of the six management of migration alternatives is presented in Table 26. The comparative analysis of the six alternatives is presented below for each of the NCP evaluation criteria, except the State and community acceptance.

Protection of Human Health and the Environment Alternatives MOM-3 (Air stripping with GAC Adsorption), MOM-4 (GAC Adsorption), MOM-5 (UV/Oxidation with GAC Adsorption), and MOM-6 (Extraction and Discharge to POTW), in conjunction with the implementation of a source control alternative, would reduce the contamination in the ground water to below risk-and health-based ARARs in a reasonable time frame. Each of these four alternatives would eliminate unacceptable risk related to VOCs in the contaminated overburden in approximately 10 years by extracting and treating the contaminated ground water. Time frames cannot be estimated for TCB and PCBs; however they are expected to take longer, and up to 100 years, given that these two contaminants are not easily moved through the groundwater during extraction. The ability to meet the time frames presented in these alternatives is dependent on the amount of contamination remaining in the unsaturated and saturated zones at the completion of the source control action, as well as the extent of the contamination within the bedrock.

Upon achieving the remedial action objectives for Alternatives MOM-3, MOM-4, MOM-5, and MOM-6, the risk for the ingestion of and dermal contact with ground water would be reduced.

While the interim cleanup levels established for these alternatives are consistent with ARARs or suitable TBC criteria for groundwater, a cumulative risk that could be posed by these compounds may exceed EPA's goals for remedial action. At the time that the interim ground water cleanup levels, newly promulgated ARARs, and modified ARARs that call into question the protectiveness of the selected alternative have been achieved and have not been exceeded for a period of three consecutive years, a risk assessment would be performed on the residual ground water contamination to determine whether the remedial action is protective.

By reducing the risk in the groundwater through any of these four alternatives, the discharge of contaminants to the surface water and sediments of the Souhegan River would also be reduced.

Alternatives MOM-3, MOM-4, MOM-5, and MOM-6 have the potential to impact the wetlands along the river Predictive modeling conducted using the computer model described in Section 3.3.2 indicated that the extraction system would extract river water, but the effect on the wetlands bordering the river should be negligible.

The Limited Action/Institutional Controls alternative, MOM-2, would be protective of human health because it requires the implementation of institutional controls in the form of restrictions on the use of the contaminated groundwater, as drinking water, until drinking water standards have been met. The No Action alternative, MOM-1, would not be protective of human health and the environment because it does not prevent the future ingestion of the contaminated groundwater. Since neither restrictions would be placed on the use of the groundwater as a drinking water supply until drinking standards have been met, nor any treatment or containment technologies implemented as part of the No Action alternative, the human health risks from the ingestion of the contaminated groundwater would not be mitigated.

Both Alternatives MOM-1 (No Action) and MOM-2 (Limited Action/Institutional Controls) would not provide any protection to the environment and would not return the aquifer to its beneficial use in a reasonable time frame.

The No Action alternative, MOM-1 would not include the use of restrictions to prevent exposure to the groundwater or the use of treatment to reduce the toxicity, mobility or volume of the contaminated groundwater at the Site; and would allow the contaminated groundwater to continue to migrate off-site and release contaminants, over time, to the Souhegan River surface waters and sediments. Contaminant concentrations in the groundwater currently exceed drinking water standards. With both MOM-1 and MOM-2, the contamination in the groundwater would be reduced over a very long period of time due to natural attenuation process such as dispersion, dilution, sorption, volatilization and both biological and abiotic degradation of the volatile contaminants.

In the absence of active remediation of the contaminated groundwater, the VOC and PCB concentrations in the overburden, are expected to persist in excess of the drinking water standards for approximately 25 years and greater than 100 years, respectively. Contaminant concentrations within the bedrock would be expected to remain in excess of the drinking water standards for an even greater time frame, depending on the full extent of contamination within the bedrock system. Depending on the source control action taken at the Site, contaminated soils could act as a source of continuous groundwater contamination through leachate generation and contaminant migration. Compliance with ARARs. Alternatives MOM-3, MOM-4, MOM-5, and MOM-6, in conjunction with the implementation of an appropriate source control alternative, would meet the chemical-specific ARARs in the ground water within a reasonable time frame. Each of these alternatives would meet the ground water cleanup levels for volatile and semivolatile contaminants within 10 years.

By meeting the chemical-specific ARARs in the ground water, any of these four alternatives would reduce the discharge of contaminants to the surface water and sediments to below the ground water cleanup levels for these two media, and the elimination of contaminant discharge to the environment would reduce the contaminant exposure of ecological receptors to acceptable risk levels.

The ability to meet the time frames presented in these alternatives is dependent on the amount of contamination remaining in the unsaturated and saturated zones at the completion of the source control action, as well as the extent of contamination within the bedrock. Assuming there is no unacceptable, residual contamination in the unsaturated zone, MOM-3, MOM-4, MOM-5, and MOM-6 would eliminate unacceptable risks due to VOCs in the overburden groundwater within 10 years, but could take much longer( up to 100 years) to reach acceptable risks due to PCB and TCB contamination in the overburden and bedrock.

Alternatives MOM-1 (No Action) and MOM-2 (Limited Action/Institutional Controls) would each take approximately 25 and at least 100 years to meet the chemical-specific ARARs for VOCs and PCBs, respectively, in the ground water within the overburden, and possibly longer for the bedrock. Again, these time frames were estimated assuming that the source of the contaminants had been removed.

Alternatives MOM-1 and MOM-2 do not have any action-specific ARARs because no action would be taken under these alternatives. Alternatives MOM-3, MOM-4, MOM-5, and MOM-6 would all meet the action-specific ARARs, including:

- State air emission regulations on the air discharge from the air stripper and the UV/oxidation system if ozone is used as the oxidant
- State air stripper regulations on the operation and control of the air stripper
- State hazardous waste regulations on the management and disposal of spent granular activated carbon ("GAC ") and other treatment residuals
- State and federal safe drinking water and Clean Water Act regulations on the discharge of the treated ground water
- State and federal water pollution control regulations on the discharge of water to a POTW
- State underground injection regulation on the reinjection of the ground water into the aquifer.

Long-Term Effectiveness and Permanence. Alternatives MOM-3, MOM-4, MOM-5, and MOM-6 would reduce the risk due to VOCs in the overburden plume to acceptable limits within 10 years by extracting and treating the groundwater. Because the PCBs and TCB are hydrophobic and adhere strongly to soils, and therefore are less mobile in the groundwater, it will take much longer for these contaminants to reach acceptable limits, and possibly up to 100 years.

While these ground water cleanup levels are consistent with ARARs or suitable TBC criteria for ground water, future federal or state regulations may modify the ARARs. Therefore, at the time that these ground water cleanup levels, newly promulgated ARARs, and modified ARARs that call into question the protectiveness of the remedy have been achieved and have not been, exceeded for a period of three consecutive years, a risk assessment would be performed on the residual ground water contamination to determine whether the remedial action is protective.

The ability to meet the time frames presented in these alternatives is dependent on the amount of contamination remaining in the unsaturated and saturated zones at the completion of the source control action, which can continue to provide a source for the contamination in the ground water, as well as the nature of the extent of the contamination within the bedrock. Assuming there is no residual contamination in the unsaturated zone or bedrock, MOM-3, MOM-4, MOM-5, and MOM-6 would eliminate unacceptable risks within 10 years.

Alternatives MOM-1 and MOM-2 would each take at least 25 and greater than 100 years to reduce the VOC and PCB contamination, respectively, in the ground water within the overburden, to within the NCP risk range. The presence of contamination in the Fletcher's Paint Site bedrock ground water would pose an even longer long-term residual risk, depending on the extent of the contamination within the bedrock.

Alternatives MOM-3, MOM-4, and MOM-5 would each produce similar quantities and types of treatment residuals that would have to treated and disposed of off-site. All residuals that would be generated during the remediation of the ground water would be disposed of in a manner to eliminate unacceptable risks. If metals removal is required, the metal hydroxide sludges from the metal precipitation unit would be disposed of in a hazardous waste landfill, and the spent GAC would be regenerated by the vendor, destroying adsorbed contaminants. Spent filters and any free product removed from the equalization tank would be shipped off Site for treatment and disposal. Alternative MOM-6 would produce only minimal residuals. Alternative MOM-6 would result in the generation of spent filters and the collection of any free product removed from the equalization tank. Each of these residuals would be shipped off-site for treatment and disposal. Alternatives MOM-1 and MOM-2 would not produce any residuals because no treatment would be performed.

The active management of migration alternatives, MOM-3, MOM-4, MOM-5, and MOM-6 would be operated until the ground water met the ground water cleanup levels, and the contaminants would be either destroyed on-Site in the UV/oxidation system or off-site when the GAC is regenerated or the extracted ground water is sent to the POTW; therefore, no long-term controls would be necessary. All of the technologies that would be used in these alternatives are considered reliable.

All six management of migration alternatives would require five-year reviews to evaluate whether the alternative is protective of public health and the environment. The five-year reviews would be initiated five years after the start of the remedial action and would continue until no contaminants remain at the Site above levels that allow for unrestricted use and unlimited exposure.

Reduction of Toxicity, Mobility, or Volume through Treatment. In alternative MOM-3, the contamination would be treated using an air stripper to volatilize the contaminants from the ground water. The air stripper initially transfers the contamination from the ground water to the air and then from the air to the vapor phase GAC. The effluent from the stripper would be polished with an aqueous phase GAC system to adsorb the remaining "unstrippable" contaminants. Air stripping is a well proven technology and, based on the results from Sites with similar contamination, would remove approximately 90 percent of the VOCs from the ground water. The remaining contaminants would be removed by the liquid phase GAC system. The contaminants adsorbed to the vapor and aqueous phase carbon units would be irreversibly destroyed during the off-site carbon regeneration. This treatment system would, therefore reduce the volume, toxicity, and mobility of the contaminants.

In alternative MOM-4, the contamination would be treated using an aqueous phase GAC system. Greater than 99 percent of the contaminants would be adsorbed from the extracted ground water prior to discharge of the treated effluent. The contaminants adsorbed to the aqueous phase carbon units would be irreversibly destroyed during the off-site carbon regeneration. This treatment system would therefore, reduce the volume, toxicity, and mobility of the contaminants.

In alternative MOM-5, the UV/Oxidation system would remove approximately 99 percent of the contamination from the extracted ground water, based on the previous studies conducted by Arthur D. Little and discussions with a UV/Oxidation system vendor. The UV/Oxidation system would irreversibly destroy the contaminants directly by oxidizing the organics to carbon dioxide, water, and hydrochloric acid. The remaining contaminants would be treated using the liquid phase GAC system and would be irreversibly destroyed during the off-site carbon regeneration. This treatment system would reduce the volume, toxicity, and mobility of the contaminants.

In alternative MOM-6, the discharge of the extracted ground water to the Milford POTW would result in the destruction of greater than 95 percent of the contamination. Those metals and refractory organics would either be collected in the sludge or discharged with the POTW effluent. The majority of the organics contained in the sludge would be irreversibly destroyed when the sludge was composted. Any metals captured in the sludge would not be removed, but would remain in the sludge. This treatment system would reduce the volume, toxicity, and mobility of the contaminants. Alternatives MOM-1 and MOM-2 would not involve the reduction of the volume, toxicity, and mobility of the contaminants through treatment.

Alternatives MOM-3, MOM-4, and MOM-5 would produce varying quantities but similar types of treatment residuals. The spent GAC would be generated by Alternatives MOM-3, MOM-4, and MOM-5 at rates of approximately 5.5, 18, and 0.6 tons/year, respectively, and would be recovered through off-site regeneration. Alternative MOM-6 would result in the generation of minimal residuals, composed of any NAPLs collected in the equalization vessel and spent filters. Each of the four active management of migration alternatives would generate similar quantities of liquids and solids in the equalization vessel, as well as spent filters, as all four would employ identical equalization and filtering systems. An estimated 50 pounds of solids would be collected each year in the equalization tank that would have to be treated off Site. Spent filters would also require off-site treatment or disposal. If metals removal is required the metal precipitation system would generate metal hydroxide sludges at a rate of approximately 73 tons/year for each of these four alternatives. These sludges would be disposed of off-site as a hazardous waste. Alternatives MOM-1 and MOM-2 would not produce any residuals because no treatment would be performed.

Short-Term Effectiveness. The operations of the equipment for Alternatives MOM-3, MOM-4, and MOM-5 are not expected to increase the risk to the community because the air emissions from the air stripper and the UV/Oxidation system would be treated by GAC prior to their release to the environment. The risks to the workers from using the acids, bases, and the hydrogen peroxide associated with the air stripper, metals precipitation, and UV/Oxidation treatment would be minimized through the use of engineering controls and personal protective equipment. The effluent for each of these three alternatives would be treated with aqueous phase GAC adsorbers to remove contaminants prior to discharge. Alternative MOM-6 is not expected to pose any short term risks to the community, as the only treatment conducted on Site is the filtering of the extracted ground water.

Alternatives MOM-3, MOM-4, MOM-5, and MOM-6 would achieve remedial action objectives in a reasonable time frame. Each of these alternatives would meet the VOC groundwater cleanup levels in the plume within approximately 10 years by extracting and treating the ground water (MOM-3, MOM-4, and MOM-5), or by extracting the ground water and discharging it for treatment (MOM-6). While the time to reach cleanup levels in the overburden cannot be estimated for TCB and PCBs, the time frame is expected to be much greater, and could be up to 100 years, due to the hydrophobic nature of these contaminants and lower impact that a groundwater extraction system would have on these particular contaminants versus the VOC contaminants. The ability to reach the interim cleanup levels in the overburden, is dependent on the amount of contamination that remains in the unsaturated zone at the end of the source control action and the extent of the contamination within the bedrock. Further bedrock studies will be necessary, once the source control action is complete to determine the ability of and the estimated time frame for the groundwater within the bedrock to reach the interim cleanup levels. It is estimated, however, that the time to meet cleanup levels in the bedrock will be much longer than the time frame estimated for the overburden. Assuming there is no residual contamination in the unsaturated zone or bedrock, Alternatives MOM-3, MOM-4, MOM-5, and MOM-6 would meet the ground water cleanup levels for VOCs within 10 years in the overburden.

By reducing the risk in the ground water in each of these four alternatives, the discharge of contaminants to the surface water and sediments would be reduced to below the cleanup levels for these two media, and the elimination of contaminant discharge to the environment would reduce the contaminant exposure of ecological receptors to acceptable risk levels. Alternatives MOM-1 and MOM-2 would not increase risk to the residents, workers, or the environment, however, neither alternative would meet the VOC and PCB ground water cleanup levels within the overburden for approximately 25 and at least 100 years, respectively, and even longer within the bedrock, depending on the extent of the contamination within the bedrock. Implementation. The construction and operation of the air stripper, GAC adsorption, and UV/oxidation systems for MOM-3, MOM-4, and MOM-5, respectively, can be easily implemented and are technically capable of treating the contaminants in the ground water. However, the UV/Oxidation system used in MOM-5 is innovative; if the system cannot meet the ground water cleanup levels, then either MOM-3 or MOM-4 can be used in its place. Alternatives MOM-3, MOM-4, and MOM-5 can each be expanded if additional ground water needs to be treated or the concentration of contamination is greater than expected. No special equipment, materials, or specialists would be required for the implementation of any of these three alternatives. Alternative MOM-6 can also be implemented, technically, and could treat more than double the anticipated flow rate, as the POTW currently treating much less than its rated capacity.

Alternatives MOM-2, MOM-3, MOM-4, MOM-5, and MOM-6 would require state and local coordination for the implementation of legal restrictions on the use of ground water at the Site. Alternatives MOM-3, MOM-4, and MOM-5 would also require state and local coordination for the discharge of treated air and ground water to the environment.

Cost

Table :Comparative Cost of Management of Migration Alternatives

| Cost | Alternative MOM-1<br>No action | Alternative MOM-2 Limited Action/<br>Institutional Controls | Alternative MOM-3<br>Air Strip & GAC | Alternative MOM-4<br>GAC Adsorption | Alternative MOM-5<br>UV/Ox & GAC | Alternative MOM-6<br>Discharge to POTW |
|---|---|---|---|---|---|---|
| Capital Cost | $0 | $0 | $0.49 million | $0.37 million | $0.62 million | $0.62 million |
| Annual O&M Cost | $4,000 | $0.20 million | $0.45 million | $0.48 million | $0.44 million | $0.31 million |
| NPV | $48,000 (a) | $2.31 million (a) | $3.77 million (b) | $3.84 million (b) | $3.82 million (b) | $2.85 million (b) |

Notes:

(a)Total NPV (1996$) estimated over 25 years at a 7% interest rate.

(b) Total NPV (1996$) estimated over 10 years at a 7% interest rate.

## X. THE SELECTED REMEDY

The selected remedy is a comprehensive remedy which utilizes source control and management of migration components to address the principal Site risks for this operable unit. Highly contaminated soils at the Elm and Mill Street Sites which pose the greatest risk to human health based on the anticipated future uses of the Site would be excavated, treated on-site by thermal desorption, and replaced. The concentrations of the contaminants in the remaining contaminated soils would be protective of the environment and prevent the future long-term spread of the contamination to the groundwater through leaching. Management of migration will be accomplished over time through institutional controls and monitored natural attenuation.

The selected remedy is a combination of the SC-6, thermal desorption and MOM-2, monitored, natural attenuation alternatives presented in the FS. Several modifications to the SC-6, thermal desorption alternative was presented in the Proposed Plan. These modifications included an elevation of the Elm Street subsurface soil cleanup standard from 1 mg/kg to 10 mg/kg PCB and the selection of a RCRA Subtitle D cap at the Elm Street Site as the long-term management option for the contaminated soils left in place. Based on public comments received on the Proposed Plan, the remedy was again modified as presented below. For a more complete description of these changes see the Documentation of Significant Changes, Section XII of the ROD

### A. Interim Ground Water Cleanup Levels

Interim cleanup levels have been established in ground water for all contaminants of concern identified in the Baseline Risk Assessment found to pose an unacceptable risk to either public health or the environment. Interim cleanup levels have been set based on the ARARs (e.g., Drinking Water Maximum Contaminant Levels (MCLs), and NH Ambient Groundwater Quality Standards (AGQS) as available, or other suitable criteria described below. Periodic assessments of the protection afforded by, remedial actions will be made as the remedy is being implemented and at the completion of the remedial action. At the time that Interim Ground Water Cleanup Levels identified in the ROD and newly promulgated ARARs and modified ARARs which call into question the protectiveness of the remedy have been achieved and have not been exceeded for a period of three consecutive years, a risk assessment shall be performed on the residual ground water contamination to determine whether the remedial action is protective. This risk assessment of the residual ground water contamination shall follow EPA procedures and will assess the cumulative carcinogenic and non-carcinogenic risks posed by ingestion of the groundwater. If, after review of the risk assessment, the remedial action is not determined to be protective by EPA, the remedial action shall continue until either protective levels are achieved, and are not exceeded for a period of three consecutive years, or until the remedy is otherwise deemed protective or is modified. These protective residual levels shall constitute the final cleanup levels for this ROD and shall be considered performance standards for this remedial action.

Because the aquifer under the Site is a Class IIB aquifer, which is a potential source of drinking water, MCLs established under the Safe Drinking Water Act and the NH Ambient Groundwater Quality Standards (AGQS) are ARARs. The New Hampshire Department of Environmental Services completed a Beneficial Use and Value Determination on the Milford-Souhegan Aquifer in which the Fletcher's Paint Site is located. This determination is attached as Appendix D. NHDES determined that the groundwater beneath the Site was of medium use and value to the community and the State of New Hampshire. This finding indicates that the groundwater beneath the Site has "medium" value as a future drinking water supply, having been a drinking water supply in the past, and therefore drinking water standards, consistent with the use and value determination, shall be attained in the groundwater at the Site.

Interim Cleanup Levels for known, probable, and possible carcinogenic compounds (Classes A, B, and C) have been established to protect against potential carcinogenic effects and to conform with ARARs. Because the MCLGs for Class A & B compounds are set at zero and are thus not suitable for use as interim cleanup levels, MCLs have been selected as the interim cleanup levels for these Classes of compounds.

Interim cleanup levels for Class D and E compounds (not classified, and no evidence of carcinogenicity) have been established to protect against potential non-carcinogenic effects and to conform with ARARs. MCLs have been selected as the interim cleanup levels for these Classes of compounds.

In the absence of a non-zero MCLG, an MCL, a proposed non-zero MCLG, proposed MCL, State standard, or other suitable criteria to be considered (i.e., health advisory, state guideline) an interim cleanup level was derived for each compound having carcinogenic potential (Classes A, B, and C compounds) based on a 10 -6 excess cancer risk level per compound considering the future ingestion of the groundwater. In the absence of the above standards and criteria, interim cleanup levels for all other compounds (Classes D and E) were established based on a level that represent an acceptable exposure level to which the human population including sensitive subgroups may be exposed without adverse affect during a lifetime or part of a lifetime, incorporating an adequate margin of safety (hazard quotient = 1) considering the future ingestion of the groundwater.

The table below summarizes the Interim Cleanup Levels for carcinogenic and non-carcinogenic contaminants of concern identified in ground water.

Interim Ground Water Cleanup Levels

| Carcinogenic Contaminant of Concern (Class) | Interim Cleanup Levels (Ig/L) | Basis | Level of Risk |
|---|---|---|---|
| Volatiles: | | | |
| Benzene (A) | 5.0 | MCL | 1.7 x 10 -6 |
| 1,2-Dichloroethane (B) | 5.0 | MCL | 5.3 x 10 -6 |
| Trichloroethylene (B) | 5.0 | MCL | 6.5 x 10 -7 |
| Pesticides/PCBs: | | | |
| PCB (B) | 0.5 | MCL | 1.2 x 10 -5 |
| | Total Carcinogenic Risk | | 2 x 10 -5 |

| Non-Carcinogenic Contaminant of Concern (Class) | Interim Cleanup Levels (Ig/L) | Basis | Target Endpoint of Toxicity | Hazard Quotient |
|---|---|---|---|---|
| Volatiles: | | | | |
| Ethylbenzene(D) | 700 | MCL | liver and kidney toxicity | 0.2 |
| Toluene (D) | 1,000 | MCL | liver and kidney weight changes | 0.1 |
| | | | Total HI for liver and kidney | 0.3 |
| Semivolatiles: | | | | |
| 1,2,4-Trichlorobenzene (D) | 70 | MCL | reduced body weight gain | 0.2 |
| | | | Total HI Body weight loss | 0.2 |
| PCBs | 0.5 | MCL | immune system | 0.7 |
| | | | Total HI Immune System | 0.7 |
| Metals | | | | |
| Manganese | 180 | Risk-Based | central nervous system (CNS) effects | 1 |
| | | | Total HI CNS Effects | 1 |

All Interim Groundwater Cleanup Levels identified in the ROD and newly promulgated ARARs and modified ARARs which call into question the protectiveness of the remedy and protective levels determined as a consequence of the risk assessment of residual contamination, must be met at the completion of the remedial action at the points of compliance. At this Site, the Interim Cleanup Levels must be attained throughout the contaminated groundwater plume, which extends from the Mill Street Site to the Souhegan River. The exact boundary of such contaminated plume will be defined during remedial design by the establishment of the Groundwater Management Zone, consistent with NH's Groundwater Management Policy. EPA has estimated that the Interim Cleanup Levels for the VOC contamination in the overburden will be obtained within 20 to 25 years after completion of an active source control component. It is expected that the PCB contamination would persist for greater than 100 years following an active source control component. The fractured, shallow bedrock zone will require further characterization and monitoring of the migration of the contaminants into and through the bedrock fractures, to determine when or if the Interim Cleanup Levels will be attained within the bedrock within a reasonable time frame. However, based on the current understanding of the groundwater contamination within the bedrock, the restoration time frame is expected to be greater than the 20 to 25 years estimated for the overburden for the VOCs and remain greater than 100 years for the PCB contamination.

**B. Soil Cleanup Levels**

Soil cleanup levels have been established to address two different exposure pathways: 1) dermal contact and incidental ingestion of surface and subsurface soils, and 2) future ingestion of contaminated groundwater.

Soil cleanup levels based on exposures through dermal contact and incidental ingestion of Surface and subsurface soils

Cleanup levels for known and suspect carcinogens (Classes A, B, and C compounds) have been set at a 10 -6 excess cancer risk level based on exposures via dermal contact and incidental ingestion of surface and subsurface soils at the Site. Cleanup levels for PCBs are based on EPA's guidance entitled Guidance Actions for Superfund Sites with PCB Contamination (PCB Guidance, EPA 1990)(TSCA Spill Policy). Cleanup levels for compounds in soils having non-carcinogenic effects (Classes D and E compounds) were derived for the same exposure pathway(s) and correspond to a level that represents an acceptable exposure level to which the human population including sensitive subgroups may be exposed without adverse affect during a lifetime or part of a lifetime, incorporating an adequate margin of safety (hazard quotient = 1).

Cleanup levels, based on dermal contact and incidental ingestion, were developed for two depths of soil: 0 to 1 foot across the Site; and from 1 to 10 feet at the Elm Street Site within a utility corridor(s).

Surface soils 0 to 1 foot. The cleanup level for surface soils at the Elm Street and Mill Street Sites is protective for an adult or child resident trespassing on the property in the future, consistent with the Town of Milford's future use expectations for the Site. The cleanup level for PCBs has been set at 1 mg/kg of PCBs. Based on the expected future uses of the Elm and Mill Street Site, this level corresponds to a 3.0 x 10 -6 excess cancer risk level. For noncarcinogenic risks, the Hazard Quotient for 1 mg/kg PCB is 0.4. (Appendix E contains the calculations for the carcinogenic risk and Hazard Quotient for PCBs). The Hazard Quotient for arsenic at a cleanup level of 0.9 mg/kg is 0.02.

Subsurface soils 1 to 10 feet within the utility corridor(s) at the Elm Street Site Under an unrestricted recreational use of the property, adults and children could receive unacceptable risks from exposure to subsurface soils brought to the surface by future excavations. The Town of Milford has indicated that future excavation of the Elm Street Site would be restricted to defined utility corridor(s). This will prevent exposures to the adult and child recreational user to the undisturbed contaminated subsurface soils. The 10 foot depth corresponds to a depth which is considered accessible in the performance of utility placement and maintenance. The cleanup level for subsurface soil within the utility corridor(s) at the Elm Street Site, is 25 mg/kg PCB. The cancer risk for a utility worker who might be exposed to 25 mg/kg PCB in the utility corridor(s) on an infrequent basis is 4.6 x 10 -7. For non-carcinogenic risks, the Hazard Quotient at 25 mg/kg PCB for the utility worker, is 0.3. (See Appendix E of this ROD for the calculations of the utility worker cancer and Hazard Quotient).

The table below summarizes the cleanup levels for carcinogenic and non-carcinogenic contaminants of concern in soils.

Interim Soil Cleanup Levels For the Protection of Human Health from Dermal Contact and Incidental Ingestion

Surface Soils - 0 to 1 Foot at Elm and Mill Street

| Compound | Interim Cleanup Level (mg/kg) | Basis | Risk at Cleanup Level (1) |
|---|---|---|---|
| Benzo [a] anthracene | 2.1 | Risk-Based (1) | 1.0 x 10 -6 |
| Benzo [a] pyrene | 0.2 | Risk-Based (1) | 1.2 x 10 -6 |
| Benzo [a] fluoranthene | 2.0 | Risk-Based (1) | 1.4 x 10 -6 |
| PCB | 1.0 | PCB Spill Policy (2) | 3.0 x 10 -6 |
| Arsenic | 0.9 | Risk-Based (1) | 1.0 x 10 -6 |
| | | Total Risk | 7.6 x 10 -6 |

Subsurface Soils - 1 to 10 Feet at Elm Street Site Utility Corridor (s)

| Compound | Interim Cleanup Level (mg/kg) | Basis | Risk at Cleanup Level (1) |
|---|---|---|---|
| PCB | 25 | PCB Spill Policy (2) | 4.6 x 10 -7 |
| | | Total Risk | 4.6 x 10 -7 |

(1) Risk based on incidental ingestion and dermal contact with soil. See the 1994 and 1996, amended Human Health Baseline Risk Assessments for exposure parameters and equations.
(2) PCB Spill Policy (40 CFR 761.60(d)) and EPA Guidance on Remedial Actions for Superfund Sites with PCB Contamination (EPA, 1990)

Soil cleanup levels for the protection of groundwater from potential soil leachate

In addition to the cleanup levels established for protection of human health from exposure to the surface and subsurface soils, consistent with the anticipated future uses of the Site, available data also suggest that the contaminated soils are also a source of release of PCBs to the groundwater. This phenomenon may result in an unacceptable risk to those who ingest the contaminated groundwater in the future. Therefore, cleanup levels were also established for Site soils, to protect the aquifer from potential soil leachate. The Guidance for Remedial Actions for Superfund Sites with PCB Contamination (EPA, 1990) was considered in addressing the contaminated soils that may be contained and managed in place over the long term.

Subsurface soils in all areas below 1 foot at the Elm and Mill Street Sites, except for the area to be defined as the utility corridor at the Elm Street Site: Soils below 1 foot at the Elm and Mill Street Sites, with the exception of the area to be designated as the utility corridor at the Elm Street Site, are not expected to pose a threat to human health through direct contact given their depth or location, based on anticipated future uses of the properties. However, contaminants at these depths could leach into the ground water and pose a threat to human health through ingestion of ground water. The remedial action objective for these soils is to prevent the leaching of contaminants from the soil to the ground water that will result in the concentration of PCBs in the ground water in excess of health and risk-based ARARs.

The Elm Street and Mill Street leachate modeling efforts reflect the apparent fate and transport issues affecting each portion of the Site differently. At the Elm Street Site, PCB transport through the subsurface is low, resulting in groundwater contaminant concentrations just above the drinking water standards. At the Mill Street Site, PCB concentrations are very high and exceed what one would expect given the fate and transport mechanisms for PCBs in soils. For soils greater than 1 foot at both the Elm Street and Mill Street Site, PCB migration from the unsaturated soil to the water table was modeled to determine whether current PCB soil concentrations would result in a ground water exceedance of the MCL for PCBs in ground water (0.5 ug/L).

Elm Street

The results of a previous EPA modeling effort (EPA PCB Guidance, 1990) were used to evaluate a PCB concentration that could remain at the Elm Street Site and not impact the groundwater in the future above the Interim Cleanup Level for PCBs. The results of this modeling indicate that a threat to the ground water currently exists from the PCB contamination at the Elm Street Site. The model indicates that the PCBs that are present in the unsaturated soils below 1 foot at the Elm Street Site will migrate to the ground water and result in an exceedance of the MCL for PCBs, set at 0.5 ug/L PCB. If left unaddressed, this process could continue for several hundred years because PCB migration is extremely slow. Therefore a cleanup level of 100 mg/kg PCB which could remain in the soils at the Elm Street Site, with only a soil cover, was set. This concentration will not result in an exceedance of the groundwater MCL for PCBs in the future.

Mill Street

A separate modeling analysis was conducted (located in Appendix E of the FS) for the Mill Street Site due to the high concentrations of PCBs already present in the ground water in this area, and as a result of finding other contaminants present that are known to increase the solubility of the PCBs. This analysis suggested that the PCB migration rate at Mill Street could be higher as a result of interaction between the PCBs and the other contaminants found at the Mill Street Site. The modeling indicated that the PCBs that are currently present in the unsaturated soils below 1 foot at Mill Street will migrate to the ground water and cause an exceedance of the MCL for PCBs in the ground water beneath the Site.

Another factor at the Mill Street Site is the presence of other paint related materials that appear to form a flocculent material (precipitate) within the well screen of monitoring well, MW-07A. The PCB concentration associated with this flocculent material is 1,780 ug/l PCB (Arochlor 1242). No separate phase DNAPL was observed during any purging of the well or sampling of this material. A 46 ug/l PCB concentration found in the top portion of the same groundwater sample may have been influenced by particulates that had not settled out, and therefore may not represent the groundwater conditions around MW-07A.

The SES0IL model for leaching, and the AT123D model for down gradient groundwater concentrations were used to determine a soil concentration that will result in groundwater concentrations at or below the Interim Cleanup Levels. SESOIL is a mathematical model designed for long-term hydrologic, sediment, and pollutant fate simulations. It can describe water transport, sediment transport, pollutant transport and transformation; soil quality; pollutant migration to groundwater; and other processes. Simulations are performed using a specified soil column extending between the ground surface and the lower part of the unsaturated soil zone. These models were used to estimate residual soil levels that are not expected to impair future groundwater quality. The Interim Cleanup Level for PCBs in groundwater was used as input into the leaching model. If the predicted protective soil level was not capable of being detected with good precision and accuracy, then the practical quantification limit was selected as the cleanup level for soils.

Low flow data collected during Phase 1B of the RI indicated that dissolved and mobile PCB contamination was present in the groundwater at both monitoring wells located within the known source area at the Mill Street Site (MW-07A and MW-21C). Sampling conducted by GE in 1995 also confirmed dissolved and mobile PCB contamination within the overburden and bedrock at the Mill Street Site.

Because of the potential for the enhanced solubility and migration of PCBs as a result of other paint related materials found only at the Mill Street Site, EPA used a conservative approach to modeling the concentration of PCBs that can remain in the saturated and unsaturated soils and not result in an exceedance of groundwater Interim Cleanup Levels. The results of the modeling indicated that 1 mg/kg PCB could remain in the soils at the Mill Street Site, with only a soil cover, and not result in an exceedance of the groundwater MCL for PCBs in the future. Recognizing EPA's conservative approach, soil column testing can be conducted during design to determine a site-dependent PCB concentration that could remain in the soils at the Mill Street Site and not result in an exceedance of the groundwater MCL for PCBs in the future. If changes are made to the Mill Street Site subsurface soil concentration in the future, the Draper Energy subsurface soil concentrations, currently set at 1 mg/kg PCB, would also have to be revisited to ensure that subsurface soils at the property would remain protective for future adult and child exposures. The determination of a subsurface soil concentration at the Mill Street Site, as well as any revisited cleanup level at the Draper Energy property, other than the 1 mg/kg PCB set in this ROD, will be in the sole discretion of the EPA.

The long-term management controls, including appropriate engineering and institutional controls, developed for the Elm and Mill Street portion of the Sites are presented in detail in Section 4.0 of the FS, and described in SC-4 under the detailed analysis of the source control alternatives. While all of the long-term management options are considered protective of the groundwater, EPA selected option 3, soil excavation and placement of a soil cover for both the Elm Street and Mill Street Sites.

In summation, the soil cleanup levels for groundwater leaching purposes and long-term management actions for the Elm and Mill Street Sites are summarized as follows:

Elm Street - Excavate all subsurface soils to a concentration of 100 mg/kg PCB or to a concentration at which leaching models and/or column testing show that infiltration through the remaining PCB soil concentrations will not result in future ground water concentrations in excess of the 0.5,Ig/l MCL ground water concentration for PCBs. The determination of a subsurface soil cleanup level other than 100 mg/kg PCB, will be in the sole discretion of the EPA.

Mill Street - Excavate all soils to a concentration of 1 mg/kg PCB or to a concentration at which leaching models and/or column testing show that infiltration through the remaining PCB soil concentrations will not result in future ground water concentrations in excess of the 0.5 Ig/l MCL ground water concentration for PCBs. The determination of a subsurface soil cleanup level other than 1 mg/kg PCB, will be in the sole discretion of the EPA.

The table below summarize the soil cleanup levels required to protect public health and the aquifer from the leaching of contamination into the groundwater and was developed specifically for the groundwater contaminant of concern, PCBs, which was detected above the Interim Cleanup Level for groundwater.

INTERIM SOIL CLEANUP LEVEL FOR THE PREVENTION OF LEACHING TO THE GROUNDWATER FOR THE PROTECTION OF HUMAN HEALTH

| Carcinogenic Contaminant | Basis for Concern | Groundwater Risk | PCB Cleanup Level (mg/kg) |
|---|---|---|---|
| ELM STREET: PCB | Groundwater MCL of 0.5 ug/l | carcinogenic risk: 1.2 X 10 -5<br>Hazard Quotient: 0.7 | 100 |
| MILL STREET: PCB | Groundwater MCL of 0. 5 ug/l | carcinogenic risk: 1.2 X 10 -5<br>Hazard Quotient: 0.7 | 1 |

All of the cleanup levels for soils set forth in this ROD are consistent with ARARs for ground water, attain EPA's risk management goal for remedial actions, and have been determined by EPA to be protective of human health. These soil cleanup levels must be met at the completion of the remedial action at the points of compliance: throughout the Fletcher's Paint Site wherever soil contamination levels exceed the soil cleanup levels set in this ROD.

**C. Description of Remedial Components**

The preferred alternative includes excavation and treatment of the contaminated soils that present the highest risk to public health, excavation and treatment of the remaining contaminated soils to prevent the spread of the contamination into the groundwater, and natural attenuation and long-term monitoring of the contaminated groundwater. The preferred alternative remedial actions would be implemented using a phased approach that provides use of innovative technology, is cost-effective and reduces the potential impacts to the community.

Specifically the preferred alternative includes the following actions:

<u>SOILS</u>

Phase 1 - Mill Street Site Cleanup:

To address the current and future risks associated with dermal contact or ingestion of the contaminated surface and subsurface soils at the Mill Street Site, the activities would include:

- Excavation of approximately 1,500 yd 3 of surface soils (0 to 1 foot) at the Mill Street Site to a depth of 1 foot, wherever PCB concentrations are greater than 1 mg/kg PCB.

To address the future risks associated with ingestion of contaminated groundwater at the Mill Street Site as a result of leaching, the activities would include:

- Excavation of approximately 12,000 yd 3 of subsurface soils at the Mill Street Site (1 to 20 feet (bedrock) below surface), approximately 3,000 yd 3 of which are located below the water table, wherever PCB concentrations remain that exceed 1 mg/kg PCB; or excavation of soils to a PCB concentration at which leaching models and/or soil column testing show that infiltration through the remaining PCB soil concentrations will not result in future groundwater concentrations in excess of the 0.5 Ig/l MCL groundwater concentration for PCBs. The determination of a subsurface soil cleanup level other than 1 mg/kg PCB, will be in the sole discretion of the EPA.

- Water collected from the dewatering of the excavated soils and water collected as a result of lowering of the water table to conduct the excavation, will be either treated on-site in a mobile unit and appropriately discharged to the Souhegan River or sent off-site to a treatment facility.

- Treatment of approximately 13,500 yd 3 of excavated soils by ex-situ thermal desorption. The thermal desorption unit would be located on the Elm Street property. This property is currently secured with a fence. Consideration may be given to the use of the former Fletcher's Paint Works building on the Elm Street Site as storage to stage and screen the contaminated soils prior to treatment. Liquid PCB condensate produced from the thermal desorption process will be disposed of off-site at an appropriate facility.

- Demolition and disposal of the Fletcher's Elm Street building prior to, or following thermal desorption activities. The manufacturing portion of this building was used to store paint pigments and chemicals. While these were removed in the 1993 removal action, gross contamination still exists in this facility and therefore some of the debris will have to be disposed of at an appropriate landfill facility. Consideration may be reviewed for use of these materials as fill material on the Site. Decontamination of building material, if warranted, and off-site disposal will be conducted in accordance with TSCA.

- Off-site disposal of all soil and debris that is either oversized or cannot be treated through the thermal desorption unit. All contaminated soil and debris will be disposed of in accordance with TSCA disposal regulations.

- Backfilling of the treated soils back onto the Mill Street Site and restoration of the property consistent with the anticipated future use of the Site. Specifically, the majority of the Mill Street Site will be paved, physically re-aligning Mill Street. The pavement will reduce infiltration of precipitation, control erosion and promote drainage away from the residential properties.

- Regrading and repair of the storm drainage ditch system, as necessary, to promote surface water flow away from the Site. Erosion control measures shall be incorporated into the final drainage system to prevent erosion or debris from restricting future storm water flow from the Mill Street Site or filling in of the drainage ditch.

Phase 2 - Elm Street Site Cleanup:

To address the current and future risks associated with dermal contact or ingestion of the contaminated surface and subsurface soils on the Elm Street Site, the activities would include:

- Excavation of approximately 2,800 yd 3 of surface soils at the Elm Street Site to a depth of 1 foot, wherever PCB concentrations are greater than 1 mg/kg PCB.

- Excavation of approximately 1,000 yd 3 of subsurface soils, within the utility corridor(s), at the Elm Street Site at depths between 1 and 10 feet, wherever PCB concentrations are greater than 25 mg/kg PCB. Final location of the utility corridor(s) within the Site will be determined during design.

- Excavation of approximately 11,600 yd3 of remaining subsurface sods, with the exception of the "hot spot" materials described below, from 1 foot to the seasonally low water table, wherever PCB concentrations remain that exceed 100 mg/kg; or to a PCB concentration at which leaching models and/or soil column testing show that infiltration through the remaining PCB soil concentrations will not result in future groundwater concentrations in excess of the 0.5 Ig/l MCL groundwater concentration for PCBs. The determination of a subsurface soil cleanup level other than 1 mg/kg PCB, will be in the sole discretion of the EPA.

- Excavation and off-site disposal in an appropriate landfill of the EB-03 "hot spot", a semi-solid stain (polyamide and polyurethane) material. This material is not amenable to the thermal desorption process, as the material is comprised of polyurethane, alkyd resins, etc., which may affect the performance of the thermal desorption unit. (The actual volume of this material is estimated to be 1,000 -2,000 yd3, and is considered part of the subsurface excavation volume describe above.)

- Removal and disposal of the 5 underground storage tanks located on the Fletcher's Elm Street property. (This could take also place during Phase 1, if appropriate)

- Treatment of the approximately 15,400 yd 3 of excavated soils by ex-situ thermal desorption. The thermal desorption unit would be preferably located on the Fletcher's Elm Street property. This may involve the placement of the mobile unit at one or more locations on the property during the excavation and treatment operations. Liquid PCB condensate produced from the thermal desorption process will be disposed of off-site at an appropriate facility.

- Backfilling of the treated soils on-site.

- Final grading of and placement of a 10 inch soil cover over the treated soils, or placement of treated soils within the top foot, which can demonstrate PCB concentrations less than or equal to 1 mg/kg PCB. Asphalt would be placed on areas designated for parking, consistent with the final grading plans and the future anticipated use of the Site. The asphalt covering will promote drainage and further minimize infiltration through the residual contamination at the Site. Restoration and landscaping of the remaining areas, not covered by asphalt. Erosion control measures will be incorporated into the final grading to prevent erosion of the cover materials off-site and into the Souhegan River.

- Institutional controls, in the form of deed restrictions would be implemented to prevent unauthorized access into the subsurface. Deed restrictions would also have to implemented to restrict future use of the Site, or the modification of the cover or surface drainage structures in ways inconsistent with this remedy or the anticipated future use of the Site.

GROUNDWATER

- Establish a Groundwater Management Zone (GMZ) under NH's Comprehensive Groundwater Policy. The GMZ sets plume boundaries within which groundwater will be monitored over time to ensure that the contaminant concentrations are decreasing; to ensure that the remaining contamination has not migrated beyond the established plume boundaries or impacted the Souhegan River; and that the covers are working and remaining effective over time. Institutional controls would have to be implemented to restrict the use of the groundwater within the GMZ while contaminant concentrations are in excess of drinking water standards. Further action may be necessary consistent with the NH Comprehensive Groundwater Policy.

- Interim Groundwater Cleanup Levels must be achieved within the GMZ and maintained for a period of three consecutive years. A risk assessment will be performed on residual groundwater contamination to determine protectiveness of the remedy. If EPA determined the remedy is not protective, the remedial action shall continue until protective levels are achieved and not exceeded for three years or until the remedy is deemed protective or is modified.

General Remedy Description

The selected remedy included thermal desorption for the treatment of the contaminated soils at the Site. Thermal desorption is an innovative technology that uses heat, at relatively low temperatures (600 to 10005F), to vaporize contaminants and consequently, separate those contaminants from the soil. Once vaporized, the contaminants are typically collected through condensation and concentrated condensate is then treated off-site at a TSCA approved incinerator. This alternative significantly reduces the volume of contaminants to be treated or disposed of, and allows the treated soil to be backfilled on to the Site.

Thermal desorption is a different process than incineration. Thermal desorption uses heat to physically separate the contaminants from the soil, which then requires further treatment. Incineration uses heat to actually destroy the contaminants.

Site Preparation. The Site preparation work for has four elements: (1) establishment of Site security, (2) provision for drainage, (3) clearing, and (4) development of a staging area. Depending on the schedule and space requirements needed for the remediation at Elm Street and Mill Street Sites, preparation for both sites may be completed simultaneously or one after the other. The decision would be made during the remedial design.

The chain link fence at Elm Street would be used to secure the processing area. Additional fencing may be required to complete the fence around the perimeter of the Elm Street and Mill Street Sites to restrict public access to the treatment facilities, contaminated soils, and areas of open excavation.

Site preparation work would include provisions for controlling site drainage to ensure proper drainage of storm water away from the Site. Erosion controls would be used to prevent uncontrolled movement of contaminated soils into uncontaminated areas during excavation activities.

Other site preparation activities include clearing and grubbing of trees and shrubs from the Elm Street Site along Keyes Drive and the Souhegan River and along the railroad tracks at the Mill Street Site, as necessary. Precautions would be taken during clearing and grubbing activities to limit exposure of the vegetation to soil contamination.

Three utility poles located on the Mill Street Site may require relocation to allow for soil excavation activities. The final clearing activities would involve the removal of the existing geotextile liners that currently exist at both the Elm and Mill Street Sites.

An area would be located outside of the 100-year floodplain to stage, as necessary, heavy equipment access roads, automobile and truck parking lots, material transfer stations, staging areas, decontamination areas, equipment sheds or trailers, storage tanks, worker sanitary facilities, and treatment systems.

The water collected during staging and dewatering of the soils excavated below the water table at the Mill Street Site would be processed in a water treatment system that would have to be installed to treat this and any other liquid effluent from dewatering operations required during excavation. Appropriate discharge of the treated effluent will be required. If this effluent is treated on-site, discharge could be to the Souhegan River or to an off-site treatment facility.

The Fletcher's Paint building would also be demolished and disposed of as part of the Site preparation, and could take place in either Phase 1 or 2 of the remedial action. In removing the building, care would have to be taken not to disturb the cemetery that is located on the east side of the building; coordination with appropriate officials will b e required to accommodate any concerns about Site work activities occurring in the buffer zone of the cemetery. The structure of the building is likely to have limited contamination and will be disposed of or decontaminated in accordance with TSCA. If any hazardous waste or asbestos is found, it will be disposed of appropriately. The foundation is expected to be contaminated, especially near the back (northern) area used for paint manufacturing, and may require off-site disposal in a TSCA chemical waste landfill, or RCRA Subtitle D landfill depending on the level of PCB contamination found, or the ability to decontaminate the materials on-site, consistent with TSCA. Consideration may be given to the use of the decontaminated demolition debris as backfill, in accordance with TSCA and all State and local regulations.

Excavation. The soils would be excavated in accordance with depth and cleanup levels set forth in the ROD. Shoring may be required along the excavation at Elm Street Site to allow continued use of Elm Street during Site operations. If necessary, traffic may have to be temporarily directed along one lane of Elm Street if shoring is not sufficient to ensure safe driving conditions until the excavation area adjacent to Elm Street could be backfilled. All efforts would be undertaken to limit any impact to the flow of the Elm Street traffic.

Excavation at the Mill Street Site would also require the cooperation of the railroad to ensure that excavation activities can be conducted while allowing continued operation of at least one railroad spur. Some of the highest levels of contamination at the Mill Street Site are present near and potentially under the railroad bed. Any excavation conducted will be managed to ensure that the structural integrity and safety of the railroad bed is not compromised.

Assuming an excavation rate of approximately 20 cubic yards of soil per hour, for 8 hour days, it would be expected to take approximately 20 weeks (770 hours) to excavate the 15,400 yd 3 of soil at Elm Street Site and approximately 17 weeks (675 hours) to excavate the 13,500 yd 3 of soil at the Mill Street Site. Wetting agents and engineered operating procedures will be used during excavation to minimize the generation of particulate emissions.

Excavation of the soil at a depth greater than 10 feet at the Elm Street Site may require the installation of vertical sheet pilings along the edge of the Souhegan River to act as a retaining wall. As the depth of excavation drops below the elevation of the river the sheet pilings would stabilize the river bank and reduce the infiltration of water from the river into the deep excavated areas. Installation of vertical sheet pilings at the Elm Street Site may be difficult due to the presence of debris-laden fill material, which was dumped along the river bank during the operation of the former burning dump as well as during development and construction of the Fletcher's facility.

At the Mill Street Site, the flow of groundwater will be minimized during excavation below the water table, through lowering the water table using de-watering well(s), or trenches, which would be designed and located during the remedial design. The extracted ground water would be treated separately or combined with the liquid effluent from the dewatered soils and processed through an on-site or off-site treatment system.

One concern regarding excavation at any depth is the volume of debris that was dumped at the Elm Street Site as backfill material over what was the old Town of Milford burning dump. Discussions with the Department of Public Works Superintendent for the Town of Milford indicated that fill material containing tree stumps, concrete blocks, large chunks of asphalt, and old tires was commonly mixed with fill material at the Elm Street Site. Drilling operations conducted on Site during the sampling phase reported the existence of tree stumps, concrete material, and thick rubber debris. Estimates of the debris volume of the soil requiring excavation range from 10 to 30 percent.

Soil, debris and liquids with PCB concentrations greater than 50 mg/kg, and which cannot be treated in the ex-situ thermal desorption or decontaminated on-site, would be transported to a TSCA-approved landfill. TSCA approved landfills that could potentially accept the soils in bulk form include, but are not limited to, the following:

- USPCI, Grassy Mountain, Tooele County, Utah
- Chemical Waste Management, Emelle, Alabama
- Chemical Waste Management, Model City, New York
- Envirosafe, Grand View, Idaho

Soil and debris with PCB concentrations less than 50 mg/kg, and which cannot be treated with ex-situ thermal desorption, would be transported over the highway to one of the RCRA Subtitle D landfills in the area. RCRA Subtitle D landfills in the region near the Fletcher's Paint Site that could potentially accept the soils include, but are not limited to, the following:

- Waste Management, Rochester, New Hampshire
- Laidlaw, Plainsville, Massachusetts
- BFI, East Bridgewater, Massachusetts

Thermal Desorption of Contaminated Soils. Thermal desorption is a process designed to remove organic compounds, including PCBs, from soils, sludges, and other media by vaporizing the contaminants from the soil into the carrier gas. The contaminants in the gas are then cooled through the use of condensers into a liquid form and then treated. The principal residuals from thermal desorption include the remediated soil, captured particulate, condensed liquid contaminants, and exhaust from propane heaters if used as the primary heating source. The remedy requires the off-site disposal of the liquid condensate in accordance with TSCA.

Pretreatment of the soil will be necessary before processing. After the excavation (or simultaneously along with excavation), the contaminated soil would be staged and dewatered, if necessary. The contaminated soils would be screened before desorption to enhance the efficiency of the desorber and protect the integrity of the desorber. After screening, the soil is conveyed into the thermal desorber for treatment. Oversized debris from the screening process will be disposed of in accordance with TSCA.

The treated soil would be discharged from the desorber, and quenched with water to cool the material and suppress fugitive dust emissions. Typical soil discharge temperatures are between 4005F and 5005F. Treated soils would be stockpiled until soil sampling ensured that soil cleanup levels were met.

After leaving the desorber, the carrier gas is passed through a cyclone separator where entrained particles are removed with a minimal drop in the off-gas temperature. The dry cyclone is followed by a wet scrubber, where the gas stream cooled to its saturation temperature. The scrubber removes a portion of the volatilized organics as the off-gas is cooled. Recirculated scrubber water continuously passes through a phase separator that collects any condensed light organics from the liquid surface and discharges a bottom sludge containing solids, water and organics. The scrubber sludge is sent to a filter press, the floating organics are drummed and sent off-site to a TSCA approved incinerator and the dewatered solids are reintroduced in to the thermal desorber feed stream. The aqueous phase from the filter press is also recirculated back to the phase separator.

The scrubbed gas passes to the first heat exchanger (condensor) where it is cooled to just above ambient temperatures. This heat exchanger would produce the bulk of the liquid condensate. The carrier gas proceeds through a second heat exchanger for further cooling. Liquid condensates from both heat exchangers are used as make up to the phase separator. The organic phase from the condensates are then separated from the water. The PCB contaminated condensor distillate is drummed and sent to an off-site TSCA incinerator.

The carrier gas would contain residual moisture and organics which were present in the feed. A mist eliminator traps any residual droplets entrained in the stream and the liquid is transferred to the condensate storage tank. The gas is heated to prevent condensate, and passed through a recirculation blower. After the blower, a small percentage of the carrier gas is vented and the remainder is heated before returning to the desorber. The process vent gas stream passes through a particulate filter and carbon adsorber before being released to the atmosphere. The spent carbon would be disposed of at an appropriate facility or regenerated. Propane fuel exhaust from the desorber burners can be vented directly to the atmosphere without treatment.

Site Restoration. Restoration activities will include backfilling the excavated pits with the treated soils, replacing, demolishing/disposing of any staging areas, compacting and grading the Site, reconstructing any existing roads, adding top soil, asphalt and hydro-seeding, as applicable. The final surface covering and grading of the Elm Street and Mill Street properties is flexible and can be altered in any way, consistent with the future anticipated uses of the Site.

The portion of the storm drainage line near the Mill Street Pond, which is aboveground will be repaired during Site restoration. Specifically, drainage controls will be installed to limit soil erosion along the ditch, while promoting drainage away from the Mill Street Site and the residential properties.

At Elm Street, the storm drainage system currently under the Fletcher's Paint Works building is not accessible by town personnel since the system lies, in some places, 17 feet below the surface. Since contaminated groundwater discharges through the drainage culvert during the seasonally high groundwater table, re-routing and actual placement of the new drainage system within a utility corridor will be necessary and actual location of the drainage system will have to be part of the remedial design. The original drain will be filled to prevent further flow through it, and into the Souhegan River.

Air Monitoring. During the excavation and treatment operations, air monitoring would be performed to ensure that nearby residents and on-site workers are protected. Air sampling stations would be located at representative points throughout the Site, along the perimeter of the Site, and at sensitive receptors outside of perimeter of the Site. Samples would be analyzed at a minimum for VOCs and PCB-contaminated particulate.

Long-Term Monitoring Plan. The long-term monitoring plan would be designed to (1) monitor any changes in surface soil, sediment, ground water and surface water PCB concentrations; and (2) to ensure that the remedy remains protective of human health and the environment.

Sampling would be conducted during the remedial action until the Site soils have achieved the PCB cleanup levels. The soil cleanup levels are expected to be attained within 5 years after the start of the remedial action, therefore the monitoring would not be a long-term program. It would continue for approximately 10 years which should provide sufficient data to demonstrate the removal of all contamination, and sufficient to monitor the long-term protectiveness and permanence of the remedy. Because of the close proximity to the Souhegan River, surface water and sediment would be included in the long-term monitoring plan to evaluate the effectiveness of the cover to confirm that contaminants are not migrating into these media. EPA does not anticipate that any residual hazardous substance remaining in the soils at both Elm Street or Mill Street after the excavation, treatment, and capping will result in a future exceedance above Interim Cleanup Levels in the groundwater. This will be confirmed during the implementation of the long-term monitoring program.

Ground water monitoring would also be included in the long-term monitoring program to monitor the contaminant concentrations within the Groundwater Management Zone to ensure that the contaminant concentrations are decreasing, are not migrating beyond the boundary of the GMZ, and are not causing exceedances in the surface water. Groundwater monitoring will continue until Interim Cleanup Levels have been met and maintained throughout the GMZ for a period of 3 years.

Five-Year Reviews. Five-year reviews would be performed to evaluate whether the selected remedy remains protective of public health and the environment over time. Five year reviews are required whenever contamination is left in place at the Site at the completion of the remedial action. In this cleanup plan, contaminated soils with concentrations of 100 mg/kg PCB or less will be left in place at depths greater than 1 foot at the Elm Street Site, with the exception of the utility corridor. The five-year reviews would be initiated five years after the start of the remedial action and continue until contaminants no longer remain at the Site above levels that allow for unrestricted use and unlimited exposure. A review would also be conducted prior to remedial action completion and Site delisting.

Time to Complete Remedial Action.

Soils
The time required to complete the remedial action using excavation and thermal desorption would be approximately 2 years and 6 months if the operations were sequenced with phase 1 followed immediately by phase 2. The time required for each component of the remedial action is estimated as:

Site Preparation - 6 months
Construction/Startup - 3 months
Operation (Phase 1) - 8 months
Operation (Phase 2) - 10 months
Site Restoration - 3 months

Groundwater

Groundwater modeling predicted that with the source of the groundwater contamination addressed, would take approximately 25 years for the VOCs within the overburden to reach the Interim Cleanup Levels and approximately 100 years for the PCBs to reach the PCB Interim Cleanup Level in the overburden. While the full extent of contamination is unknown, it is expected that the bedrock contamination will take longer than the overburden to reach Interim Cleanup Levels. As part of the monitored natural attenuation of the groundwater, additional bedrock wells will be installed, and the extent of bedrock contamination will be evaluated to determine when and if the Interim Cleanup Levels will be attained.

Town Issues. The selected remedy requires that the contaminated surface and subsurface soils that present a risk to human health are excavated, and treated to levels that are permanently protective of the human health.

The phasing of the cleanup allows for a more efficient use of the Site properties, thereby reducing any potential use impact on the Keyes Field . While both portions of the Site are small in size, a thermal desorption unit can be placed on the Elm Street property during the cleanup of the Mill Street Site. If it becomes difficult to provide adequate space at the Site for remedial equipment, staging areas of clean fill, and other remedial activities, consideration will be give to the use of the Keyes Field with the Town's permission. The ability of the cleanup to be conducted, in preference, entirely on the Elm Street Site, will be thoroughly examined and detailed during the design.

Traffic on Mill Street may have to be temporarily rerouted during certain activities because of the small size of the Mill Street Site and the activities involved. However, previous removal efforts were undertaken with the closure of only one lane of the two lane road. Future utilities and replacement of the storm drainage system would be performed during backfill operations. Access to these utilities would be accomplished through manholes, etc. which will be designed into the cover system. Deed restrictions would be implemented regarding access and use restrictions to the subsurface at the Elm Street Site.

## XI. STATUTORY DETERMINATIONS

The remedial action selected for implementation at the Fletcher's Paint Works and Storage Facility Superfund Site is consistent with CERCLA and, to the extent practicable, the NCP. The selected remedy is protective of human health and the environment, attains ARARs, or invokes an appropriate waiver, and is cost effective. The selected remedy also satisfies the statutory preference for treatment which permanently and significantly reduces the mobility, toxicity or volume of hazardous substances as a principal element. Additionally, the selected remedy utilizes alternate treatment technologies or resource recovery technologies to the maximum extent practicable.

### A. The Selected Remedy is Protective of Human Health and the Environment

The remedy at this Site will permanently reduce the risks posed to human health and the environment by eliminating, reducing or controlling exposures to human and environmental receptors through treatment, engineering controls, and institutional controls; more specifically this remedy will permanently reduce the risks presently posed by human health and the environment through:

- Excavation of soils to a depth of one foot at both the Elm and Mill Street Sites, and to a depth of 10 feet within the utility corridor at the Elm Street Site wherever contamination exceeds the soil cleanup, levels set in this ROD.

- On-site treatment of these excavated soils by ex-situ thermal desorption.

- Off-site disposal of any soil, debris or liquid contaminated with PCBs above cleanup levels or is too large to be effectively treated by the thermal desorption system.

- Appropriate off-site disposal of the PCB-contaminated oil condensate.

- Long-term containment of the remaining contaminated soils present at depths greater than 1 foot and outside of the designated utility corridor (s) as follows:

  - excavation and treatment on-site in the thermal desorption system of the remaining soils exhibiting concentrations of PCBs greater than 100 mg/kg PCB at the Elm Street Site, and 1 mg/kg PCB at the Mill Street Site; or to a PCB concentration at which leaching models and/or soil column testing show that infiltration through the remaining PCB soil concentrations will not result in future groundwater concentrations in excess of the 0.5 ug/l MCL groundwater concentration for PCBs. The determination of a subsurface soil cleanup level other those set above for PCBs, will be in the sole discretion of the EPA.

- Backfilling of the treated soils on the Site, and restoration of the Site, including placement of soil and asphalt covers, consistent with the future uses of the Site.

- Natural attenuation and the long term monitoring of the contaminant concentrations in the groundwater to ensure that the Interim Cleanup Levels are met within the GMZ and that contamination is not migrating beyond the boundaries of the GMZ, or impacting the Souhegan River

- Institutional Controls to restrict the future uses of the properties, to prevent damage to the covers and access to the remaining contaminated soils, and restrictions on the use of the contaminated groundwater until the Interim Cleanup Levels are met and maintained.

The remedial actions, as proposed, will be protective of human health and the environment. Treatment of the soil contaminated to a depth of one foot at both the Elm and Mill Street Sites and to a depth of 10 feet within the utility corridor at the Elm Street Site, wherever contamination exceeds the soil cleanup levels set in this ROD, will eliminate current and future exposure risks from direct contact and incidental ingestion.

The selection of the long-term containment option of reducing all remaining PCB contamination at the Elm Street Site to 100 mg/kg PCB, and all remaining PCB contamination at the Mill Street Site to 1 mg/kg PCB - or to levels which would not cause an exceedance of the PCB MCL in groundwater in the future - provides the greatest protection of human health and the environment because it treats all the PCB contaminated soil that could potentially impact the groundwater under the Site in the future. The determination of a subsurface soil cleanup level other those set above for PCBs, will be in the sole discretion of the EPA. Institutional controls will be exercised, restricting the use of the groundwater, thereby eliminating the future ingestion exposure until natural attenuation processes can reduce the contaminant concentrations in the groundwater to safe levels. A long-term monitoring program will ensure the remedy remains protective of human health and the environment.

Implementation of the selected remedy will not pose unacceptable short-term risks or cross media impacts since the technology, while still innovative, has been successfully demonstrated at many Superfund Sites with PCB contamination, and pilot studies may be conducted at the Site before full scale operations begin. Phasing of the remedy allows the most use of the Site itself, thereby reducing public inconvenience. Finally, engineering controls and air monitoring will be employed and precautions taken to minimize potential air emissions at the Site during excavation activities.

Moreover, the selected remedy will achieve potential human health risk levels that attain the 10 -4 to 10 -6 incremental cancer risk range and a level protective of noncarcinogenic endpoints, and will comply with ARARs and To Be Considered criteria. At the time that the Interim Ground Water Cleanup Levels identified in the ROD and newly promulgated ARARs and modified ARARs which call into question the protectiveness of the remedy have been achieved and have not been exceeded for a period of three consecutive years, a risk assessment shall be performed on the residual ground water contamination to determine whether the remedial action is protective. This risk assessment of the residual ground water contamination shall follow EPA procedures and will assess the cumulative carcinogenic and non-carcinogenic risks posed by ingestion of ground water. If, after review of the risk assessment, the remedial action is not determined to be protective by EPA, the remedial action shall continue until protective levels are achieved and have not been exceeded for a period of three consecutive years, or until the remedy is otherwise deemed protective or is modified. These protective residual levels shall constitute the final cleanup levels for this ROD and shall be considered performance standards for this remedial action.

**B. The Selected Remedy Attains ARARs**

This remedy (modified versions of SC-6 and MOM-2) will attain or waive all applicable or relevant and appropriate federal and state requirements that apply to the Site. A discussion of which requirements are applicable or relevant and appropriate may be found in the FS report for the source control and management of migration alternatives. A brief narrative summary of the ARARs follows. Refer to Tables 27 through 32 of this ROD for a comprehensive presentation of the ARARs and other policies, criteria and guidances to be considered (TBCs) that pertain to the selected remedy.

<u>Chemical Specific ARARs</u>

The Safe Drinking Water Act (SDWA) Maximum Contaminant levels (MCLs) and the State Ambient Groundwater Quality Standards (AGQSs), were used to determine appropriate Interim Cleanup levels for the groundwater and for the soils. The more stringent of these standards were used to establish groundwater and soil cleanup levels for the Site.

Location Specific ARARs

Excavations at the Site will not discharge excavated or fill materials into the Souhegan River or Mill Street Pond in accordance with the Clean Water Act, the NH Wetlands Act and the NH Dredging Rules. The remedy is the best practical alternative and all excavation will be undertaken with control of wetland excavation and with minimal impacts to the risk of flood loss in the floodplains, to the greatest extent possible. Restoration will be performed following any such excavation according to the Protection of Wetlands Executive Order No. 11990, the Protection of Floodplains Executive Order No. 11988 and the NH Wetlands Act.

Action Specific ARARs

Toxic Substances Control Act. Toxic Substances Control Act. The Toxic Substances Control Act (TSCA) 40 CFR Part 761, as amended, addresses the cleanup, storage and disposal of PCBs. The requirements of TSCA's Subpart D- Storage and Disposal Sections 761.60, 761.61, and 761.65, as amended, are applicable because the selected remedy involves the storage and disposal of soils and liquids contaminated with PCBs.

At both the Elm and Mill Street site, PCB-contaminated surface soils to a depth of 1 foot, will be treated on-site to a residual PCB concentration of less than or equal to 1 mg/kg and placed back in the excavated area. At the Mill Street site PCB-contaminated subsurface soils will remain on-site at a concentration of less than or equal to 1 mg/kg and at Elm Street, PCB subsurface soils will remain on-site at concentrations of less than or equal to 100 mg/kg, except within the utility corridor where the PCB concentration will be less than or equal to 25 mg/kg. The placement of soils with PCB concentrations of less than or equal to 1 mg/kg and less than or equal to 100 mg/kg under an asphalt and 10-inch soil cover, at Elm Street and Mill Street respectively, would provide a permanent and protective remedy that satisfies the requirements of the º761.61(c).

Storage

While waiting to be treated, PCB remediation waste may be stored in accordance with º761.65. º761.65(c)(9) permits bulk PCB remediation waste to be stored at the cleanup site for 180 days, subject to the following conditions:

- The waste is placed in a pile designed and operated to control dispersal of the waste by wind, or where necessary, by means other than wetting.
- The waste must not generate leachate through decomposition or other reactions;
- The storage site must have a liner designed to comply with the requirements of Section 761.65(c)(9)(iii).

Liquid PCBs produced from the thermal desorption treatment, in accordance with º761.65(c)(1), are required to be stored for no more than 30 days. Pursuant to º761.61(c), however, the Regional Administrator has determined that liquid PCB remediation waste may be stored for a longer period of time than prescribed in º761.65(c)(1). This determination was based on technical, environmental, and/or waste specific characteristics or considerations, that the proposed storage methods will not pose an unreasonable risk of injury to health or the environment.

Disposal

Section 761.61 (a)(5)(i)(B)(2)(ii) provides that soil or debris contaminated with PCBs at concentrations of less than 50 mg/kg shall be disposed of in accordance with º761.61 (a)(5)(v)(A), which provides the following disposal options:

- a municipal solid waste landfill permitted under Part 258;
- a non-municipal, non-hazardous landfill permitted under ºº257.5 through 257.30;
- RCRA Subtitle C landfill permitted to accept PCB waste; or
- a TSCA approved PCB disposal facility.

Soils or debris contaminated with PCBs at concentrations of greater than or equal to 50 mg/kg will be disposed of:

- in a hazardous waste landfill approved under º3004 of RCRA;
- in an incinerator approved under º761.70;
- by an alternative disposal method approved under º761.60(e); or
- in a chemical waste landfill approved under º761.75

Liquid PCB remediation waste will either be decontaminated to the levels specified in °761.79(b)(1) or (b)(2) or be disposed of in accordance with °761.60(a), °761.60(e), or °761.61(c).

Resource Conservation and Recovery Act (RCRA) and the NH Hazardous Waste Management Act and Hazardous Waste Rules. State (and federal as incorporated by the state) hazardous waste regulation are applicable to actions occurring on-site which generate hazardous waste. Undisturbed waste left in place, although not characterized, is determined to be similar to RCRA waste; therefore certain state and federal hazardous waste regulations are relevant and appropriate for actions taken on-site to address these wastes. RCRA Land Disposal Regulations are neither applicable nor relevant and appropriate since all movement of contaminated soils occur on-site within an area of contamination, and placement does not occur.

Hazardous waste generated and stockpiled onsite for longer than 90 days through excavation, demolition or treatment will be stored in waste piles or in tanks in accordance with 40 CFR 262.34 and 40 CFR 264 Subparts J and L before final disposal. Certain closure requirements are relevant and appropriate for the Site such as groundwater monitoring and long-term monitoring and maintenance plans. Cover requirements are also relevant and appropriate; however as explained below, EPA is invoking the equivalency waiver for cover requirements under CERCLA 121(d)(40(D). In addition, certain portions of the State hazardous waste facility siting requirements are waived pursuant to Env-Ws 353.10 as explained below.

Air Regulations. The design and operation of the thermal desorption treatment system will meet the air pollutant emission standards and monitoring requirements under the respective Subparts P, AA, and CC of RCRA, and the NH Administrative Code, Air Chapter 100, Parts 604-606, Env-Wm 702.11 and 702.12 as well as the NH Env-A 1002 and 1305.

Dust and asbestos m the Site during demolition and excavation would need to comply with the Clean Air Act and the State of New Hampshire Air Regulations for emissions during demolition, excavation and transportation of the contaminated soils. Engineering controls would be used to minimize the fugitive dust emissions, including wetting the soils and using foams, as necessary.

While each thermal treatment unit varies, contaminants present in the carrier gas is assumed to be negligible due to the pollution control devises on the unit such as condensers, filters and the use of activated carbon. Propane fuel, if used, should bum cleanly in the desorber and the exhaust could be vented directly to the atmosphere. Air monitoring of the thermal treatment unit would be performed to ensure compliance with the NH Air Regulations.

Water Regulations. The monitored natural attenuation of the groundwater will comply with the Clean Water Act and the Safe Drinking Water Act which establish Ambient Water Quality Criteria (AWQCs)for surface waters and MCLs for drinking waters. The groundwater at the Site will be monitored to ensure that the MCLs, which are relevant and appropriate for groundwater, are attained in the future and that the Souhegan River Surface waters are not impacted by the contaminated groundwater and comply with the AWQCs.

<u>Waivers</u>

Storage Requirements

Any hazardous waste and PCB contaminated materials generated during the RI/FS has required storage and may continue to require storage until the start of the remedial action, exceeding regulatory storage limitations under TSCA and the State Hazardous Waste Regulations. The final disposition of these wastes comply with ARARs, as the investigative derived wastes currently stored on the Site will be treated via thermal desorption, consistent with the selected remedy. An interim remedy waiver pursuant to CERCLA ° 121 (d)(4)(A) is being invoked for the RCRA and TSCA Storage limitations for RI/FS generated wastes since the wastes currently stored on the Site is interim in nature and the final remedy will comply with all ARARs for final disposition of the waste.

NH Hazardous Waste Treatment Facility Siting Requirements

The siting requirements for new facilities for hazardous waste treatment under the New Hampshire Hazardous Waste Regulations are applicable for the selected remedy, which includes the on-site treatment of contaminated soil and groundwater (from the de-watering operation). The Env-Wm 353.09 siting regulations specify various siting requirements that must be complied with or waived under Env-Ws 353.10.

During implementation of the remedy, the siting of the thermal desorption system would likely be on the Elm Street Site and the de-watering groundwater treatment system would likely be on the Mill Street property.

A waiver is invoked for certain portions of the siting requirements for new facilities due to the on-site treatment required as part of the selected remedy. Under the provisions of Env-Ws 353.10, these requirements can be waived if it can be demonstrated clearly and convincingly that the facility will not pose an unreasonable risk to public health or the environment. The Administrative Record for this Site demonstrate that the engineering safeguards of the facility will be designed to ensure normal operation, prevent public health threatening accidents, and mitigate hazardous waste discharges to the environment. Specifically waivers are being invoked for the siting requirements 353.09 (b) (2) location within a 100-year flood plain and 353.09(d) , location within the specified distance to a residence, school, home for the elderly, adjacent property line, surface water public intake system, edge of river, within a non-bedrock aquifer with greater than 200,000 g.p.d yield and within a class A rivershed. (See Figure 16 for Floodplain boundaries).

A waiver of the closure requirements of Env-Wm708.02 is invoked pursuant to CERCLA º 121 (d)(4)(D) on the grounds that the cover systems of the selected remedy attain an equivalent performance standard as required by State regulations. At Mill Street, soil will be cleaned up to 1 mg/kg PCB and an asphalt cover applied over the backfilled, treated soil. At the Elm Street Site soil will be cleaned up to 100 mg/kg PCB and the cover material is a combination of soil and asphalt, thus eliminating risks from exposure to the subsurface soils from dermal contact and incidental ingestion. The soil and asphalt cover meet the performance requirements of the NH Closure regulations. Specifically, the soil and asphalt cover will be designed to promote drainage, thus minimizing the infiltration of the precipitation and the generation of leachate. The placement of the asphalt over the majority of the Elm and Mill Street Site meets the requirement that the cover material be less permeable than the bottom material, which for this Site is natural soil materials with very high permeabilities. The asphalt cover will also be designed to control and direct run-off from the Site as well as prevent erosion of the cover materials off of the Site and into the surrounding properties or into the Souhegan River. The cover materials will be maintained in such a way as to ensure that these performance standards will be met at the Site.

To be Considered

The following policies, criteria, and guidances will also be considered (TBCs) during the implementation of the source control and management of migration remedial actions:

- Toxic Substance Control Act (TSCA), PCB Spill Cleanup Policy;
- EPA Guidance on Remedial Actions for Superfund Sites with PCB Contamination;
- EPA Groundwater Protection Strategy
- EPA Guidance on Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Groundwater at CERCLA Sites;
- EPA Policy Directive for the Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites;

**C. The Selected Remedial Action is Cost-Effective**

In the Agency's judgment, the selected remedy is cost effective, i.e., the remedy affords overall effectiveness proportional to its costs. In selecting this remedy, once EPA identified alternatives that are protective of human health and the environment and that attain, or, as appropriate, waive ARARs, EPA evaluated the overall effectiveness of each alternative by assessing the relevant three criteria--long term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short term effectiveness, in combination. The relationship of the overall effectiveness of this remedial alternative was determined to be proportional to its costs.

The costs of this remedial alternative are:

| | Source Control SC-6: Thermal Desorption | Management of Migration MOM-2: Monitored Natural Attenuation/Institutional Controls | Total Costs |
|---|---|---|---|
| Capital Cost | $11,791,615 | $0 | $11,791,615 |
| O&M Cost | $39,000 | $198,380 | $237,380 |
| Present Worth Cost | $12,292,375 | $2,439,600 | $14,731,975 |

The costs of this remedial alternative are presented in Appendix F. A comparison of costs associated with the FS alternatives were presented in this ROD in Tables 25 and 26.

With the exception of the no action and limited action alternatives, all of the source control alternatives, SC-4 through SC-8, are protective of human health and the environment and attain ARARs. Comparing these alternatives, EPA's selected remedy combines the most cost effective remedial components evaluated, and makes changes to reflect the anticipated future uses of the Site and public comment. Specifically, the selected remedy is less expensive than the treatment alternatives presented in the FS as a result of changes in the subsurface soil cleanup levels, and long-term management actions. The selected remedy is cost effective in that these changes actually make the Site more protective for less costs. In addition, a smaller volume of soil would also be excavated, while providing a higher level of long-term permanence and protection at the Site since the concentrations of the soils remaining at the Site are protective of groundwater from leaching with only a soil cover. While the selected remedy would cost approximately $3 to 4 million more than a full containment remedy (SC-3), a full containment was not supported by the public, the Town or the State. The selected remedy, while more costly, provides for the complete removal of soil contamination for the protection of both human health from direct contact, incidental ingestion and leaching of the soils into the groundwater in excess of the PCB MCL for groundwater, requiring only future long-term monitoring of the contaminated groundwater and institutional controls on the future use and access to the Site and use of the groundwater as a drinking water supply. A full containment remedy would require the installation and operation of a pump and treat hydraulic control system at the Mill Street Site which would be anticipated to be operated for over 100 years, due to the high levels of contamination at the Site, and the slow transport of that migration over time into the groundwater.

Because the source control action requires that all soils are to be cleaned up such that they are protective of the groundwater in the future with only a soil cover, the limited action alternative, MOM-2 becomes the most cost-effective management of migration alternative. Active management of migration through pump and treat (MOM-3,4,5 and 6) would not offer significant savings on the time required to meet the cleanup levels since the effectiveness of groundwater extraction for TCB and PCBs is limited. The majority of the pump and treat alternatives cost up to $1.5 million more than monitored natural attenuation, while offering no increase to the level of protectiveness.

**D. The Selected Remedy Utilizes Permanent Solutions and Alternative Treatment or Resource Recovery Technologies to the Maximum Extent Practicable**

Once the Agency identified those alternatives that attain or, as appropriate, waive ARARs and that are protective of human health and the environment, EPA identified which alternative utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. This determination was made by deciding which one of the identified alternatives provides the best balance of trade-offs among alternatives in terms of 1) long-term effectiveness and permanence; 2) reduction of toxicity, mobility or volume through treatment; 3) short-term effectiveness; 4) implementability; and 5) cost. The balancing test emphasized long-term effectiveness and permanence and the reduction of toxicity, mobility and volume through treatment; and considered the preference for treatment as a principal element, the bias against off-site land disposal of untreated waste, and community and state acceptance. The selected remedy provides the best balance of trade-offs among the alternatives.

With the exception of alterative SC-1, SC-2 and MOM-1, all the alternatives were determined to be protective of public health and the environment and would attain (or waive) ARARs. Source control alternatives SC-3 - SC-8 and management of migration alternatives MOM-2 - MOM-6 were compared using the five balancing criteria above. In general, the combination of alternatives SC-6 and MOM-2 best satisfy these criteria and in combination, were chosen as the recommended remedy. There is no direct opposition to the use of thermal desorption at the site, other than PRP and public interest in EPA reviewing the potential use of an innovative form of thermal desorption, which is performed by heating wells, in-situ. Based on the data available to date, EPA was not able to fully evaluate this technology for comparison to the ex-situ thermal desorption technology selected in the remedy. The selected remedy provides a higher degree of long-term effectiveness and permanence by excavating and treating all soils that could pose a long-term threat to human health and the groundwater when compared to the containment alternative SC-3 which would leave high levels of contamination in place at the Site. Thermal desorption would similarly reduce toxicity, mobility and volume through treatment as would SC-8, solvent extraction; but would have less short-term impacts and implementability issues. Off-Site disposal (SC-4), and solvent extraction (SC-8) had comparable costs to thermal desorption. SC-6, thermal desorption was more expensive than both containment (SC-3) and solidification/ stabilization (SC-7); and less expensive than off-site incineration (SC-5).

Monitored natural attenuation, MOM-2, does not use treatment to reduce toxicity, volume or mobility of the contamination in the groundwater, as would MOM-3 through MOM-6. However, in combination with the source control actions, the groundwater will attain Interim Cleanup Levels through natural processes in a reasonable time frame, when compared to active pump and treat it is unclear how effective pump and treat would be for the attainment of the PCB and TCB cleanup levels given their slow transport through the subsurface. MOM-2 costs less than MOM-3 through MOM-6 while offering a similar level of protectiveness.

### E. The Selected Remedy Satisfies the Preference for Treatment Which Permanently and Significantly reduces the Toxicity, Mobility or Volume of the Hazardous Substances as a Principal Element

The principal element of the selected remedy is the source control action which utilizes excavation and treatment of the contaminated soils using ex-situ thermal desorption. Thermal desorption will remove and concentrate the contaminants in the soil, thereby permanently reducing the volume of and mobility of the contaminants on the soil. The condensate will be transported off-site to an approved TSCA incinerator for treatment, thereby permanently reducing the toxicity of the contaminants at the Site.

The source control action addresses the primary threat at the Site, the contamination of the surface and subsurface soils. Treatment of the subsurface soils also permanently removes contaminants that pose a long-term threat to the groundwater. The selected remedy satisfies the statutory preference for treatment as a principal element by excavating, treating on-site with ex-situ thermal desorption and sending the condensate off-site for incineration.

Treatment of the contaminated groundwater is not part of the selected remedy, however natural attenuation processes will eventually result in the attainment of the Interim Cleanup Levels in the overburden in 20-25 years for VOCs and 100 years for PCBs. Natural Attenuation processes may result in the attainment of the Interim Cleanup Levels in the bedrock depending upon the full extent of the contamination within the bedrock. The groundwater monitoring program will assess the potential for DNAPL within the bedrock system. If DNAPL is conclusively found or concluded to be within the bedrock aquifer, a Technical Impracticality waiver may be sought for the PCB MCL within the bedrock if the waiver standards are demonstrated.

Although the management of migration portion of the remedy relies on natural attenuation to achieve groundwater cleanup standards, the overall remedy is effective only through the active treatment of the soils at the Site.

## XII. DOCUMENTATION OF SIGNIFICANT CHANGES

EPA issued a Proposed Plan for remediation of the Site in December 1996 and presented it to the public at a meeting held on January 14, 1997. EPA proposed a cleanup plan that would treat the soils that presented the highest risks to public health and treat the highly contaminated soils within the subsurface at both Elm Street and Mill Street that posed the greatest threat to groundwater in the future. The large volume of remaining, lesser contaminated soils would covered with a cap to prevent the spread of the contamination into the groundwater and the groundwater would be restricted from use, and monitored until natural processes reduced contamination levels in the groundwater to acceptable levels.

In the Proposed Plan, the main components of the source control portion of the preferred alternative incorporated a phased approach which included:

Phase 1 - Mill Street Site:

- the excavation and on-Site treatment using thermal desorption, of all contaminated soils in the top 0 to 1 foot at the Mill Street Site;

- the excavation and on-Site treatment using thermal desorption of all contaminated soils in the subsurface (from 1 foot to bedrock), wherever concentrations were greater than 1 mg/kg PCB, or to a level which, in the future, would not result in exceedances above the interim cleanup levels in the groundwater. Placement of the treated soils on the Site, and restoration consistent with the expected future use of the property.

Phase 2 - Elm Street Site:

- the excavation and on-Site treatment using thermal desorption, of all contaminated soils in the top 0 to 1 foot at the Elm Street Site;

- the excavation and on-Site treatment using thermal desorption of all contaminated soils at the Elm Street Site in the subsurface from 1 to 10 feet where PCBs were greater than 10 mg/kg;

- the excavation of all soils at Elm Street, below 10 feet, with PCB concentrations greater than 500 mg/kg;

- the placement of a single-liner cap (RCRA Subtitle D) over the remaining contaminated soils at the Elm Street Site to prevent the infiltration of precipitation, Placement of the treated soils on the Site, and restoration consistent with the expected future use of the property

The management of migration portion of the preferred alternative included use of natural attenuation processes and long-term monitoring to attain the interim cleanup levels in the future. Institutional controls were also included to restrict access to groundwater, thereby preventing ingestion of the contaminated groundwater, until drinking water standards could be met.

The soil cleanup levels and depths in the Proposed Plan were set as a result of exposure assessments relating to discussions with the Town of Milford regarding the anticipated future uses of the properties. Specifically, the Town of Milford anticipated that the Town would take over both the Elm Street and Mill Street properties. The Elm Street Site would become an extension to the Keyes Field, primarily for extended parking purposes. In addition, the Town wanted future accessibility to the subsurface for routine maintenance and repair to the drainage system and for possible unforseen activities associated with the Keyes Field such as the placement of utilities associated restrooms, a concession stand, and parking light installation. It was anticipated that the entire Site would not be covered in asphalt for parking due to the steep slope presented at the Site, but that parking would be the primary purpose of the future use of the Elm Street property. The Mill Street Site would be used to physically move Mill Street from its current position, further north, thereby giving additional buffer between the Mill Street residences and the road. No future use was anticipated for the subsurface at the Mill Street Site. The excavation required under EPA's 1996 Proposed Plan, totaled approximately 33,300 cubic yards of contaminated soil and was estimated to cost $17.9 million.

EPA accepted comment on the Proposed Plan from January 15, 1997 through April 21, 1997. EPA received a letter from the Town of Milford requesting EPA to accept changes in the anticipated future use of the Elm Street Site, thereby also changing the scope of the final remedy. Specifically the Town of Milford requested that EPA consider incorporating a utility corridor(s) scenario within the Elm Street Site, where any and all future maintenance of any utility and culvert system could be accomplished. By restricting the future subsurface exposure pathways to a utility corridor(s) and placing restrictions on access and use of the remainder of the subsurface at the Elm Street Site, future human health exposure to the subsurface soils, re-deposited onto the surface through excavation would be eliminated. The surface of the Site would remain consistent with the prior anticipated future use as primarily a parking area extension to the Keyes Field. The Town noted that these recommended changes could result in a decrease in the volume of soil that required excavation and treatment, thereby reducing costs and short term impacts related to implementing the proposed plan alternative.

As a result of public comment on the EPA's 1996 Proposed Plan, EPA delayed the issuance of the Record of Decision until changes could be made with respect to the future uses of the Site, and to accept and review data on an innovative technology proposed for review called In-Situ Thermal Desorption ("ISTD - Thermal Wells"). This technology is being developed by Terratherm, a subsidiary of Shell Oil. GE has proposed the ISTD - Thermal Wells as an alternative technology to the ex-situ thermal desorption technology.

EPA held numerous meetings to discuss the Towns comments and how the FS alternatives could be adapted to consider the new future use changes requested by the Town. In addition, EPA reviewed data from pilot studies where the ISTD-Thermal Well technology has been demonstrated. GE also submitted a Focused Feasibility Study in December of 1997, which developed FS alternatives that included a mixtures of the use of the ISTD - Thermal Well technology and the use of containment with hydraulic control to reach the cleanup goals for the Site.

Significant changes to the scope of the remedy were made and incorporated into this Record of Decision as a result of public comment and the review of subsequent materials in the time period between public comment and the issuance of the Record of Decision. The significant changes made from the Proposed Plan to this Record of Decision include the following:

Subsurface Soil Cleanup Levels:

Under an unrestricted recreational use of the Site, adults and children could be subject to unacceptable risks from exposure to subsurface soils brought to the surface by future excavations. The Town of Milford has indicated that future excavation of the Elm Street Site would be restricted to defined utility corridor(s). This will prevent exposures to the adult and child recreational user to contaminated subsurface soils. The 10 foot depth corresponds to a depth which is considered accessible in the performance of utility placement and maintenance. The cleanup level for subsurface soil within the utility corridor(s) at the Elm Street Site, is 25 mg/kg PCB, and is derived from EPA's Guidance on Remedial Actions for Superfund Sites with PCB Contamination (EPA, 1990) (TSCA PCB Spill Policy). The cancer risk for a utility worker who might be exposed to 25 mg/kg PCB in the utility corridor(s) on an infrequent basis is 4.6 x 10 -7. For non-carcinogenic risks, the Hazard Quotient at 25 mg/kg PCB for the utility worker, is 0.3. (See Appendix E of this ROD for the calculations of the utility worker cancer and Hazard Quotient).

No subsurface future uses are expected for the Fletcher's Mill Street property and therefore no exposures were evaluated. However, the Draper Energy Coal Yard portion of the Mill Street Site has anticipated future uses as a commercial property. Because no future access restrictions will be placed on the subsurface soils at the Draper energy portion of the Mill Street Site, these subsurface soils will be cleaned to 1 mg/kg PCB, consistent with the surface soil exposure criteria for the Site. The 1 mg/kg PCB cleanup standard is also consistent with the Mill Street subsurface soil cleanup standard for the protection of groundwater through the leaching of contamination to the groundwater.

Change to the Elm Street Long-term Management of residuals:

Soils not addressed above include those below 1 foot at the Elm Street Site, with the exception of the area to be designated as the utility corridor. These soils are not expected to pose a threat to human health through direct contact given their depth or location, based on anticipated future uses of the property; however, contaminants at these depths could leach into the ground water and pose a threat to human health through ingestion of ground water. The remedial action objective for these soils is to prevent the leaching of contaminants from the soil to the ground water that will result in the concentration of PCBs in the ground water in excess of health and risk-based ARARs.

As a result of the PCB migration analysis, long-term management controls for the PCB contaminated soils were developed to prevent the leaching of the contaminants from the soils in the ground water in exceedance of the MCL for PCB s. The Guidance for Remedial Actions for Superfund Sites with PCB Contamination [EPA, 1990] was considered in addressing the contaminated soils that may be contained and managed in place over the long term through appropriate engineering and institutional controls. The long-term management controls developed for the Elm Street Site was presented in Source Control Alternative 4.

The 1996 Proposed Plan addressed the these Site soils by requiring excavation wherever concentrations were greater than 500 mg/kg PCB. This required an excavation of an additional 1,600 cubic yards of soils in addition to the excavation of 18,200 cubic yards of soils associated with the human health based cleanup levels in the top ten feet of the Site, for a total of 19,800 cubic yards of contaminated soils requiring excavation.

Consistent with the EPA guidance and the TSCA long-term management controls, Sites where concentrations of PCBs remaining are 500 mg/kg or less, a single, flexible membrane liner (FML) cap consistent with RCRA Subtitle D would be required to prevent the infiltration of precipitation and the leaching of the PCBs into the groundwater above drinking water standards. Long-term monitoring would also be required to assure that the cap remains protective of the groundwater. This cap would also require continuous maintenance and restrictions would have required to prevent access to and potential damage to the cap.

The final remedial action plan requires that all soils at the Elm Street Site, below 1 foot with the exception of those within the utility corridor, be excavated wherever concentrations exceed 100 mg/kg PCB or to a PCB concentration at which leaching models and/or soil column testing show that infiltration through the remaining PCB soil concentrations will not result in future groundwater concentrations in excess of the 0.5 ug/l MCL groundwater concentration for PCBs. The determination of a subsurface soil cleanup level other than 100 mg/kg PCB, will be in the sole discretion of the EPA. The remaining soils are protective of groundwater, but not protective of a child or adult trespasser on the Site; therefore while institutional controls will restrict future access into these soils, a 10-inch soil cover and asphalt are required to maintain a protective layer from the contaminated soils and areas of unrestricted access. Maintenance of the soil and asphalt cover would be conducted consistent with TSCA and State regulations. This long-term management action of a soil and asphalt cover is consistent with the TSCA long-term management controls where PCBs are left in place at the end of a remedial action that are greater than 25 mg/kg PCB but less than or equal to 100 mg/kg, if the Site is covered with a cap meeting the requirements of 761.61 (a)7 and (a)(8). The cover also meets the performance standards of the State closure regulations.

The amount of contaminated soil estimated to have concentrations greater than 100 mg/kg PCB, and thus requiring excavation as apart of the selected remedy is 11,600 cubic yards. The total excavation for the Elm Street Site in the final selected remedy is 15,400 cubic yards, 4,400 cubic yards less than that estimated for the Proposed Plan.

Change in the amount of soil requiring excavation:

Under the new cleanup scenario, the volume of soils estimated to require excavation were reduced from the 1996 Proposed Plan estimate of 33,300 cubic yards to the following:

Elm Street Site:

| Area | Cleanup Level | Soil Volume |
|---|---|---|
| 0- 1 foot: | 1 mg/kg PCB | 2,800 cubic yards |
| Utility Corridor, 1-10 feet: | 25 mg/kg PCB | 1,000 cubic yards |
| 1-23 feet: | 100 mg/kg PCB | 11,600 cubic yards |
| | Total: | 15,400 cubic yards |

Mill Street:

| Area | Cleanup Level | Soil Volume |
|---|---|---|
| 0-1 foot: | 1 mg/kg PCB | 1,500 cubic yards |
| 1 - bedrock: | 1 mg/kg PCB | 12,000 cubic yards |
| | Total: | 13,500 cubic yards |

The total excavation for this ROD includes 28,900 cubic yards of soil.

Reduction of Costs:

The estimated costs for the 1996 Proposed Plan were $17.9 million. Due to the time lapse from the generation of the FS alternative cost estimates and the Proposed Plan cost estimate, which were developed using 1995 quotes, new estimates were developed to reflect the costs associated with the Proposed Plan using 1997 quotes. The 1997 quotes for treatment using thermal desorption indicated that the most conservative cost for treatment was $200 per ton. This estimate was less than the 1995 most conservative quote of $250 per ton treated. The associated cost savings of $50 per ton, reduced the Proposed Plan costs by approximately $1.8 million, to a new 1997 cost estimate of $16.1 million ($13.8 million for the source control and $2.4 million for the monitored natural attenuation),

In addition, to reflect the changes accepted to the future use of the Elm Street Site, described above, EPA also developed 1997 cost estimates for the Thermal Desorption alternative. While new 1997 cost estimates were not developed for all of the FS alternatives, it should be noted that similar cost savings for alternatives SC-4 through SC-8 would be recognized as a result of the changes in the future land use assumptions. Since there would be no changes in the SC-1, SC-2 or SC-3 alternatives as a result of having no impact from the change in the future use for the Elm Street Site, no 1997 cost estimates were developed, and therefore the 1996 costs estimates as presented in this ROD remain accurate. This information was presented to both GE and, the town of Milford in a letter dated March 6, 1998.

The estimated total volume of soil in the selected remedy, requiring excavation and treatment using thermal desorption is 28,900 cubic yards. Using the most conservative 1997 cost estimates for thermal desorption, the final selected remedy has a cost estimate of $14.7 million ($12.3 million for the source control and $2.4 million for the monitored natural attenuation). This represents a $1.4 million decrease in costs from the 1997 Proposed Plan costs and a $3.2 million decrease from the 1996 Proposed Plan cost estimate.

Additional Potential for Cost Savings:

Additional costs savings can be reviewed at EPA's discretion, during implementation of the selected remedy. These additional costs savings may include all or some of the following:

1) Cost savings could be seen during implementation of the final selected remedy as a result of lower actual per unit ton treatment costs of thermal desorption treatment. While the most conservative 1997 quote of $200 per ton was used to develop the costs associated with the final selected remedy, less conservative costs may be realized during implementation of the remedy. The costs for thermal desorption are becoming more competitive as the technology sees more vendors available and gains more widespread use and acceptance. Costs of $100 per ton are not unreasonable for some Sites.

If the costs for the treatment of thermal desorption were estimated to be $100 per ton, the cost savings of the selected remedy would be approximately 2.7 million dollars. This would result in a final cost for the remedy of $11.4 million ($9.6 million for source control and $2.4 million for monitored natural attenuation).

2) Leaching modeling and/or soil column testing may be conducted during design to determine a site specific PCB concentration that could remain in the subsurface and not result in a future exceedance of

the 0.5 ug/l PCB MCL in groundwater. While these studies may or may not be undertaken during design any increase in the PCB soil cleanup from the 1 mg/kg PCB concentration used in the cost estimate would realize a cost savings, if EPA determines that the PCB concentration would be protective of the groundwater in the future. The cost saving would be realized in the decrease in the volume of soil requiring excavation and treatment. For example, if EPA determined that an increase to 100 mg/kg PCB would be protective of the groundwater at the Mill Street Site, this would result in 7,600 cubic yards less soil requiring excavation and treatment at an additional cost savings of approximately $2.6 million. This could result in a cost reduction to $12.1 million for the remedy ($9.7 million for the source control and $2.4 million for the monitored natural attenuation).

If both cost saving scenarios described above are realized for the final remedy, a total cost savings of approximately $4.5 million could be realized, for a potential cost estimate of $10.2 million. ($7.8 million for the source control and $2.4 million for the monitored natural attenuation).

The costs associated with this Record of Decision are $1.4 million less than the 1997 Proposed Plan costs.

**XIII. STATE ROLE**

The New Hampshire Department of Environmental Services has reviewed the various alternatives and has indicated its support for the selected remedy. The State has also reviewed the Remedial Investigation, the Baseline Human Health Risk Assessment and its amendments, the Preliminary Ecological Risk Assessment and the Feasibility Study to determine if the selected remedy is in compliance with applicable or relevant and appropriate State Environmental laws and regulations. The State of New Hampshire has not concurred with the selected remedy for the Fletcher's Paint Works and Storage Facility Superfund Site as of the signing of this ROD. EPA anticipates that the State will concur shortly. A copy of the declaration of concurrence will be attached as Appendix A upon receipt.

<IMG SRC 98124F>
<IMG SRC 98124G>
<IMG SRC 98124H>
<IMG SRC 98124I>
<IMG SRC 98124J>
<IMG SRC 98124K>
<IMG SRC 98124L>
<IMG SRC 98124M>
<IMG SRC 98124M1>
<IMG SRC 98124M2>
<IMG SRC 98124M3>
<IMG SRC 98124M4>
<IMG SRC 98124M5>
<IMG SRC 98124M6>
<IMG SRC 98124M7>
<IMG SRC 98124M8>

**TABLES**

**TABLE 1 - Field Laboratory PCB Results for Elm Street Soils (Page 1 of 4)**

| Location | Depth(ft.) | ADL Sequence No. | Sample Date | Total PCB Conc.(mg/kg) |
|---|---|---|---|---|
| EB-01a | 0.0-2.0 | 001 | 10/29/91 | 5.3 |
| | 2.0-4.0 | 002 | 10/29/91 | 8.6 |
| | 4.0-6.0 | 003 | 10/29/91 | 3.1 |
| | 8.0-10.0 | 004 | 10/29/91 | 0.1 |
| | 10.0-12.0 | 015 | 10/29/91 | -- |
| | 12.0-14.0 | 016 | 10/30/91 | -- |
| | 14.0-16.0 | 017 | 10/30/91 | -- |
| | 16.0-18.0 | 018 | 10/30/91 | -- |
| | 18.0-20.0 | 019 | 10/30/91 | -- |
| | 20.0-22.0 | 020/021 | 10/30/91 | -- |
| | 22.0-24.0 | 022 | 10/30/91 | -- |
| | 24.0-26.0 | 023 | 10/30/91 | -- |
| | 28.0-29.5 | 024 | 10/30/91 | -- |
| | 30.0-32.0 | 025 | 10/30/91 | -- |
| | 32.0-34.0 | 027 | 10/30/91 | -- |
| | 38.0-40.0 | 028 | 10/30/91 | -- |
| | 44.0-46.0 | 029 | 10/30/91 | -- |
| | 51.5-53.0 | 030 | 10/30/91 | -- |
| EB-01b | 20.0-21.5 | 035 | 11/4/91 | -- |
| EB-02a | 0.0-2.0 | 005 | 10/29/91 | 1.8 |
| | 2.0-4.0 | 006 | 10/29/91 | 5.3 |
| | 4.0-6.0 | 007 | 10/29/91 | 1.8 |
| | 6.0-9.0 | 008 | 10/29/91 | 1.4 |
| | 8.0-10.0 | 009 | 10/29/91 | 1.0 |
| | 10.0-12.0 | 010 | 10/29/91 | 3.0 |
| | 12.0-14.0 | 011 | 10/29/91 | 0.9 |
| | 16.0-18.0 | 012 | 10/30/91 | 95 |
| | 19.0-19.3 | 013 | 10/30/91 | 15 |
| | 21.0-22.0 | 014 | 10/30/91 | 34 |
| | 22.0-24.0 | 026 | 10/30/91 | 28 |
| | 24.0-28.0 | 030 | 10/30/91 | 5.8 |
| | 31.0-31.4 | 031 | 10/30/91 | 0.6 |
| EB-02b | 25.0-28.0 | 189 | 11/21/91 | 1.8 |
| EB-03a | 1.0-2.5 | 065 | 11/08/91 | 290 |
| | 3.0-5.0 | 064 | 11/08/91 | 150 |
| | 5.0-7.0 | 066 | 11/08/91 | 200 |
| | 9.0-10.5 | 067/068 | 11/08/91 | 6700/7900 |
| | 11.0-13.0 | 069 | 11/08/91 | 1900 |
| | 13.0-15.0 | 070 | 11/08/91 | 110 |
| | 15.0-17.0 | 071 | 11/08/91 | 79 |
| | 17.0-19.0 | 072 | 11/08/91 | 1.7 |
| | 23.0-25.0 | 073 | 11/08/91 | 2.3 |
| | 29.0-31.0 | 074 | 11/08/91 | 0.5 |
| | 35.0-37.0 | 075 | 11/08/91 | 0.1 |
| | 41.0-43.0 | 078 | 11/08/91 | -- |
| | 45.0-46.5 | 081 | 11/08/91 | 0.3 |

- = Not detected.

**TABLE 1 - Field Laboratory PCB Results for Elm Street Soils (Page 2 of 4)**

| Location | Depth(ft.) | ADL Sequence No. | Sample Date | Total PCB Conc.(mg/kg) |
|---|---|---|---|---|
| EB-03b | 1.0-2.5 | 087 | 11/13/91 | 370 |
| | 3.0-5.0 | 089/090 | 11/13/91 | 110/130 |
| | 5.0-6.5 | 092 | 11/13/91 | 96 |
| | 7.0-9.0 | 091 | 11/13/91 | 51 |
| | 9.0-11.0 | 095 | 11/13/91 | 350 |
| | 11.0-13.0 | 096 | 11/13/91 | 170 |
| | 13.0-15.0 | 101 | 11/13/91 | 0.8 |
| | 15.0-21.0 | 100 | 11/13/91 | 3.2 |
| EB-04a | 13.0-15.0 | 146 | 11/19/91 | 2.8 |
| | 15.0-17.0 | 147 | 11/19/91 | 0.3 |
| | 17.0-19.0 | 148 | 11/19/91 | 0.6 |
| | 19.0-21.0 | 149 | 11/19/91 | 0.1 |
| | 21.0-23.0 | 150 | 11/19/91 | -- |
| | 25.0-27.0 | 159 | 11/19/91 | -- |
| | 30.0-32.0 | 160 | 11/19/91 | -- |
| | 35.0-37.0 | 161 | 11/19/91 | -- |
| | 40.0-42.0 | 171 | 11/20/91 | -- |
| | 42.0-44.0 | 172/173 | 11/20/91 | --/-- |
| | 44.0-46.0 | 174 | 11/20/91 | -- |
| EB-04c | 0.0-2.0 | 076 | 11/08/91 | 32 |
| | 2.0-4.0 | 077 | 11/08/91 | 18 |
| | 4.0-6.0 | 079 | 11/08/91 | 11 |
| | 7.0-9.0 | 082 | 11/12/91 | 9.4 |
| | 9.0-11.0 | 083 | 11/12/91 | 1.4 |
| | 11.0-13.0 | 084 | 11/12/91 | 2.7 |
| | 17.0-19.5 | 097 | 11/13/91 | 0.1 |
| | 19.0-21.0 | 098 | 11/13/91 | -- |
| | 21.0-23.0 | 103 | 11/13/91 | 0.7 |
| | 23.0-25.0 | 104 | 11/13/91 | 0.3 |
| | 25.0-27.0 | 107 | 11/14/91 | 0.1 |
| | 27.0-29.0 | 108 | 11/14/91 | 0.1 |
| | 29.0-31.0 | 111 | 11/14/91 | -- |
| | 31.0-33.0 | 112/113 | 11/14/91 | --/-- |
| | 37.0-39.0 | 117 | 11/14/91 | -- |
| | 43.0-45.0 | 128 | 11/14/91 | -- |
| | 45.0-47.5 | 118 | 11/14/91 | -- |
| | 48.5-49.3 | 129 | 11/14/91 | 0.4 |
| EB-05a | 0.0-2.0 | 191 | 11/21/91 | -- |
| | 2.0-4.0 | 192 | 11/21/91 | -- |
| | 4.0-6.0 | 193 | 11/21/91 | -- |
| | 6.0-8.0 | 194 | 11/21/91 | -- |
| | 8.0-10.0 | 195 | 11/21/91 | -- |
| | 10.0-12.0 | 196 | 11/21/91 | -- |
| | 12.0-14.0 | 197 | 11/21/91 | -- |
| | 18.0-20.0 | 199 | 11/25/91 | -- |
| | 24.0-26.0 | 200 | 11/25/91 | -- |
| | 32.0-34.0 | 201 | 11/25/91 | -- |
| | 40.0-42.0 | 216 | 11/25/91 | -- |
| | 42.0-44.0 | 217 | 11/26/91 | -- |

- = Not detected

**TABLE 1 - Field Laboratory PCB Results for Elm Street Soils (Page 3 of 4)**

| Location | Depth(ft.) | ADL Sequence No. | Sample Date | Total PCB Conc.(mg/kg) |
|---|---|---|---|---|
| EB-05a(con.) | 48.0-50.0 | 211 | 11/26/91 | -- |
| EB-06a | 57.0-59.0 | 231 | 12/2/91 | -- |
| EB-06c | 0.0-2.0 | 202 | 11/25/91 | -- |
| | 2.0-4.0 | 203 | 11/25/91 | -- |
| | 4.0-6.0 | 204 | 11/25/91 | -- |
| | 6.0-8.0 | 205 | 11/25/91 | -- |
| | 8.0-10.0 | 206/207 | 11/25/91 | -- |
| | 10.0-12.0 | 208 | 11/25/91 | -- |
| | 12.0-14.0 | 209 | 11/25/91 | -- |
| | 20.0-22.0 | 210 | 11/26/91 | -- |
| | 26.0-28.0 | 224 | 11/26/91 | -- |
| | 30.0-33.0 | 225 | 11/26/91 | -- |
| | 37.0-39.0 | 227 | 11/26/91 | -- |
| | 43.0-45.0 | 228 | 11/26/91 | -- |
| | 51.0-53.0 | 229 | 12/02/91 | -- |
| | 53.0-55.0 | 230 | 12/02/91 | -- |
| EB-11a | 0.0-2.0 | 253/254 | 12/04/91 | -- |
| | 2.0-4.0 | 255 | 12/04/91 | -- |
| | 4.0-6.0 | 256 | 12/04/91 | -- |
| | 6.0-8.0 | 257 | 12/04/91 | -- |
| | 8.0-10.0 | 258 | 12/04/91 | -- |
| | 10.0-12.0 | 259 | 12/04/91 | -- |
| | 12.0-14.0 | 260 | 12/04/91 | -- |
| | 14.0-16.0 | 261 | 12/04/91 | -- |
| | 16.0-18.0 | 262 | 12/04/91 | -- |
| | 18.0-20.0 | 253 | 12/04/91 | -- |
| | 20.0-22.0 | 264 | 12/04/91 | -- |
| | 22.0-24.0 | 265 | 12/04/91 | -- |
| | 24.0-26.0 | 266 | 12/04/91 | -- |
| | 26.0-28.0 | 267 | 12/04/91 | -- |
| | 28.0-30.0 | 269 | 12/04/91 | -- |
| | 30.0-31.5 | 268 | 12/04/91 | -- |
| | 31.5-33.0 | 270 | 12/04/91 | 0.1 |
| | 37.0-39.0 | 271 | 12/05/91 | -- |
| | 43.0-45.0 | 272 | 12/05/91 | -- |
| | 49.0-51.0 | 273 | 12/05/91 | -- |
| | 55.0-57.0 | 274/275 | 12/06/91 | --/-- |
| | 59.0-61.0 | 276 | 12/06/91 | -- |
| | 65.0-67.0 | 277 | 12/06/91 | -- |
| | 71.0-73.0 | 278 | 12/06/91 | -- |
| | 73.0-77.0 | 280 | 12/06/91 | -- |
| EB 15 | 1.0-2.5 | 049 | 11/06/91 | 14.000 |
| | 4.0-6.0 | 053 | 11/06/91 | 18 |
| | 9.0-11.0 | 054 | 11/06/91 | 940 |
| | 15.0-17.0 | 056 | 11/06/91 | 210 |
| | 19.0-20.5 | 055 | 11/06/91 | 640 |
| | 24.0-26.0 | 059 | 11/06/91 | 11 |
| | 39.5-39.7 | 061 | 11/07/91 | 0.3 |

- = Not detected

**TABLE 1 - Field Laboratory PCB Results for Elm Street Soils (Page 4 of 4)**

| Location | Depth(ft.) | ADL Sequence No. | Sample Date | Total PCB Conc.(mg/kg) |
|---|---|---|---|---|
| EB-16 | 0.0-2.0 | 106 | 11/14/91 | 400 |
| | 5.0-7.0 | 109 | 11/14/91 | 2.3 |
| | 10.0-12.0 | 110 | 11/14/91 | 5.5 |
| | 12.0-14.0 | 114 | 11/14/91 | 8.9 |
| | 14.0-16.0 | 115 | 11/14/91 | 8.7 |
| | 16.0-18.0 | 116 | 11/14/91 | 0.5 |
| | 18.0-20.0 | 119 | 11/14/91 | -- |
| | 20.0-21.5 | 120 | 11/14/91 | 0.1 |
| | 22.0-24.0 | 121 | 11/14/91 | 0.1 |
| | 24.0-26.0 | 122 | 11/14/91 | 0.1 |
| | 30.0-32.0 | 124 | 11/14/91 | -- |
| | 35.0-37.0 | 125 | 11/14/91 | -- |
| | 38.0-39.5 | 126 | 11/14/91 | -- |
| | 40.0-42.0 | 127 | 11/14/91 | -- |
| | 45.0-47.0 | 141 | 11/18/91 | -- |
| EB-17 | 0.0-2.0 | 032 | 11/04/91 | 18 |
| | 4.0-6.5 | 034 | 11/04/91 | -- |
| | 10.0-12.0 | 036 | 11/04/91 | 45 |
| | 15.0-17.0 | 039 | 11/05/91 | 29 |
| | 20.0-22.0 | 085 | 11/05/91 | 170 |
| | 27.0-29.0 | 040 | 11/05/91 | 198 |
| | 30.0-32.0 | 041 | 11/05/91 | 10.8 |
| | 34.0-36.0 | 042/043 | 11/05/91 | 3.7/3.1 |
| EB-18b | 0.0-2.0 | 292 | 12/12/91 | 0.3 |
| | 5.0-7.0 | 294 | 12/12/91 | -- |
| | 10.0-12.0 | 295 | 12/12/91 | -- |
| | 15.0-17.0 | 296 | 12/12/91 | -- |
| | 17.0-18.5 | 297/298 | 12/12/91 | -- |
| | 19.0-20.5 | 299 | 12/12/91 | -- |
| | 20.5-22.0 | 300 | 12/12/91 | -- |
| | 22.0-25.0 | 302 | 12/12/91 | -- |
| | 25.0-26.5 | 303 | 12/12/91 | -- |
| | 35.0-36.5 | 304 | 12/12/91 | -- |
| | 50.0-51.5 | 305 | 12/12/91 | -- |
| | 55.0-56.5 | 306 | 12/12/91 | -- |
| SS-04 | 0.0-0.5 | 232 | 12/03/91 | -- |
| | 0.5-1.0 | 241 | 12/03/91 | 1.7 |
| | 1.0-1.5 | 242 | 12/03/91 | 1.2 |
| | 1.5-2.0 | 243 | 12/03/91 | 0.6 |
| | 2.5-3.0 | 244 | 12/03/91 | 0.1 |
| | 3.5-4.0 | 245 | 12/03/91 | -- |
| | 4.5-5.0 | 246 | 12/03/91 | -- |
| | 5.5-6.0 | 247 | 12/03/91 | -- |
| | 6.5-7.0 | 248 | 12/03/91 | -- |
| | 7.0-7.5 | 249 | 12/03/91 | -- |
| | 8.5-9.0 | 250/251 | 12/03/91 | -- |

Notes: Field laboratory results reported on a wet-weight basis

- = Not detected

**TABLE 2 Estimated PCB Mass, by Depth and Location**

| Location | 0-2 Feet | 2-10 Feet |
|---|---|---|
| Elm Street | | |
| Contaminated Soil Volume (CY) | 5,620 | 17,480 |
| Average PCB Concentration (mg/kg) | 660 | 460 |
| PCB Mass in Soil (kg) | 4,390 | 9,460 |
| Mill Street | | |
| Contaminated Soil Volume (CY) | 3,770 | 9,280 |
| Average PCB Concentration (mg/kg) | 6,370 | 620 |
| PCB Mass in Soil (kg) | 28,420 | 6,770 |

**TABLE 3 - RESULTS OF PCB-CONGENER ANALYSIS**
**Fletcher's Paint Works and Storage Facility Superfund Site**

| Well ID | MW-07A | |
|---|---|---|
| Sub Sample Location | bottom of bailer | top of bailer |
| Sample ID | GW03JH | GW04JH |
| Date Collected | 18-Nov-97 | 18-Nov-97 |
| Date Analyzed | 3-Dec-97 | 2-Dec-97 |
| Total PCBs | 1781.85 | 45.96 |
| PCB Homolog Distribution (mole percent) | | |
| Mono | 0.00 | 0.00 |
| Di | 0.93 | 2.21 |
| Tri | 35.86 | 35.94 |
| Tetra | 48.31 | 46.34 |
| Penta | 12.60 | 12.94 |
| Hexa | 2.13 | 2.35 |
| Hepta | 0.16 | 0.20 |
| Octa | 0.02 | 0.02 |
| Nona | 0.00 | 0.00 |
| Deca | 0.00 | 0.00 |
| Aroclor Distribution* | | |
| Aroclor 1221 | 0.00 | 0.00 |
| Aroclor 1242 | 215.64 | 5.23 |
| Aroclor 1254 | 78.37 | 2.16 |
| Aroclor 1260 | 0.72 | 0.02 |
| Aroclor 1268 | 0.00 | 0.00 |

Notes:
Unless otherwise specified, units are expressed as micrograms per litre (Ig/L) or parts per billion (ppb)
PCBs - polychlorinated biphenyls
* Concentration of indicator peaks in Ig/L. A review of the chromatograms and PCB congener distribution indicated that the PCBs in both samples are Aroclor 1242 with slight devolatilization and biodegradation of selected less chlorinated PCB congeners.

**TABLE 4 Field Laboratory PCB Results for Mill Street Soils (Page 1 of 2)**

| Location | Depth(Ft.) | ADL Sequence No. | Sample Date | Total PCB Conc. |
|---|---|---|---|---|
| EB-07a | 0.0-2.0 | 130 | 11/15/91 | 9,700 |
| | 2.0-4.0 | 131 | 11/15/91 | 2,300 |
| | 4.0-5.5 | 132 | 11/15/91 | 0.3 |
| | 6.0-8.0 | 135 | 11/15/91 | 7 |
| | 8.0-10.0 | 136/137 | 11/15/91 | 6.4/5.7 |
| | 10.0-12.0 | 139 | 11/15/91 | 8 |
| | 12.0-12.5 | 140 | 11/15/91 | 1.3 |
| EB-08a | 0.0-2.0 | 285 | 12/11/91 | -- |
| | 2.0-4.0 | 286 | 12/11/91 | -- |
| | 4.0-6.0 | 287 | 12/11/91 | -- |
| | 10.0-12.0 | 288 | 12/11/91 | -- |
| | 116.0-118.0 | 289 | 12/11/91 | -- |
| | 20.0-22.0 | 290 | 12/11/91 | -- |
| | 26.0-28.0 | 291 | 12/11/91 | -- |
| EB-09a | 0.0-2.0 | 233 | 12/02/91 | 7.4 |
| | 2.0-4.0 | 234 | 12/02/91 | 0.3 |
| | 4.0-8.10 | 235 | 12/02/91 | 0.3 |
| | 8.0-10.0 | 238 | 12/02/91 | -- |
| | 10.0-12.0 | 239 | 12/02/91 | -- |
| | 12.0-14.0 | 240 | 12/02/91 | -- |
| | 15.0-16.0 | 279 | 12/06/91 | -- |
| | 22.0-23.0 | 281 | 12/09/91 | -- |
| EB-10b | 0.0-2.0 | 046 | 11/20/91 | -- |
| | 2.0-4.0 | 165 | 11/20/91 | -- |
| | 4.0-6.0 | 166 | 11/20/91 | -- |
| | 6.0-8.0 | 167 | 11/20/91 | -- |
| | 8.0-9.5 | 168 | 11/20/91 | -- |
| | 10.0-12.0 | 169 | 11/20/91 | -- |
| | 16.0-18.0 | 170 | 11/20/91 | -- |
| | 18.0-20.0 | 175 | 11/20/91 | -- |
| | 24.5-26.5 | 188 | 11/21/91 | -- |
| | 30.5-32.5 | 190 | 11/21/91 | -- |
| EB-12 | 1.0-3.0 | 047 | 11/06/91 | 110,000 |
| | 9.5-11.5 | 050 | 11/06/91 | 1,700 |
| | 15.0-17.0 | 051 | 11/06/91 | 480 |
| EB-13 | 0.0-2.0 | 086 | 11/13/91 | 11,000 |
| | 5.0-8.5 | 088 | 11/13/91 | 12 |
| | 10.0-12.0 | 093 | 11/13/91 | 0.4 |
| | 15.0-16.5 | 094 | 11/13/91 | 2 |

**TABLE 4 Field Laboratory PCB Results for Mill Street Soils (Page 2 of 2)**

| Location | Depth(Ft.) | ADL Sequence No. | Sample Date | Total PCB Conc. |
|---|---|---|---|---|
| EB-14 | 0.0-2.0 | 052 | 11/07/91 | 2,800 |
| | 4.0-6.0 | 057 | 11/07/91 | 330 |
| | 6.0-8.0 | 058 | 11/07/91 | 20 |
| | 10.0-12.0 | 045 | 11/07/91 | 4.8 |
| | 12.0-16.0 | 044 | 11/07/91 | 4 |
| | 17.0-19.0 | 062 | 11/07/91 | 3.7 |
| EB-19 | 13.0-14.5 | 283 | 12/10/91 | -- |
| | 18.0-21.5 | 284 | 12/10/91 | -- |
| SS-01 | 0.0-0.5 | 151 | 11/19/91 | 2.5 |
| | 0.5-1.0 | 152 | 11/19/91 | 0.2 |
| | 1.0-1.5 | 153 | 11/19/91 | 0.6 |
| | 1.5-2.0 | 154 | 11/19/91 | -- |
| | 2.5-3.0 | 155 | 11/19/91 | 0.1 |
| | 3.5-4.0 | 156 | 11/19/91 | -- |
| | 4.5-5.0 | 157 | 11/19/91 | -- |
| | 5.5-6.0 | 158 | 11/19/91 | -- |
| | 6.0-7.5 | 164 | 11/19/91 | 0.1 |
| | 7.5-8.0 | 162 | 11/19/91 | -- |
| SS-02 | 0.0-0.5 | 177 | 11/20/91 | 7.7 |
| | 0.5-1.0 | 178 | 11/20/91 | 0.2 |
| | 1.0-1.5 | 179 | 11/20/91 | -- |
| | 1.5-2.0 | 180 | 11/20/91 | -- |
| | 2.5-3.0 | 181 | 11/20/91 | -- |
| | 3.5-4.0 | 182 | 11/20/91 | -- |
| | 4.5-5.0 | 183 | 11/20/91 | 0.1 |
| | 5.5-6.0 | 184 | 11/20/91 | 0.3 |
| | 6.5-8.0 | 185 | 11/20/91 | 0.1 |
| | 8.0-8.5 | 186/187 | 11/20/91 | --/-- |
| SS-03 | 0.0-0.5 | 212 | 12/02/91 | 35 |
| | 0.5-1.0 | 213 | 12/02/91 | 6.4 |
| | 1.0-1.5 | 214 | 12/02/91 | 6.3 |
| | 1.5-2.0 | 215 | 12/02/91 | 3 |
| | 2.5-3.0 | 218 | 12/02/91 | 2.6 |
| | 3.5-4.0 | 219 | 12/02/91 | 0.4 |
| | 4.5-5.0 | 220 | 12/02/91 | 0.1 |
| | 5.5-7.5 | 221 | 12/02/91 | 0.3 |

"-" = Not Detected

<IMG SRC 98124M9>
<IMG SRC 98124N1>
<IMG SRC 98124N2>
<IMG SRC 98124N2A>
<IMG SRC 98124N2B>
<IMG SRC 98124N2C>

**TABLE 7**



**Noncarcinogenic Risk Characterization**
**Incidental Ingestion - Current and Future**
**Surface Soil - Mill Street and Elm Street**
**Adults**

| Chemical | Relative Absorption Factor | Exposure Factor kg/kg/day | Average Exposure Conc. mg/kg | Average Average Daily Dose mg/kg/day | Average Reference Dose mg/kg/day | Average Hazard Quotients | Maximum Exposure Conc. mg/kg | Maximum Average Daily Dose mg/kg/day | Maximum Reference Dose mg/kg/day | Maximum Hazard Quotients |
|---|---|---|---|---|---|---|---|---|---|---|
| Semivolatile Organic Compounds | | | | | | | | | | |
| Benzo(a)anthracene | 100% | 5-5E-07 | 1.2E+00 | 6.8E-07 | ND | NC | 6.4E+00 | 3.5E-06 | ND | NC |
| Benzo(a)pyrene | 100% | 5.5E-07 | 1.3E+00 | 7.0E-07 | ND | NC | 6.8E+00 | 3.7E-06 | ND | NC |
| Benzo(b)fluoranthene | 100% | 5.5E-07 | 1.0E+00 | 5.5E-07 | ND | NC | 3.0E+00 | 1.6E-06 | ND | NC |
| Benzo(g,h,i)perylene | 100% | 5.5E-07 | 5.9E-01 | 3.2E-07 | 4.0E-03 | 8E-05 | 1.5E+00 | 8.2E-07 | 4.0E-03 | 2E-04 |
| Benzo(k)fluoranthene | 100% | 5.5E-07 | 1.2E+00 | 6.6E-07 | ND | NC | 6.7E+00 | 3.7E-06 | ND | NC |
| Chrysene | 100% | 5.5E-07 | 1.5E+00 | 8.4E-07 | ND | NC | 8.8E+00 | 4.8E-06 | ND | NC |
| Indeno(1,2,3-c,d)Pyrene | 100% | 5.5E-07 | 6.8E.01 | 3.7E-07 | ND | NC | 2.4E+00 | 1.3E-06 | ND | NC |
| Phenanthrene | 100% | 5.5E-07 | 2.0E+00 | 1.1E-06 | 4.0E-03 | 3E-04 | 1.2E+01 | 6.6E-06 | 4.0E-03 | 2E-03 |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 30% | 5.5E-07 | 1.3E+02 | 2.1E-05 | ND | NC | 1.3E+03 | 2.1E-04 | ND | NC |
| Aroclor-1254 | 30% | 5.5E-07 | 1.1E+01 | 1.9E-06 | ND | NC | 1.5E+02 | 2.5E-05 | ND | NC |
| Inorganics | | | | | | | | | | |
| Arsenic | 100% | 5.5E-07 | 9.5E+00 | 5.2E-06 | 3.0E-04 | 2E-02 | 2.6E+01 | 1.4E-05 | 3.0E-04 | 5E-02 |
| Chromium | 100% | 5.5E-07 | 1.8E+01 | 9.7E-06 | 5.0E-03 | 2E-03 | 1.1E+02 | 5.8E-05 | 5.0E-03 | 1E-02 |
| Magnesium | 100% | 5.5E-07 | 1.8E-03 | 9.8E-04 | ND | NC | 6.5E+03 | 3.6E-03 | ND | NC |
| Manganese | 100% | 5.5E-07 | 1.4E+02 | 7.9E-05 | 5.0E-03 | 2E-02 | 3.9E+02 | 2.2E-04 | 5.0E-03 | 4E-02 |
| Nickel | 100% | 5.5E-07 | 1.1E+01 | 5.8E-06 | 2.0E-02 | 3E-04 | 1.2E+02 | 6.4E-05 | 2.0E-02 | 3E-03 |
| Vanadium | 100% | 5.5E-07 | 1.4E+01 | 7.4E-06 | 7.0E-03 | 1E-03 | 2.6E+01 | 1.4E-05 | 7.0E-03 | 2E-03 |

Estimated hazard index average concentration = 4E-02

Estimated hazard index maximum concentration = 1E-01

Please refer to Attachment #1, and the reference for this table, for the correct Hazard Quotients and Hazard Index numbers associated with ths exposure pathway.

**TABLE 7**
**Noncarcinogenic Risk Characterization**
**Incidental Ingestion - Current and Future**
**Surface Soil - Mill Street and Elm Street**
**Adults**



| Chemical | Relative Absorption Factor | Exposure Factor kg/kg/day | Average: Exposure Conc. mg/kg | Average: Average Daily Dose mg/kg/day | Average: Reference Dose mg/kg/day | Average: Hazard Quotients | Maximum: Exposure Conc. mg/kg | Maximum: Average Daily Dose mg/kg/day | Maximum: Reference Dose mg/kg/day | Maximum: Hazard Quotients |
|---|---|---|---|---|---|---|---|---|---|---|
| Semivolatile Organic Compounds | | | | | | | | | | |
| Benzo(a)anthracene | 100% | 5.1E-06 | 1.2E+00 | 6.4E-06 | ND | NC | 6.4E+00 | 3.3E-05 | ND | NC |
| Benzo(a)pyrene | 100% | 5.1E-06 | 1.3E+00 | 6.6E-06 | ND | NC | 6.8E+00 | 3.5E-05 | ND | NC |
| Benzo(b)fluoranthene | 100% | 5.1E-06 | 1.0E+00 | 5.1E-06 | ND | NC | 3.0E+00 | 1.5E-05 | ND | NC |
| Benzo(g,h,i)perylene | 100% | 5.1E-06 | 5.9E-01 | 3.0E-06 | 4.0E-03 | 8E-04 | 1.5E+00 | 7.7E-06 | 4.0E-03 | 2E-03 |
| Benzo(k)fluoranthene | 100% | 5.1E-06 | 1.2E+00 | 6.1E-06 | ND | NC | 6.7E+00 | 3.4E-05 | ND | NC |
| Chrysene | 100% | 5.1E-06 | 1.5E+00 | 7.8E-06 | ND | NC | 8.8E+00 | 4.5E-05 | ND | NC |
| Indeno(1,2,3-c,d)Pyrene | 100% | 5.1E-06 | 6.8E.01 | 3.5E-06 | ND | NC | 2.4E+00 | 1.2E-05 | ND | NC |
| Phenanthrene | 100% | 5.1E-06 | 2.0E+00 | 1.0E-05 | 4.0E-03 | 3E-03 | 1.2E+01 | 6.1E-05 | 4.0E-03 | 2E-02 |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 30% | 5.1E-06 | 1.3E+02 | 2.0E-04 | ND | NC | 1.3E+03 | 2.0E-03 | ND | NC |
| Aroclor-1254 | 30% | 5.1E-06 | 1.1E+01 | 1.7E-05 | ND | NC | 1.5E+02 | 2.3E-04 | ND | NC |
| Inorganics | | | | | | | | | | |
| Arsenic | 100% | 5.1E-06 | 9.5E+00 | 4.9E-05 | 3.0E-04 | 2E-01 | 2.6E+01 | 1.3E-04 | 3.0E-04 | 4E-01 |
| Chromium | 100% | 5.1E-06 | 1.8E+01 | 9.0E-05 | 5.0E-03 | 2E-02 | 1.1E+02 | 5.4E-04 | 5.4E-04 | 1E-01 |
| Magnesium | 100% | 5.1E-06 | 1.8E-03 | 9.2E-03 | ND | NC | 6.5E+03 | 3.3E-02 | ND | NC |
| Manganese | 100% | 5.1E-06 | 1.4E+02 | 7.3E-04 | 5.0E-03 | 1E-01 | 3.9E+02 | 2.0E-03 | 5.0E-03 | 4E-01 |
| Nickel | 100% | 5.1E-06 | 1.1E+01 | 5.4E-05 | 2.0E-02 | 3E-03 | 1.2E+02 | 6.0E-04 | 2.0E-02 | 3E-02 |
| Vanadium | 100% | 5.1E-06 | 1.4E+01 | 6.9E-05 | 7.0E-03 | 1E-02 | 2.6E+01 | 1.3E-04 | 7.0E-03 | 2E-02 |

Estimated hazard index average concentration = 3E-01
Total estimated average hazard index = 4E-01

Estimated hazard index maximum concentration = 1E+00
Total estimated maximum hazard index = 1E+00Notes:

NA = Toxicity value not available from EPA
NC = Not calculated

Adults

E = Exposure Factor (kg/kg/day) = SI x CF x EF x ED / BW x AT

| | |
|---|---|
| SI = Soil incidental ingestion rate (mg/day) | 100 |
| CF = Conversion factor (kg/mg) | 1.0E-06 |
| EF = Exposure frequency (days/year) | 140 |
| ED = Exposure duration (years) | 24 |
| AT = Averaging time, non-carcinogenic (24 years x 365 days | 8,760 |
| RAF = Relative absorption factor (PCBs 30%, Inorganics 100%, EPA, 1989) | |
| BW = Body weight (EPA, 1990) (kg) | 70 |
| Exposure Factor (noncarcinogenic) = | 5.5E-07 |

Average, daily dose (mg/kg/day)=exposure factor x RAF x exposure concentration

Children 1 to 6

E = Exposure Factor (kg/kg/day)= SI x CF x EF x ED / BW x AT

| | |
|---|---|
| SI = Soil incidental ingestion rate (mg/day) | 200 |
| CF = Conversion factor (kg/mg) | 1.0E-06 |
| EF = Exposure frequency (days/year) | 140 |
| ED = Exposure duration (years) | 6 |
| AT = Averaging time, non-carcinogenic (6 years x 365 days/ye | 2,190 |
| RAF = Relative absorption factor (PCBs 30%, Inorganics 100%, EPA, 1989) | |
| BW = Body, weight (EPA, 1990)(kg) | 15 |
| Exposure Factor (noncarcinogenic) = | 5.1E-06 |

Average daily dose (mg/kg/day)=exposure factor x RAF x exposure concentration

**TABLE 8**
**Carcinogenic Risk Characterization**
**Incidental Ingestion - Current and Future**
**Surface, Soil - Mill Street and Elm Street**

**Adults**

| Chemical | Relative Absorption Factor | Exposure Factor kg/kg/day | Average Exposure Conc. mg/kg | Average Average Daily Dose mg/kg/day | Average Cancer Potency mg/kg/day -1 | Average Incremental Cancer | Maximum Exposure Conc. mg/kg | Maximum Average Daily Dose mg/kg/day | Maximum Cancer Potency Factor mg/kg/day -1 | Maximum Incremental Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|
| Semivolatile Organic Compounds | | | | | | | | | | |
| Benzo(a)anthracene | 100% | 1.9E-07 | 1.2E+00 | 2.3E-07 | 7.3E-01 | 2E-07 | 6.4E+00 | 1.2E-06 | 7.3E-01 | 9E-07 |
| Benzo(a)pyrene | 100% | 1.9E-07 | 1.3E+00 | 2.4E-07 | 7.3E+00 | 2E-06 | 6.8E+00 | 1.3E-06 | 7.3E+00 | 9E-06 |
| Benzo(b)fluoranthene | 100% | 1.9E-07 | 1.0E+00 | 1.9E-07 | 7.3E-01 | 1E-07 | 3.0E+00 | 5.6E-07 | 7.3E+01 | 4E-07 |
| Benzo(g,h,i)perylene | 100% | 1.9E-07 | 5.9E-01 | 1.1E-07 | ND | NC | 1.5E+00 | 2.8E-07 | ND | NC |
| Benzo(k)fluoranthene | 100% | 1.9E-07 | 1.2E+00 | 2.3E-07 | 7.3E-02 | 2E-08 | 6.7E+00 | 1.3E-06 | 7.3E-02 | 9E-08 |
| Chrysene | 100% | 1.9E-07 | 1.5E+00 | 2.9E-07 | 7.3E-03 | 2E-09 | 8.8E+00 | 1.7E-06 | 7.3E-03 | 1E-08 |
| Indeno(1,2,3-c,d)Pyrene | 100% | 1.9E-07 | 6.8E.01 | 1.3E-07 | 7.3E-01 | 9E-08 | 2.4E+00 | 4.5E-07 | 7.3E-01 | 3E-07 |
| Phenanthrene | 100% | 1.9E-07 | 2.0E+00 | 3.7E-07 | ND | NC | 1.2E+01 | 2.3E-06 | ND | NC |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 30% | 1.9E-07 | 1.3E+02 | 7.3E-06 | 7.7E+00 | 6E-05 | 1.3E+03 | 7.3E-05 | 7.7E+00 | 6E-04 |
| Aroclor-1254 | 30% | 1.9E-07 | 1.1E+01 | 6.4E-07 | 7.7E+00 | 5E-06 | 1.5E+02 | 8.5E-06 | 7.7E+00 | 7E-05 |
| Inorganics | | | | | | | | | | |
| Arsenic | 100% | 1.9E-07 | 9.5E+00 | 1.8E-06 | 1.8E+00 | 3E-06 | 2.6E+01 | 4.9E-06 | 1.8E+00 | 9E-06 |
| Chromium | 100% | 1.9E-07 | 1.8E+01 | 3.3E-06 | ND | NC | 1.1E+02 | 2.0E-05 | ND | NC |
| Magnesium | 100% | 1.9E-07 | 1.8E-03 | 3.4E-04 | ND | NC | 6.5E+03 | 1.2E-03 | ND | NC |
| Manganese | 100% | 1.9E-07 | 1.4E+02 | 2.7E-05 | ND | NC | 3.9E+02 | 7.4E-05 | ND | NC |
| Nickel | 100% | 1.9E-07 | 1.1E+01 | 2.0E-06 | ND | NC | 1.2E+02 | 2.2E-05 | ND | NC |
| Vanadium | 100% | 1.9E-07 | 1.4E+01 | 2.5E-06 | ND | NC | 2.6E+01 | 4.9E-06 | ND | NC |

Estimated incremental cancer risk average concentration = 7E-05

Estimated incremental cancer risk maximum concentration = 6E-04

Please refer to Attachment #1, and the reference for this table, for the correct Hazard Quotients and Hazard Index numbers associated with this exposure pathway.

**TABLE 8**



**Carcinogenic Risk Characterization**
**Incidental Ingestion - Current and Future**
**Surface Soil - Mill Street and Elm Street**

**Children Ages 1 to 6**

| Chemical | Relative Absorption Factor | Exposure Factor | Average Exposure Conc. | Average Average Daily Dose | Average Cancer Potency | Average Incremental Cancer | Maximum Exposure Conc. | Maximum Average Daily Dose | Maximum Cancer Potency Factor | Maximum Incremental Cancer Risk |
|---|---|---|---|---|---|---|---|---|---|---|
| | | kg/kg/day | mg/kg | mg/kg/day | mg/kg/day -1 | | mg/kg | mg/kg/day | mg/kg/day -1 | |
| Semivolatile Organic Compounds | | | | | | | | | | |
| Benzo(a)anthracene | 100% | 4.4E-07 | 1.2E+00 | 5.4E-07 | 7.3E-01 | 4E-07 | 6.4E+00 | 2.8E-06 | 7.3E-01 | 2E-06 |
| Benzo(a)pyrene | 100% | 4.4E-07 | 1.3E+00 | 5.6E-07 | 7.3E+00 | 4E-06 | 6.8E+00 | 3.0E+06 | 7.3E-00 | 2E-05 |
| Benzo(b)fluoranthene | 100% | 4.4E-07 | 1.0E+00 | 4.4E-07 | 7.3E-01 | 3E-07 | 3.0E+00 | 1.3E+06 | 7.3E-01 | 1E-06 |
| Benzo(g,h,i)perylene | 100% | 4.4E-07 | 5.9E-01 | 2.6E-07 | ND | NC | 1.5E+00 | 6.6E+07 | ND | NC |
| Benzo(k)fluoranthene | 100% | 4.4E-07 | 1.2E+00 | 5.3E-07 | 7.3E-02 | 4E-08 | 6.7E+00 | 2.9E+06 | 7.3E-02 | 2E-07 |
| Chrysene | 100% | 4.4E-07 | 1.5E+00 | 6.7E-07 | 7.3E-03 | 5E-09 | 8.8E+00 | 3.9E+06 | 7.3E-03 | 3E-08 |
| Indeno(1,2,3-c,d)Pyrene | 100% | 4.4E-07 | 6.8E.01 | 3.0E-07 | 7.3E-01 | 2E-07 | 2.4E+00 | 1.1E-06 | 7.3E-01 | 8E-07 |
| Phenanthrene | 100% | 4.4E-07 | 2.0E+00 | 8.7E-07 | ND | NC | 1.2E+01 | 5.3E-06 | ND | NC |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 30% | 4.4E-07 | 1.3E+02 | 1.7E-05 | 7.7E+00 | 1E-04 | 1.3E+03 | 1.7E-04 | 7.7E+00 | 1E-03 |
| Aroclor-1254 | 30% | 4.4E-07 | 1.1E+01 | 1.5E-06 | 7.7E+00 | 1E-05 | 1.5E+02 | 2.0E-05 | 7.7E+00 | 2E-04 |
| Inorganics | | | | | | | | | | |
| Arsenic | 100% | 4.4E-07 | 9.5E+00 | 4.2E-06 | 1.8E+00 | 7E-06 | 2.6E+01 | 1.1E-05 | 1.8E+00 | 2E-05 |
| Chromium | 100% | 4.4E-07 | 1.8E+01 | 7.8E-06 | ND | NC | 1.1E+02 | 4.6E-05 | ND | NC |
| Magnesium | 100% | 4.4E-07 | 1.8E-03 | 7.9E-04 | ND | NC | 6.5E+03 | 2.8E-03 | ND | NC |
| Manganese | 100% | 4.4E-07 | 1.4E+02 | 6.3E-05 | ND | NC | 3.9E+02 | 1.7E-04 | ND | NC |
| Nickel | 100% | 4.4E-07 | 1.1E+01 | 4.6E-06 | ND | NC | 1.2E+02 | 5.1E-05 | ND | NC |
| Vanadium | 100% | 4.4E-07 | 1.4E+01 | 5.9E-06 | ND | NC | 2.6E+01 | 1.1E-05 | ND | NC |

Estimated hazard index average concentration = 2E-04
Total estimated average hazard index = 2E-04

Estimated hazard index maximum concentration = 2E+03
Total estimated maximum hazard index = 2E+03

Notes:

NA = Toxicity value not available from EPA
NC = Not calculated

Adults

E = Exposure Factor (kg/kg/day) = (SI x CF x EF x ED) / (BW x AT)

SI = Soil incidental ingestion rate (mg/day) 100
CF = Conversion factor (kg/mg) 1.0E-06
EF = Exposure frequency (days/year) 140
ED = Exposure duration (years) 24
RAF = Relative absorption factor (PCBs 30%, Inorganics 100%, EPA, 1989)
BW = Body weight (EPA, 1990) (kg) 70
AT = Averaging time, carcinogenic (days) 25,550
Exposure Factor (noncarcinogenic) = 1.9E-07
Average, daily dose (mg/kg/day)=exposure factor x RAF x exposure concentration

Children 1 to 6

E = Exposure Factor (kg/kg/day)= (SI x CF x EF x ED) / (BW x AT)

SI = Soil incidental ingestion rate (mg/day) 200
CF = Conversion factor (kg/mg) 1.0E-06
EF = Exposure frequency (days/year) 140
ED = Exposure duration (years) 6
RAF = Relative absorption factor (PCBs 30%, Inorganics 100%, EPA, 1989)
BW = Body, weight (EPA, 1990)(kg) 15
AT = Averaging time, carcinogenic (days) 25,550
Exposure Factor (noncarcinogenic) = 4.4E-07
Average daily dose (mg/kg/day)=exposure factor x RAF x exposure concentration

<IMG SRC 98124N3>
<IMG SRC 98124N4>
<IMG SRC 98124N5>
<IMG SRC 98124N6>
<IMG SRC 98124N7>
<IMG SRC 98124N8>
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<IMG SRC 98124O3>

**TABLE 15**
**Noncarcinogenic Risk Characterization**
**Incidental Ingestion - Current and Future**
**Surface Soil - Drainage Ditch**

Please refer to Attachment #1, and the reference for this table, for the correct Hazard Quotients and Hazard Index numbers associated with this exposure pathway.



**Adults**

| Chemical | Relative Absorption Factor | Exposure Factor kg/kg/day | Exposure Conc. mg/kg | Average Daily Dose mg/kg/day | Average Reference Dose mg/kg/day | Hazard Quotients | Exposure Conc. mg/kg | Maximum Average Daily Dose mg/kg/day | Reference Dose mg/kg/day | Hazard Quotients |
|---|---|---|---|---|---|---|---|---|---|---|
| Semivolatile Organic Compounds | | | | | | | | | | |
| Benzo (a) anthracene | 100% | 6.6E-07 | 1.6E+00 | 8.8E-07 | ND | NC | 7.1E+00 | 3.9E-06 | ND | NC |
| Benzo (a) pyrene | 100% | 5.5E-07 | 1.8E+00 | 1.0E-06 | ND | NC | 8.4E+00 | 4.6E-06 | ND | NC |
| Benzo (a) fluoranthene | 100% | 5.5E-07 | 2.4E+00 | 1.3E-06 | ND | NC | 1.3E+01 | 7.1E-06 | ND | NC |
| Benzo (g,h,i) perylene | 100% | 5.5E-07 | 2.2E+00 | 1.2E-06 | 4.0E-03 | 3E-04 | 1.4E+01 | 7.7E-06 | 4.0E-03 | 2E-03 |
| Benzo (k) fluoranthene | 100% | 5.5E-07 | 1.8E+00 | 9.9E-07 | ND | NC | 7.2E+00 | 3.9E-06 | ND | NC |
| Chrysene | 100% | 5.5E-07 | 2.2E+00 | 1.2E-06 | ND | NC | 1.1E+01 | 6.0E-06 | ND | NC |
| Indeno (1,2,3-c,d)pyrene | 100% | 5.5E-07 | 1.8E+00 | 1.0E-06 | ND | NC | 1.1E+01 | 6.0E-06 | ND | NC |
| Phenanthrene | 100% | 5.5E-07 | 1.9E+00 | 1.0E-06 | 4.0E-03 | 3E-04 | 7.9E+00 | 4.3E-06 | 4.0E-03 | 1E-03 |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 30% | 5.5E-07 | 4.5E-01 | 7.4E-08 | ND | NC | 2.6E+00 | 4.3E-07 | ND | NC |
| Aroclor-1254 | 30% | 5.5E-07 | 2.1E-01 | 3.4E-08 | ND | NC | 7.2E+01 | 1.2E-07 | ND | NC |
| Inorganics | | | | | | | | | | |
| Antimony | 100% | 5.5E-07 | 2.1E+01 | 1.2E-05 | 4.0E-04 | 3E-02 | 7.9E+01 | 4.3E-05 | 4.0E-04 | 1E-01 |
| Arsenic | 100% | 5.5E-07 | 1.8E+01 | 9.7E-06 | 3.0E-04 | 3E-02 | 4.9E+01 | 2.7E-05 | 3.0E-04 | 9E-02 |
| Chromium | 100% | 5.5E-07 | 3.0E+02 | 1.6E-04 | 5.0E-03 | 3E-02 | 1.2E+03 | 6.4E-04 | 5.0E-03 | 1E-01 |
| Manganese | 100% | 5.5E-07 | 2.7E+02 | 1.5E-04 | 5.0E-03 | 3E-02 | 5.6E+02 | 3.1E-04 | 5.0E-03 | 6E-02 |
| Mercury | 100% | 5.5E-07 | 9.2E+01 | 5.1E-07 | 3.0E-04 | 2E-03 | 3.4E+00 | 1.9E-06 | 3.0E-04 | 6E-03 |
| Nickel | 100% | 5.5E-07 | 9.0E+00 | 4.9E-06 | 2.0E-02 | 2E-04 | 1.6E+01 | 8.9E-06 | 2.0E-02 | 4E-04 |
| Vanadium | 100% | 5.5E-07 | 1.5E+01 | 8.0E-06 | 7.0E-03 | 1E-03 | 1.6E+01 | 1.3E-05 | 7.0E-03 | 2E-03 |

Estimated hazard index average concentration = 1E-Q1

Estimated hazard index maximum concentration = 4E-01

**TABLE 15**

**Noncarcinogenic Risk Characterization**
**Incidental Ingestion - Current and Future**
**Surface Soil - Drainage Ditch**

**Children Ages 1 to 6**

| Chemical | Relative Absorption Factor | Exposure Factor kg/kg/day | Average: Exposure Conc. mg/kg | Average: Average Daily Dose mg/kg/day | Average: Reference Dose mg/kg/day | Average: Hazard Quotients | Maximum: Exposure Conc. mg/kg | Maximum: Average Daily Dose mg/kg/day | Maximum: Reference Dose mg/kg/day | Maximum: Hazard Quotients |
|---|---|---|---|---|---|---|---|---|---|---|
| Semivolatile Organic Compounds | | | | | | | | | | |
| Benzo (a) anthracene | 100% | 5.1E-06 | 1.6E+00 | 8.2E-06 | ND | NC | 7.1E+00 | 3.6E-05 | ND | NC |
| Benzo (a) pyrene | 100% | 5.1E-06 | 1.8E+00 | 9.3E-06 | ND | NC | 8.4E+00 | 4.3E-05 | ND | NC |
| Benzo (a) fluoranthene | 100% | 5.1E-06 | 2.4E+00 | 1.2E-05 | ND | NC | 1.3E+01 | 6.6E-05 | ND | NC |
| Benzo (g,h,i) perylene | 100% | 5.1E-06 | 2.2E+00 | 1.1E-05 | 4.0E-03 | 3E-03 | 1.4E+01 | 7.2E-05 | 4.0E-03 | 2E-02 |
| Benzo (k) fluoranthene | 100% | 5.1E-06 | 1.8E+00 | 9.3E-06 | ND | NC | 7.2E+00 | 3.7E-05 | ND | NC |
| Chrysene | 100% | 5.1E-06 | 2.2E+00 | 1.2E-05 | ND | NC | 1.1E+01 | 5.6E-05 | ND | NC |
| Indeno (1,2,3-c,d)pyrene | 100% | 5.1E-06 | 1.8E+00 | 9.4E-06 | ND | NC | 1.1E+01 | 5.6E-05 | ND | NC |
| Phenanthrene | 100% | 5.1E-06 | 1.9E+00 | 9.7E-06 | 4.0E-03 | 2E-03 | 7.9E+00 | 4.0E-05 | 4.0E-03 | 1E-02 |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 30% | 5.1E-06 | 4.5E-01 | 6.9E-07 | ND | NC | 2.6E+00 | 4.0E-06 | ND | NC |
| Aroclor-1254 | 30% | 5.1E-06 | 2.1E-01 | 3.2E-07 | ND | NC | 7.2E+01 | 1.1E-06 | ND | NC |
| Inorganics | | | | | | | | | | |
| Antimony | 100% | 5.1E-06 | 2.1E+01 | 1.1E-04 | 4.0E-04 | 3E-01 | 7.9E+01 | 4.0E-04 | 4.0E-04 | 1E+00 |
| Arsenic | 100% | 5.1E-06 | 1.8E+01 | 9.1E-05 | 3.0E-04 | 3E-01 | 4.9E+01 | 2.5E-04 | 3.0E-04 | 8E-01 |
| Chromium | 100% | 5.1E-06 | 3.0E+02 | 1.5E-03 | 5.0E-03 | 3E-01 | 1.2E+03 | 6.0E-03 | 5.0E-03 | 1E+00 |
| Manganese | 100% | 5.1E-06 | 2.7E+02 | 1.4E-03 | 5.0E-03 | 3E-01 | 5.6E+02 | 2.9E-03 | 5.0E-03 | 6E-01 |
| Mercury | 100% | 5.1E-06 | 9.2E+01 | 4.7E-06 | 3.0E-04 | 2E-02 | 3.4E+00 | 1.7E-05 | 3.0E-04 | 6E-02 |
| Nickel | 100% | 5.1E-06 | 9.0E+00 | 4.6E-05 | 2.0E-02 | 2E-03 | 1.6E+01 | 8.3E-05 | 2.0E-02 | 4E-03 |
| Vanadium | 100% | 5.1E-06 | 1.5E+01 | 7.5E-05 | 7.0E-03 | 1E-02 | 2.3E+01 | 1.2E-04 | 7.0E-03 | 2E-02 |

| | | | |
|---|---|---|---|
| Estimated hazard index average concentration = | 1E+00 | Estimated hazard index maximum concentration = | 4E+00 |
| Total lifetime hazard index average concentration = | 1E+00 | Total lifetime hazard index maximum concentration = | 4E+00 |

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**TABLE 16**
**Carcinogenic Risk Characterization**
**Incidental Ingestion - Current and Future**
**Surface Soil - Drainage Ditch**



**Adults**

| | | | | Average | | | | Maximum | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Chemical | Relative | Exposure | Exposure | Average | Cancer | Incremental | Exposure | Average | Cancer | Incremental |
| | Absorption | Factor | Conc. | Daily | Potency | Cancer | Conc. | Daily | Potency | Cancer |
| Factor | | Dose | | | | Dose | | | | |
| | Factor | | | Dose | Factor | Risk | | Dose | Factor | Risk |
| | | kg/kg/day | mg/kg | mg/kg/day | mg/kg/day - 1 | | mg/kg | mg/kg/day | mg/kg/day - 1 | |
| Semivolatile Organic Compounds | | | | | | | | | | |
| Benzo (a) anthracene | 100% | 1.9E-07 | 1.6E+00 | 3.0E-07 | 7.3E-01 | 2E-07 | 7.1E+00 | 1.3E-06 | 7.3E-01 | 1E-06 |
| Benzo (a) pyrene | 100% | 1.9E-07 | 1.8E+00 | 3.4E-07 | 7.3E+00 | 2E-06 | 8.4E+00 | 1.6E-06 | 7.3E+00 | 1E-05 |
| Benzo (a) fluoranthene | 100% | 1.9E-07 | 2.4E+00 | 4.5E-07 | 7.3E-01 | 3E-07 | 1.3E+01 | 2.4E-06 | 7.3E-01 | 2E-06 |
| Benzo (g,h,i) perylene | 100% | 1.9E-07 | 2.2E+00 | 4.2E-07 | ND | NC | 1.4E+01 | 2.6E-06 | ND | NC |
| Benzo (k) fluoranthene | 100% | 1.9E-07 | 1.8E+00 | 3.4E-07 | 7.3E-02 | 2E-08 | 7.2E+00 | 1.4E-06 | 7.3E-02 | 1E-07 |
| Chrysene | 100% | 1.9E-07 | 2.2E+00 | 4.2E-07 | 7.3E-03 | 3E-09 | 1.1E+01 | 2.1E-06 | 7.3E-03 | 2E-08 |
| Indeno (1,2,3-c,d)pyrene | 100% | 1.9E-07 | 1.8E+00 | 3.5E-07 | 7.3E-01 | 3E-07 | 1.1E+01 | 2.1E-06 | 7.3E-01 | 2E-06 |
| Phenanthrene | 100% | 1.9E-07 | 1.9E+00 | 3.6E-07 | ND | NC | 7.9E+00 | 1.5E-06 | ND | NC |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 30% | 1.9E-07 | 4.5E-01 | 2.5E-08 | 7.7E+00 | 2E-07 | 2.6E+00 | 1.5E-07 | 7.7E+00 | 1E-06 |
| Aroclor-1254 | 30% | 1.9E-07 | 2.1E-01 | 1.2E-08 | 7.7E+00 | 9E-08 | 7.2E+01 | 4.1E-07 | 7.7E+00 | 3E-07 |
| Inorganics | | | | | | | | | | |
| Antimony | 100% | 1.9E-07 | 2.1E+01 | 4.0E-06 | ND | NC | 7.9E+01 | 1.5E-05 | ND | NC |
| Arsenic | 100% | 1.9E-07 | 1.8E+01 | 3.3E-06 | 1.8E+00 | 6E-06 | 4.9E+01 | 9.3E-06 | 1.8E+00 | NC |
| Chromium | 100% | 1.9E-07 | 3.0E+02 | 5.6E-05 | ND | NC | 1.2E+03 | 2.2E-04 | ND | NC |
| Manganese | 100% | 1.9E-07 | 2.7E+02 | 5.1E-05 | ND | NC | 5.6E+02 | 1.1E-04 | ND | NC |
| Mercury | 100% | 1.9E-07 | 9.2E+01 | 1.7E-07 | ND | NC | 3.4E+00 | 6.4E-07 | ND | NC |
| Nickel | 100% | 1.9E-07 | 9.0E+00 | 1.7E-06 | ND | NC | 1.6E+01 | 3.1E-06 | ND | NC |
| Vanadium | 100% | 1.9E-07 | 1.5E+01 | 2.8E-06 | ND | NC | 2.3E+01 | 4.4E-06 | ND | NC |
| | | | | Estimated incremental cancer risk average concentration = | | 9E-06 | | Estimated incremental cancer risk maximum concentration = | | 3E-05 |

Please refer to Attachment #1, and the reference for this table, for the correct Hazard Quotients and Hazard Index numbers associated with this exposure pathway.

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**TABLE 12**
**Carcinogenic Risk Characterization**
**Incidental Ingestion - Future**
**Surface Soil(1 to 10 feet) - Elm Street**

Please refer to Attachment #1, and the reference for this table, for the correct Hazard Quotients and Hazard Index numbers associated with this exposure pathway. 2

**Adults**

| | | | Average | | | | Maximum | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Chemical | Relative Absorption Factor | Exposure Factor kg/kg/day | Exposure Conc. mg/kg | Average Daily Dose mg/kg/day | Cancer Potency Factor mg/kg/day - 1 | Incremental Cancer Risk | Exposure Conc. mg/kg | Average Daily Dose mg/kg/day | Cancer Potency Factor mg/kg/day - 1 | Incremental Cancer Risk |
| Semivolatile Organic Compounds | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | 100% | 1.9E-07 | 1.9 | 3.6E-07 | ND | NC | 8.8 | 1.7E-06 | ND | NC |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 30% | 1.9E-07 | 1010 | 5.7E-05 | 7.7E+00 | 4E-04 | 5000 | 2.8E-04 | 7.7E+00 | 2E-03 |
| Inorganics | | | | | | | | | | |
| Arsenic | 100% | 1.9E-07 | 10.7 | 2.0E-06 | 1.8E+00 | 4E-06 | 19.3 | 3.6E-06 | 1.8E+00 | 6E-06 |
| Chromium | 100% | 1.9E-07 | 13.9 | 2.6E-06 | ND | NC | 23.8 | 4.5E-06 | ND | NC |
| Lead | 100% | 1.9E-07 | 38.8 | 7.3E-06 | ND | NC | 81.1 | 1.5E-05 | ND | NC |
| Manganese | 100% | 1.9E-07 | 116 | 2.2E-05 | ND | NC | 208 | 3.9E-05 | ND | NC |
| Vanadium | 100% | 1.9E-07 | 12.0 | 2.3E-06 | ND | NC | 22.6 | 4.2E-06 | ND | NC |

Estimated incremental cancer risk average concentration = 4E-04
Estimated incremental cancer risk maximum concentration = 2E-03

**Children Ages 1 to 6**

| | | | Average | | | | Maximum | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Chemical | Relative Absorption Factor | Exposure Factor kg/kg/day | Exposure Conc. mg/kg | Average Daily Dose mg/kg/day | Cancer Potency Factor mg/kg/day - 1 | Incremental Cancer Risk | Exposure Conc. mg/kg | Average Daily Dose mg/kg/day | Cancer Potency Factor mg/kg/day - 1 | Incremental Cancer Risk |
| Semivolatile Organic Compounds | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | 100% | 4.4E-07 | 1.9 | 8.3E-07 | ND | NC | 8.8 | 3.9E-06 | ND | NC |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 30% | 4.4E-07 | 1010 | 1.3E-04 | 7.7E+00 | 1E-03 | 5000 | 6.6E-04 | 7.7E+00 | 5E-03 |
| Inorganics | | | | | | | | | | |
| Arsenic | 100% | 4.4E-07 | 10.7 | 4.7E-06 | 1.8E+00 | 8E-06 | 19.3 | 8.5E-06 | 1.8E+00 | 1E-05 |
| Chromium | 100% | 4.4E-07 | 13.9 | 6.1E-06 | ND | NC | 23.8 | 1.0E-05 | ND | NC |
| Lead | 100% | 4.4E-07 | 38.8 | 1.7E-05 | ND | NC | 81.1 | 3.6E-05 | ND | NC |
| Manganese | 100% | 4.4E-07 | 116 | 5.1E-05 | ND | NC | 208 | 9.1E-05 | ND | NC |
| Vanadium | 100% | 4.4E-07 | 12.0 | 5.3E-06 | ND | NC | 22.6 | 9.9E-06 | ND | NC |

Estimated incremental cancer risk average concentration = 1E-03
Estimated incremental cancer risk maximum concentration = 5E-03

Total lifetime incremental cancer risk average concentration = 1E-03
Total lifetime incremental cancer risk maximum concentration = 7E-03

<IMG SRC 9812403C>

**TABLE 13**
**NonCarcinogenic Risk Characterization**
**Dermal Contact - Future**
**Surface Soil(1 to 10 feet) - Elm Street**

Please refer to Attachment #1, and the reference for this table, for the correct Hazard Quotients and Hazard Index numbers associated with this exposure pathway.

**Adults**

| Chemical | Absorption Factor | Exposure Factor kg/kg/day | Average Exposure Conc. mg/kg | Average Dermally Absorbed Dose mg/kg/day | Average Oral Reference Dose mg/kg/day | Average Hazard Quotients | Maximum Exposure Conc. mg/kg | Maximum Dermally Absorbed Dose mg/kg/day | Maximum Oral Reference Dose mg/kg/day | Maximum Hazard Quotients |
|---|---|---|---|---|---|---|---|---|---|---|
| Semivolatile Organic Compounds | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | NA | 3.2E-05 | 1.90 | NC | 1.0E-02 | NC | 8.80 | NC | 1.0E-02 | NC |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 6% | 3.2E-05 | 1010 | 1.9E-03 | ND | NC | 5000 | 9.5E-03 | ND | NC |
| Inorganics | | | | | | | | | | |
| Arsenic | NA | 3.2E-05 | 10.7 | NC | 3.0E-04 | NC | 19.3 | NC | 3.0E-04 | NC |
| Chromium | NA | 3.2E-05 | 13.90 | NC | 5.0E-03 | NC | 23.8 | NC | 5.0E-03 | NC |
| Lead | NA | 3.2E-05 | 38.8 | NC | ND | NC | 81.1 | NC | ND | NC |
| Manganese | NA | 3.2E-05 | 116 | NC | 5.0E-03 | NC | 208 | NC | 5.0E-03 | NC |
| Vanadium | NA | 3.2E-05 | 12.0 | NC | 7.0E-03 | NC | 22.6 | NC | 7.0E-03 | NC |

**Children Ages 1 to 6**

| Chemical | Absorption Factor | Exposure Factor kg/kg/day | Average Exposure Conc. mg/kg | Average Dermally Absorbed Dose mg/kg/day | Average Oral Reference Dose mg/kg/day | Average Hazard Quotients | Maximum Exposure Conc. mg/kg | Maximum Dermally Absorbed Dose mg/kg/day | Maximum Oral Reference Dose mg/kg/day | Maximum Hazard Quotients |
|---|---|---|---|---|---|---|---|---|---|---|
| Semivolatile Organic Compounds | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | NA | 5.1E-05 | 1.90 | NC | 1.0E-02 | NC | 8.80 | NC | 1.0E-02 | NC |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 6% | 5.1E-05 | 1010 | 3.1E-03 | ND | NC | 5000 | 1.5E-02 | ND | NC |
| Inorganics | | | | | | | | | | |
| Arsenic | NA | 5.1E-05 | 10.7 | NC | 3.0E-04 | NC | 19.3 | NC | 3.0E-04 | NC |
| Chromium | NA | 5.1E-05 | 13.9 | NC | 5.0E-03 | NC | 23.8 | NC | 5.0E-03 | NC |
| Lead | NA | 5.1E-05 | 38.8 | NC | ND | NC | 81.1 | NC | ND | NC |
| Manganese | NA | 5.1E-05 | 116 | NC | 5.0E-03 | NC | 208 | NC | 5.0E-03 | NC |
| Vanadium | NA | 5.1E-05 | 12.0 | NC | 7.0E-03 | NC | 22.6 | NC | 7.0E-03 | NC |
| | | | | | Estimated Hazard index average concentration = | NC | | | Estimated hazard index maximum concentration = | NC |
| | | | | | Total hazard index average concentration = | NC | | | Total hazard index maximum concentration = | NC |

<IMG SRC 9812403D>

**TABLE 14**
**Carcinogenic Risk Characterization**
**Dermal Contact - Future**
**Surface Soil(1 to 10 feet) - Elm Street**

Please refer to Attachment #1, and the reference for this table, for the correct Hazard Quotients and Hazard Index numbers associated with this exposure pathway.

**Adults**

| | | Average | | | | | Maximum | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Chemical | Absorption Factor | Exposure Factor kg/kg/day | Exposure Conc. mg/kg | Dermally Absorbed Dose mg/kg/day | Cancer Potency Factor mg/kg/day - 1 | Incremental Cancer Risk | Exposure Conc. mg/kg | Dermally Absorbed Dose mg/kg/day | Cancer Potency Factory mg/kg/day - 1 | Incremental Cancer Risk |
| Semivolatile Organic Compounds | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | NA | 1.1E-05 | 1.90 | NC | ND | NC | 8.80 | NC | ND | NC |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 6% | 1.1E-05 | 1010 | 6.6E-04 | 7.7E+00 | 5E-03 | 5000 | 3.3E-03 | 7.7E+00 | 3E-02 |
| Inorganics | | | | | | | | | | |
| Arsenic | NA | 1.1E-05 | 10.7 | NC | 1.8E+00 | NC | 19.3 | NC | 1.8E+00 | NC |
| Chromium | NA | 1.1E-05 | 13.9 | NC | ND | NC | 23.8 | NC | ND | NC |
| Lead | NA | 1.1E-05 | 38.8 | NC | ND | NC | 81.1 | NC | ND | NC |
| Manganese | NA | 1.1E-05 | 116 | NC | ND | NC | 208 | NC | ND | NC |
| Vanadium | NA | 1.1E-05 | 12.0 | NC | ND | NC | 22.6 | NC | ND | NC |

Estimated incremental cancer risk average concentration = 5E-03
Estimated incremental cancer risk maximum concentration = 3E-02

Children Ages 1 to 6

| | | Average | | | | | Maximum | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Chemical | Absorption Factor | Exposure Factor kg/kg/day | Exposure Conc. mg/kg | Dermally Absorbed Dose mg/kg/day | Cancer Potency Factor mg/kg/day - 1 | Incremental Cancer Risk | Exposure Conc. mg/kg | Dermally Absorbed Dose mg/kg/day | Cancer Potency Factor mg/kg/day - 1 | Incremental Cancer Risk |
| Semivolatile Organic Compounds | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | NA | 4.4E-06 | 1.90 | NC | ND | NC | 8.80 | NC | ND | NC |
| Pesticides/PCBs | | | | | | | | | | |
| Aroclor-1248 | 6% | 4.4E-06 | 1010 | 2.7E-04 | 7.7E+00 | 2E-03 | 5000 | 1.3E-03 | 7.7E+00 | 1E-02 |
| Inorganics | | | | | | | | | | |
| Arsenic | NA | 4.4E-06 | 10.7 | NC | 1.8E+00 | NC | 19.3 | NC | 1.8E+00 | NC |
| Chromium | NA | 4.4E-06 | 13.9 | NC | ND | NC | 23.8 | NC | ND | NC |
| Lead | NA | 4.4E-06 | 38.8 | NC | ND | NC | 81.1 | NC | ND | NC |
| Manganese | NA | 4.4E-06 | 116 | NC | ND | NC | 208 | NC | ND | NC |
| Vanadium | NA | 4.4E-06 | 12.0 | NC | ND | NC | 22.6 | NC | ND | NC |

Estimated incremental cancer risk average concentration = 2E-03
Estimated incremental cancer risk maximum concentration = 1E-02
Total lifetime incremental cancer risk average concentration = 7E-03
Total lifetime incremental cancer risk maximum concentration = 4E-02

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<IMG SRC 9812403W>

**TABLE 24**
**Noncarcinogenic Risk Characterization**
**Ingestion of Drinking Water - Ground Water**
**Future - Adults**

Please refer to Attachment #1, and the reference for this table, for the correct Hazard Quotients and Hazard Index numbers associated with this exposure pathway.

| | | Average | | | | Maximum | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chemical | Exposure Factor | Exposure Conc. | Average Daily Dose | Oral reference Dose | Hazard Quotients | Exposure Conc. | Avarage Daily Dose | Oral Reference Dose | Hazard Quotients |
| | L\kg\day | mg\L | mg\kg\day | mg\kg\day | | mg\L | mg\kg\day | mg\kg\day | |
| Volatile Organic Compounds | 2.7E-02 | 5.75E-03 | 1.6E-04 | ND | NC | 1.80E-02 | 4.9E-04 | ND | NC |
| 1,2-Dichloroethane | 2.7E-02 | 1.81E-01 | 5.0E-03 | ND | NC | 4.40E+00 | 1.2E-01 | ND | NC |
| Ethylbenzene | 2.7E-02 | 4.10E-01 | 1.1E-02 | 1.0E-01 | 1.12E-01 | 8.40E+00 | 2.3E-01 | 1.0E-01 | 2.30E+00 |
| Toluene | 2.7E-02 | 8.47E-01 | 2.3E-02 | 2.0E-01 | 1.16E-01 | 1.90E+01 | 5.2E-01 | 2.0E-01 | 2.60E+00 |
| Trichloroethene | 2.7E-02 | 2.37E-01 | 6.5E-03 | ND | NC | 5.70E+00 | 1.6E-01 | ND | NC |
| Xylenes (Total) | 2.7E-02 | 2.79E+00 | 7.7E-02 | 2.0E+00 | 3.83E-02 | 5.50E+01 | 1.5E+00 | 2.0E+00 | 7.53E-01 |
| Semivolatile Organic Compounds | | | | | | | | | |
| 1,2,4-Trichlorobenzene | 2.7E-02 | 9.61E-03 | 2.6E-04 | 1.0E-02 | 2.63E-02 | 1.40E-01 | 3.8E-03 | 1.0E-02 | 3.84E-01 |
| Naphthalene | 2.7E-02 | 6.54E-03 | 1.8E-04 | 4.0E-03 | 4.48E-02 | 4.00E-02 | 1.1E-03 | 4.0E-03 | 2.74E-01 |
| Pesticides/PCBs | | | | | | | | | |
| Aroclor-1221 | 2.7E-02 | 6.35E-03 | 1.7E-04 | ND | NC | 1.40E-01 | 3.8E-03 | ND | NC |
| Aroclor-1242 | 2.7E-02 | 5.93E-03 | 1.6E-04 | ND | NC | 1.30E-01 | 3.6E-03 | ND | NC |
| Aroclor-1248 | 2.7E-02 | 3.84E-04 | 1.1E-05 | ND | NC | 7.40E-04 | 2.0E-05 | ND | NC |
| Inorganics | | | | | | | | | |
| Arsenic | 2.7E-02 | 1.69E-02 | 4.6E-05 | 3.0E-04 | NC | 1.77E-02 | 4.8E-04 | 3.0E-04 | NC |
| Lead | 2.7E-02 | 2.93E-03 | 8.0E-05 | ND | NC | 1.58E-02 | 4.3E-04 | ND | NC |
| Manganese | 2.7E-02 | 1.33E-01 | 3.7E-03 | 5.0E-03 | 7.30E-01 | 8.50E-01 | 2.3E-02 | 5.0E-03 | 4.66E+00 |
| | | | Estimated hazard index average concentration = | | 1E+00 | | Estimated hazard index maximum concentration = | | 1E+01 |

Notes:
Because of the uncertainty in inhalation models at this time, EPA Region 1 suggests that this pathway be qualitatively evaluated by assuming that the exposure dose from inhalation is equal to that received from ingesting 2L of ground water. Thus, total risk from groundwater would be double that from ingestion.
ND = Toxicity value not available from EPA.
NC = Not calculated.

$$E = \text{Exposure Factor (L/kg/day)} = \frac{IR \times EF \times ED}{BW \times AT}$$

| | |
|---|---|
| IR = Drinking water ingestion rate, adult (L/day) | 2 |
| EF = Exposure frequency (USEPA, 1991)(days/yr) | 350 |
| ED = Exposure duration (years) | 30 |
| AT = Averaging time, non-carcinogenic (30 years x 365 days/year) | 10,950 |
| BW = Body weight (USEPA,1991)(kg) | 70 |

Exposure Factor (noncarcinogenic) 2.7E-02
Average daily dose (mg/kg/day)= exposure concentration x exposure factor

Hazard Quotients for PCB 1248 and 1254

**Attachment #1**

**Table 7 Ingestion of Soil - SS - Mill and Elm St. - Adults**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 2.1E-005 | 2.00E-005 | 1.05 |
| 1254 | 1.9E-006 | 2.00E-005 | 0.095 |
| | | | 1.1 total HI for PCBs |
| | | | 1.1 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 2.1E-004 | 2.00E-005 | 10.5 |
| 1254 | 2.5E-005 | 2.00E-005 | 1.25 |
| | | | 11.8 total HI for PCBs |
| | | | 11.9 Total HI (at bottom of table) |

**TABLE 7 Ingestion of Soil - SS - Mill and Elm St. - Child 1-6**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 2.00E-004 | 2.00E-005 | 10 |
| 1254 | 1.7E-005 | 2.00E-005 | 0.85 |
| | | | 10.9 total HI for PCBs |
| | | | 11.3 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 2.0E-003 | 2.00E-005 | 100 |
| 1254 | 2.3E-004 | 2.00E-005 | 11.5 |
| | | | 111.5 total HI for PCBs |
| | | | 112.5 Total HI (at bottom of Table) |

**TABLE 9 - Dermal Contact - SS - Mill and Elm St.-Adult**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 2.5E-004 | 2.00E-005 | 12.5 |
| 1254 | 2.2E-005 | 2.00E-005 | 1.1 |
| | | | 13.6 total HI for PCBs |
| | | | 13.6 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 2.5E-003 | 2.00E-005 | 125 |
| 1254 | 2.9E-004 | 2.00E-005 | 14.5 |
| | | | 139.5 total HI for PCBs |
| | | | 139.5 Total HI (at bottom of table) |

**TABLE 9 Dermal Contact - SS - Mill and Elm St. - child 1-6**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 4-00E-004 | 2.00E-005 | 20 |
| 1254 | 3.5E-005 | 2.00E-005 | 1.75 |
| | | | 21.8 total HI for PCBs |
| | | | 21.8 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 4.00E-003 | 2-00E-005 | 200 |
| 1254 | 4.6E-004 | 2.00E-005 | 23 |
| | | | 223.0 total HI for PCBs |
| | | | 223 Total HI (at bottom of table) |

**TABLE 11 ingestion - subsurface soil - Elm St - adult**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 1.7E-004 | 2-00E-005 | 8.5 |
| | | | 21.8 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 8.2E-004 | 2.00E-005 | 41 |
| | | | 41 Total HI (at bottom of table) |

**TABLE 11 - ingestion - subsurface soil - Elm St. - child 1-6**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 1.5E-003 | 2.00E-005 | 75 |
| | | | 75.4 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 7.7E-003 | 2.00E-005 | 385 |
| | | | 385.7 Total HI (at bottom of table) |

**TABLE 13 - dermal - subsurface soil - Elm St - adult**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 1.9E-003 | 2.00E-005 | 95 |
| | | | 95.0 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 9.5E-003 | 2.00E-005 | 475 |
| | | | 475 Total HI (at bottom of table) |

**TABLE 13 - dermal - subsurface soil - Elm St - child 1-6**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 3.1E-003 | 2.00E-005 | 155 |
| | | | 155.0 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 1.5E-002 | 2.00E-005 | 750 |
| | | | 750 Total HI (at bottom of table) |

**TABLE 15 - ingestion - drainage ditch - adult**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 7.4E-008 | 2.00E-005 | 0.0037 |
| 1254 | 3.4E-008 | 2.00E-005 | 0.0017 |

0.005 total HI for PCBs
0.1 Total HI (at bottom of table)

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 4.3E-007 | 2.00E-005 | 0.0215 |
| 1254 | 1.2E-007 | 2.00E-005 | 0.006 |

0.028 total HI for PCBs
0.43 Total HI (at bottom of table)

**TABLE 15 ingestion - drainage ditch - child 1-6**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 6.9E-007 | 2.00E-005 | 0.0345 |
| 1254 | 3.2E-007 | 2.00E-005 | 0.016 |

0.051 total HI for PCBs
1.0 Total HI (at bottom of table)

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 4.00E-006 | 2.00E-005 | 0.2 |
| 1254 | 1.1E-006 | 2.00E-005 | 0.055 |

0.255 total HI for PCBs
4.3 Total HI (at bottom of table)

**TABLE 17 - dermal - drainage ditch - adult**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 8.5E-007 | 2.00E-005 | 0.0425 |
| 1254 | 3.9E-007 | 2.00E-005 | 0.0195 |

0.062 total HI for PCBs
0.06 Total HI (at bottom of table)

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 5.00E-006 | 2.00E-005 | 0.25 |
| 1254 | 1.4E-006 | 2.00E-005 | 0.07 |

0.320 total HI for PCBs
0.32 Total HI (at bottom of table)

**TABLE 17 dermal - drainage ditch - child 1-6**

| Chemical | AVERAGE Add | RfD | HQ | |
|---|---|---|---|---|
| 1248 | 1.4E-006 | 2.00E-005 | 0.07 | |
| 1254 | 6.3E-007 | 2.00E-005 | 0.0315 | |
| | | | 0.102 | total HI for PCBs |
| | | | 0.10 | Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ | |
|---|---|---|---|---|
| 1248 | 8.00E-006 | 2.00E-005 | 0.4 | |
| 1254 | 2.2E-006 | 2.00E-005 | 0.11 | |
| | | | 0.510 | total HI for PCBs |
| | | | 0.5 | Total HI (at bottom of table) |

**TABLE 19 - ing veg - drainage ditch - adult**

| Chemical | AVERAGE Add | RfD | HQ | |
|---|---|---|---|---|
| 1248 | 4.5E-006 | 2.00E-005 | 0.225 | |
| 1254 | 2.1E-006 | 2.00E-005 | 0.105 | |
| | | | 0.330 | total HI for PCBs |
| | | | 0.40 | Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ | |
|---|---|---|---|---|
| 1248 | 2.6E-005 | 2.00E-005 | 1.3 | |
| 1254 | 7.2E-006 | 2.00E-005 | 0.36 | |
| | | | 1.660 | total HI for PCBs |
| | | | 1.7 | Total HI (at bottom of table) |

**TABLE 20 - ing - sediment - drainage ditch - adult**

| Chemical | AVERAGE Add | RfD | HQ | |
|---|---|---|---|---|
| 1248 | 1.6E-008 | 2.00E-005 | 0.0008 | |
| | | | 0.002 | Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ | |
|---|---|---|---|---|
| 1248 | 4.3E-008 | 2.00E-005 | 0.00215 | |
| | | | 0.009 | Total HI (at bottom of table) |

**TABLE 20 ing - sediment - drainage ditch - child 1-6**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 1.5E-007 | 2.00E-005 | 0.0075 |
| | | | 0.020 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 4.1E-007 | 2.00E-005 | 0.0205 |
| | | | 0.08 Total HI (at bottom of table) |

**TABLE 22 dermal - sediment - drainage ditch - adult**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 6.5E-007 | 2.00E-005 | 0.0325 |
| | | | 0.030 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 1.7E-006 | 2.00E-005 | 0.085 |
| | | | 0.09 Total HI (at bottom of table) |

**TABLE 22 dermal - sediment - drainage - child 1-6**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 3.02E-006 | 2.00E-005 | 0.151 |
| | | | 0.150 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 8.11E-006 | 2.00E-005 | 0.4055 |
| | | | 0.4 Total HI (at bottom of table) |

**Table 6-29 - ingestion - sw - souhegan river - adults - see BRA 7/1/94**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 1.6E-008 | 2.00E-005 | 0.0008 |
| | | | 0.001 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 2.9E-008 | 2.00E-005 | 0.00145 |
| | | | 0.003 Total HI (at bottom of table) |

**Table 6-29 - ingestion - sw - souhegan river - child 1-6 - see BRA 7/1/94**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 7.4E-008 | 2.00E-005 | 0.0037 |
| | | | 0.007 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 1.3E-007 | 2.00E-005 | 0.0065 |
| | | | 0.01 Total HI (at bottom of table) |

**TABLE 24 Ingestion - GW-Adult - see 7/1/94 BRA**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1221 | 1.7E-004 | 2.00E-005 | 8.5 |
| 1242 | 1.6E-004 | 2.00E-005 | 8 |
| 1248 | 1.1E-005 | 2.00E-005 | 0.55 |
| | | | 17.1 total HI for PCBs |
| | | | 18.1 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1221 | 3.8E-003 | 2.00E-005 | 190 |
| 1242 | 3.6E-003 | 2.00E-005 | 180 |
| 1248 | 2.00E-005 | 2.00E-005 | 1 |
| | | | 371.0 total HI for PCBs |
| | | | 381 Total HI (at bottom of table) |

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 1.6E-008 | 2.00E-005 | 0.0008 |
| | | | 0.002 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 4.3E-008 | 2.00E-005 | 0.00215 |
| | | | 0.009 Total HI (at bottom of table) |

**TABLE 20 ing - sediment - drainage ditch - child 1-6**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 1.5E-007 | 2.00E-005 | 0.0075 |
| | | | 0.020 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 4.1E-007 | 2.00E-005 | 0.0205 |
| | | | 0.08 Total HI (at bottom of table) |

**TABLE 22 dermal - sediment - drainage ditch - adult**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 6.5E-007 | 2.00E-005 | 0.0325 |
| | | | 0.030 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1248 | 1.7E-006 | 2.00E-005 | 0.085 |
| | | | 0.09 Total HI (at bottom of table) |

**TABLE 22 dermal - sediment - drainage ditch - child 1-6**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 3.02E-006 | 2.00E-005 | 0.151 |
| | | | 0.150 Total HI (at bottom of table) |

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1248 | 8.11E-006 | 2.00E-005 | 0.4055 |

**TABLE 24 Ingestion - GW-Adult - see 7/1/94 BRA**

| Chemical | AVERAGE Add | RfD | HQ |
|---|---|---|---|
| 1221 | 1.7E-004 | 2.00E-005 | 8.5 |
| 1242 | 1.6E-004 | 2.00E-005 | 8 |
| 1248 | 1.1E-005 | 2.00E-005 | 0.55 |
| | | | 17.1 total HI for PCBs |
| | | | 18.1 Total HI (at bottom of table) |

| Chemical | MAXIMUM Add | RfD | HQ |
|---|---|---|---|
| 1221 | 3.8E-003 | 2.00E-005 | 190 |
| 1242 | 3.6E-003 | 2.00E-005 | 180 |
| 1248 | 2.00E-005 | 2.00E-005 | 1 |
| | | | 371.0 total HI for PCBs |
| | | | 381 Total HI (at bottom of table) |

<IMG SRC 98124O4>
<IMG SRC 98124O5>
<IMG SRC 98124O6>
<IMG SRC 98124O7>
<IMG SRC 98124O8>
<IMG SRC 98124O9>
<IMG SRC 98124P>
<IMG SRC 98124P1>
<IMG SRC 98124P2>
<IMG SRC 98124P3>

**APPENDIX A**

<IMG SRC 98124P4>

Subject: Declaration of Concurrence

Dear Ms. Meaney:

The New Hampshire Department of Environmental Services (Department) has reviewed and concurs with the "Record of Decision (ROD) Summary for the Fletcher Paint Works and Storage Facility Superfund Site OU-1" dated September 1998. EPA prepared the ROD in accordance with the provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. The ROD addresses the remedial actions necessary under CERCLA, as amended, to manage potential threats to human health and the environment at the Fletcher Paint Works and Storage Facility Superfund Site (Fletcher Superfund Site.)

Remedy

The Environmental Protection Agency has selected a preferred remedy for operable unit-1 (OU-1) of the Fletcher Superfund Site. OU-1 includes the areas identified as the Elm Street Site, the Mill Street Site, and the drainage ditch/culvert system that flows from the Mill Street Site to the Elm Street Site and discharges into the Souhegan River. The remedy requires cleanup of the highest risk, primarily PCB-contaminated soils at the surface and in the subsurface, and installation of a protective covering of clean fill. Institutional controls will prevent exposures to soil and groundwater above appropriate risk levels. Groundwater will be remediated by monitored natural attenuation. A second operable unit will address river sediments and the Keyes Wellfield contamination.

Remedy Components

The preferred remedy has the following components directed at source control and management of contaminated groundwater migration. Contaminated soils will be excavated and treated using on-site thermal desorption. Surface soils will be remediated to PCB levels of 1 mg/kg to a depth of one foot below the surface at Elm Street and Mill Street.

A utility corridor will be defined at the Elm Street Site where future excavation may expose subsurface soils. Cleanup levels for PCBs are established within the utility corridor at 25 mg/kg. Any soil outside the utility corridor will be excavated to a cleanup level of 100 mg/kg PCB the level where PCBs leaching to the groundwater would not exceed the drinking water MCL of 0.5 ug/L. Institutional controls will restrict direct exposures to the subsurface. Demolition of Fletcher's Elm Street facility and removal of underground storage tanks will be required. Also at the Elm Street Site, a polyamide and polyurethane hot spot will be excavated and treated separately.

Different soil cleanup levels were developed at Mill Street because PCBs are present in groundwater at high concentrations attributed to their increased solubility when mixed with other contaminants that are present. Modeling resulted in a cleanup level of 1 mg/kg PCBs that could be left in soils without leaching to the groundwater that would exceed the MCL of 0.5 ug/L.

Both soil cleanup levels may be modified by further analysis with leaching models and/or column testing. Treated soils will be returned to the sites and covered with a soil/sand mix. Long term monitoring of groundwater will be implemented under a Groundwater Management Zone with institutional controls to restrict use.

Significant Changes to the Proposed Plan

EPA issued the preferred alternative of the Proposed Plan in December and presented it to the public January 14, 1997. Changes to the scope of the remedy were made as a result of public comment that include changing the future use assumptions for the Elm Street property and defining a utility corridor where excavation would be allowed with limited restrictions. Soil cleanup levels were then revised to be consistent with risk under the new anticipated uses and activities.

The Proposed Plan's Consistency with State's Remediation Requirements and Policies

The Department has been actively involved in the development and review of the Fletcher Superfund Site OU-1 proposed remedy. The following discussion describes in detail the consistency of the proposed remedy with state policies and requirements.

The proposed remedy is consistent with the Department's "Draft Guidelines for Selection of Natural Attenuation for Groundwater Restoration under Env-Ws 410" in that it meets the guidance for use of natural attenuation at contaminated sites and for monitoring of the natural attenuation process. Long term monitoring and five year reviews in the ROD, which determine the remedy's protectiveness of public health and the environment over time, are consistent with the guidance.

The Department has reviewed the proposed remedy consistent with its Risk Characterization and Management Policy (RCMP.) Under this policy, remedies that do not meet first tier values (S-1) in the RCMP require a health risk assessment. The State's Bureau of Health Risk Assessment has completed this review and concluded that the soil cleanup levels in the proposed plan appear to be protective of human health with appropriate institutional controls. The State stresses that in order for this assessment to be valid, institutional controls must be developed that meet the risk assumptions and they must be strictly maintained.

Env-Ws 410

Env-Ws 410, the Department's Groundwater Protection Rules, establishes statewide groundwater quality standards and the protocols to be used when investigating and remediating contaminated sites. It also allows the scope and aggressiveness of remedial actions necessary to achieve these standards to be selected based on the resource use and value of the groundwater. EPA has designated specific sections of Env-Ws 410 as ARARs. The ROD applies the requirements of Env-Ws 410 as follows:

- GMZ Establishment: Env-Ws 410.26 requires the establishment and containment of contaminated groundwater within a Groundwater Management Zone (GMZ), when violations of Groundwater Quality Standards are present. The ROD includes Env-Ws 410.26 as an ARAR and provides for the establishment of a GMZ with attenuation of groundwater contamination;

- Source Area Treatment, Removal or Containment: Env-Ws 410 requires that sources of continuing groundwater contamination must be either treated or removed and, if treatment or removal are not feasible, the source must be contained. Source areas at both the Elm Street and Mill Street Sites will be excavated to remove contaminants to levels below concern for leaching into groundwater such that they will no longer be contaminant sources. The selected remedy will treat the excavated soil;

- Groundwater Restoration: The remedial action must restore groundwater quality to meet the groundwater quality criteria contained in Env-Ws 410.03. The Fletcher Superfund Site Groundwater Use & Value Determination developed under EPA Guidance and with consultation from the town defined this aquifer as of medium use and value. This EPA Guidance is designed to assist in determining remedial objectives. For a medium use and value designation, the groundwater Remedial Action objectives generally will include the restoration of contaminated groundwater to drinking water standards, within a time frame that is reasonable given the particular circumstances of the site. The source removal action and the monitored natural attenuation provisions in the ROD are functionally equivalent to Env-WS 410's requirement for development and implementation of a remedy that will restore groundwater quality to statewide standards;

- Establishment of Performance Standards: Final and interim objectives and criteria, including specific performance standards are established for the remedial actions. If the remedial actions do not meet the performance standards, additional action may be required. The ROD defines performance standards for surface and subsurface soil zones as part of the remedial action. The ROD includes Env-Ws 410's numerical groundwater quality standards as an ARAR and the NCP requires that these standards be met in a reasonable timeframe (March 8, 1990 Federal Register, p. 8732);

- Long Term Monitoring of the GMZ and Remedy Performance: Env-Ws 410 requires monitoring of the performance of remedial systems and GMZ boundary compliance. The ROD provides for monitoring of the performance and effectiveness of the remedial actions as well as the groundwater quality at the GMZ boundary. A comprehensive detailed review of all environmental monitoring data will be conducted periodically to ensure that the remedial action provides adequate protection of human health and the environment and complies with applicable regulations.

- Institutional Controls; Env-Ws 410.26(e) requires control of the use of groundwater for drinking water within the GMZ either ownership of the overlying land or easement, unless an alternate water supply is available. The remedy includes implementation of controls to restrict groundwater use while contaminant concentrations are in excess of drinking water standards;

Based on the partial use of the Env-Ws 410 as ARARs, the OU-1 ROD is consistent with the approach that would be required to meet our groundwater remediation approach at similar sites within the State.

State Concurrence

The Department, acting on behalf of the State of New Hampshire, concurs that the selected remedy, described in the ROD, satisfies the requirements of CERCLA.

In striving to maximize the effectiveness of limited public and private resources, the Department continues to seek reasonable and practical solutions to the complex challenges associated with contaminated site cleanups. The partnership and dedication of EPA and the Department will speed up the achievement of our mutual environmental goals at this site. As always, the Department stands ready to provide the guidance and assistance that EPA may require to take the actions necessary to protect human health and the environment completely and cost-effectively.

<IMG SRC 98124P5>

cc: Dana Bisbee, Esq., Assistant Commissioner, NHDES
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Richard Boynton, USEPA
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**APPENDIX B**

**Fletcher's Paint Site**
**Responsiveness Summary**

**TOWN OF MILFORD, CITIZENS, AND INTERESTED PARTY COMMENTS**

1. The Town of Milford requested that the Environmental Protection Agency (EPA) revise the Baseline Human Health Risk Assessment (BHHRA) to reflect the town's intention to use Elm Street as a parking lot and to adopt institutional controls to limit the use of the property in perpetuity.

EPA Response: The EPA reviewed the Town's request to change the expected future subsurface use at the Elm Street Site. In the selected remedy, EPA incorporates the Towns comment by limiting future utility maintenance to within designated utility corridors at the Elm Street Site.

The risks presented in the FS and in the Proposed Plan reflect the assumption that in the future, adult and children could be exposed to subsurface soils which were re-deposited on the surface as a result of future excavation or maintenance work. The cleanup levels presented in the Proposed Plan reflected this assumption. Limiting the future excavation potential to within the confines of a utility corridor(s), along, with restrictions placed on unauthorized access into the subsurface at the Elm Street Site as well as surface restrictions on the future use of the Site, eliminate the exposure pathways of dermal contact and ingestion.

EPA considered the TSCA Spill Policy in setting a cleanup level within the utility corridor to 25 mg/kg PCB for the protection of a utility worker who may infrequently access the corridor to perform maintenance and repair.

The surface exposures would remain the same, adult and child exposure through dermal contact and incidental ingestion, since the future use assumption that the Site would become an extension to the Keyes Field recreation area, primarily for the purposes of additional parking would not change.

The remainder of the soils in the subsurface at the Elm Street Site would require long-term management controls and institutional controls for the protection of the groundwater. This is also consistent with the Town's desire, set forth in a letter to the EPA dated March 13, 1998. The selected remedy requires that the subsurface soils, with the exception of the utility corridor, be excavated and treated by thermal desorption wherever concentrations exceed 100 mg/kg PCB, or which through modeling and/or soil column testing show that the PCB MCL of 0.5 ug/l in groundwater will not be exceeded in the future. The determination to alter the cleanup level to any concentration other than the 100 mg/kg PCB will be to the sole discretion of the EPA.

The 100 mg/kg PCB soil cleanup level is based on a leaching analysis of the soils where only a soil cover is needed to protect the groundwater from future leaching of the PCBs into the groundwater above drinking water standards. Erosion and drainage controls will be mostly provided through placement of asphalt over a large portion of the property, consistent with the parking consistent with the future anticipated parking use for the Elm Street Site. Because the soil concentrations remaining in the subsurface are not protective for adult and children users of the Site, minimum 10-inch soil cover as well as 6 inches of asphalt, consistent with TSCA where PCBs will remain in the surface with PCB concentrations of greater than 25 to less than or equal to 100 mg/kg PCBs will be required. Institutional controls in the form of deed restrictions will also be required to prevent unauthorized access to the contaminated subsurface soils in the future, and to protect the integrity of the cover materials.

2. The Town of Milford expressed concern about the potential for Dense Non-Aqueous Phase Liquid (DNAPL) and requested additional studies be conducted.

EPA Response: In undertaking the RI studies at the Site, EPA has always been concerned about the possible presence of dense non-aqueous phase liquids ("DNAPL"). PCBs are characterized a highly viscous DNAPL, when compared to other more familiar chlorinated solvent DNAPLs such as TCE and PCE. EPA has also been concerned with the potential presence of organic contaminants (other than PCBs) that might have enhanced the mobility or solubility of the PCBs in the past, and which may still be enhancing their movement through the soils at the Site. The presence of DNAPLs at the Site, whether free-phase or residual, could cause long-term contamination of the ground water. EPA believes that the selected remedy takes into consideration the potential for DNAPL at the Site.

At the Elm Street Site, there was no evidence that there is currently, or had been in the past, any organic compounds that may have increased the mobility of the PCB contamination. At the Mill Street Site, however, there is significant evidence that there has been enhanced PCB transport. It is unclear however, if the factors that increased the solubility and mobility of the PCB through the subsurface in the past, continues today. The high PCB concentrations in the groundwater at the Mill Street Site could either be as a result of PCB, DNAPL, or the result of other paint related compounds found in the subsurface that have the potential to enhance the transport of the PCBs through the subsurface and/or increase the solubility of the PCBs in the groundwater.

DNAPL sites also are often characterized by having contaminant concentrations that do not generally decrease with depth at the site, but are rather sporadic or increasing concentration with depth, with the majority of the contamination usually lying below the water table. This is because of the dense, less viscous nature of most DNAPLs and the higher capacity to retain contamination within the soil pore areas in the saturated zone. EPA observed during the RI that PCB contamination decreases with depth at the Mill Street Site with approximately 94% of the mass of PCBs at the Site residing in the top 4 feet. This information, combined with the percent level contamination levels found within the surface soils as a result of liquid PCBs being released to the surface, yet the lack of any visual DNAPL on the soils, indicates that there is residual PCB DNAPL in the surface soils at the Site. Residual DNAPL is

While that data is unclear whether or not any of the PCB DNAPL has entered into the bedrock, approximately 20 feet below( data from the RI indicate PCBs contamination within 5 feet of the bedrock surface), calculations show that less than 1% of the PCB mass at the Mill Street Site currently lies below the water table.

The extent of the contamination within the bedrock is uncertain given the limited available bedrock data and the nature of contaminant movement within shallow fractured bedrock systems. While specific PCB congeners have the ability to travel greater distances form the source area, in general, most PCB sites are not characterized by large plumes of PCB contamination. The data is unclear as to whether or not PCBs have migrated away from the source area at the Mill Street Site.

A chlorinated DNAPL plume typically reflects a concentration in the groundwater of between 1 and 10% of the effective solubility of the compound found in the original DNAPL. PCBs are hydrophobic compounds and therefore the PCBs are less likely to move into the groundwater from the soils. At the Mill street Site, the PCB concentrations found in the overburden at MW-07 were 10 and 12 ug/l and up to 270 ug/l in MW-21C, a bedrock well on the Site. These numbers exceed the 1-10% general rule of thumb since the PCB solubility for Arochlor 1242 (the prevalent groundwater PCB contaminant) is approximately 100 ug/l. The actual effective solubility of the PCBs in the groundwater could be even less than the 100ug/l since information obtained from past Fletcher employees revealed that the PCBs released onto the Site were often mixtures of PCBs with other solvents. The effective solubility would take into account the mole fraction of the PCBs in the original mixture.

EPA believes that the high PCB concentrations found in the groundwater at the Mill Street Site reflect an enhanced solubility of the PCBs as a result of interactions with other paint related compounds also likely released as liquids to the surface at the Mill Street Site. This is not to say that DNAPL could not also be affecting the groundwater quality at the Site to some degree. However, a sample of the flocculent material taken from MW-07 A reported to have 1,780 ug/l PCB (Arochlor 1242) without any visual observation of DNAPL. This appears to reflect an extremely high affinity of the PCBs to this material. EPA believes that the majority of the compounds that comprise the floc will be removed during the excavation of the soils and the dewatering action needed to excavate the soils below the water.

The selected remedy sets surface and subsurface soil cleanup levels for the protection of human health through dermal contact, incidental ingestion and ingestion of contaminated groundwater. The selected remedy also requires the establishment of a Groundwater Management Zone (GMZ) consistent with NH's Comprehensive Groundwater Management Policy which requires that the groundwater be monitored to ensure that the contaminant concentrations are decreasing, are not moving beyond the boundaries established by the GMZ, and are not impacting the Souhegan River. Long-term monitoring of the contaminated groundwater, including monitoring of the groundwater within the bedrock, will be conducted until the Interim cleanup levels are met in the future for a period of three consecutive years. Future actions may be necessary, consistent with the NH Comprehensive Groundwater Policy.

An additional comment was made by one of General Electric's (GE's) consultants that the observed enhanced vertical PCB migration may have been caused by the drilling process. However, this concern is unsubstantiated. Continuous soil samples were collected in each of the borings at Mill Street Site. Each of the soil samples was collected using a split-spoon sampler in advance of the drill bit. In other words, elevated PCB concentrations were determined to be present in the subsurface in advance of the drill bit. Therefore all detected soil contamination was present throughout the soil column prior to drilling. Further, monitoring well, MW-07, was only drilled to 12.5 feet with hollow stem augers (a relatively destructive technique). At 12.5 feet, a boulder was encountered and a 4-inch diameter steel casing was set. The remainder of the hole was drilled through a 3-inch casing using drive and wash techniques. Therefore, the more contaminated upper portion of the hole was cased-off from the lower portion of the hole during drilling and well installation activities. In addition, a steel casing at monitoring well, MW-21C, was set down to bedrock, before drilling through the grout into bedrock for installation of the bedrock well. As such, the bedrock was isolated from potential overburden contamination by way of the steel casing.

3. The Town of Milford requested that the differences between clean up standards for Norwood PCB Superfund Site, and Fletcher Paints be evaluated to understand the discrepancy. The stricter standard for Fletcher results in a more expensive and extensive cleanup than that proposed for Norwood, but there is no compelling public health or environmental risk warranting the need

EPA Response: Cleanup levels for each Superfund site are based on the anticipated future uses for the site. Exposure pathways and receptors also vary at each site. It is the evaluation of these factors that determine how the cleanup levels are set for each site.

In determining the exposure receptors and pathways at each site, the risk assessment must address the site specific current and future uses and exposures on the site. For example, the exposure pathway on the main portion of the Norwood Site was anticipated to be used for commercial future uses. At the Fletcher's Paint Site, however, the future use anticipated is that the surface of the Site would be considered recreational. The Fletcher's Paint Site is abutted by residential homes and in close proximity to schools and the Keyes Field. The risk assessment reflects potential exposure scenarios for adult and child trespassers frequenting the Site for recreational purposes. Because the Site abuts residential properties the exposure parameters used to calculate the risks assumed that the adult and child trespassers would frequent the Site 140 days per year.

Two final notes of difference at the two Sites: 1) is that the Norwood Site has been, and is currently operating a multi-million dollar groundwater extraction and treatment system at the site and 2) the Norwood remedy calls for containment of the contaminated soils on the commercial property and cleanup of the remaining soils, consistent with the exposure pathways present for that site. The pump and treat operations were considered in the determination of the Norwood soil remedy. The largest portion of the Fletcher's Paint site (23,600 out of 28,900 yd3) is being cleaned up to standards that are protective of human health through ingestion of contaminated groundwater. Because the source control action addressed all contaminated soil which could impact the groundwater in the future, monitored natural attenuation was selected as the most cost effective management of migration action for the groundwater. Stringent capping requirements as well as additional pump and treat operations would have had to be implemented if soils were left in the subsurface at the Fletcher Site that were not protective of the groundwater in the future.

4. The Town of Milford requested that the EPA increase the subsurface clean up standard for Mill Street from 1 ppm to 500 ppm. They believe the lower standard is not necessary and may result in cleanup that could mobilize PCBs in the ground water zone. PCB cleanup levels consistent with land use would speed up the site remedial action and eliminate potential problems such as space limitations to installing thermal desorption equipment, or the In-Situ Thermal Desorption - Thermal Well ("ISTD- thermal Wells) technology. The town is particularly concerned with the impact on the Keyes Field area, a public park. At Norwood, additional room was required to operate a treatment system; and the Town is concerned that this could also occur at Fletcher and cause an unacceptable encroachment on the nearby Keyes Field and other site areas.

EPA Response: In response to the comment concerning increasing the subsurface cleanup level at Mill Street from 1 to 500 mg/kg, please see the EPA's response to Comment 1, since the Town now supports a 100 mg/kg PCB cleanup level for the subsurface, consistent with the selected remedy.

EPA agrees with the Town that any remedial action will be staged with the primary goal of minimizing the use of Keyes Field, and minimizing inconvenience to the public. In addition, if Keyes Field is used for storage, only clean soils, construction equipment, and supplies will be stored there, with prior agreement from the Town. The phasing approach was incorporated into the selected remedy will allow maximum use of the Site property itself for cleanup activities. By phasing the cleanup, the Elm Street Site can be used to stage the equipment and staging of soils needed for the Mill Street operation. Once the Fletcher's Paint building has been removed, the Elm Street Site should be sufficiently large enough to house a small mobile thermal desorption unit, even if that unit needs to be moved once or even twice during the operation to maximize the use of the site, without going "off-site" onto other properties.

While the Town proposed comment that the subsurface cleanup level should be elevated from 1 to 500 mg/kg PCB, the EPA received comment from the Town on March 13, 1998, stating that the Town, in consideration of information received from the EPA, now recommended a 100 mg/kg PCB cleanup standards for the subsurface soils, outside of the utility corridors at the Elm Street site. The cleanup level for these soils cannot be compared to any levels set at the Norwood Superfund site, since the level represents a concentration protective of the groundwater and not human health, as were the basis for all of the Norwood soil cleanup levels not included under the containment area. NHDES determined that the ground waters beneath the Fletcher's Paint Site were of value to the Town and the State as a potential drinking water supply and therefore drinking water standards are required to be met in the future in the groundwater at the Site. Soil standards at the Elm and Mill Street Sites reflect concentrations that can remain in the subsurface soils, with only a soil cover, and not impact the groundwater in the future in excess of the PCB MCL of 0.5 ug/l

5. The Town of Milford, State Representative Durnham, and various residents believe that it is essential to consider ISTD-Thermal Well data. They believe that the additional time to assess innovative technologies such as the ISTD -Thermal Wells is okay because there is no immediate risk to public health or the environment posed by current site conditions. Some residents are concerned about the schoolyard adjacent to the site and the transport of soils in its vicinity and potential spreading of the soil, as well as the resulting disruption. They believe on this basis that ISTD-Thermal Wells should be considered Another resident believes, the EPA should oversee the ISTD-Thermal Wells process and implement a vigorous testing program, but that it is important that the contamination be removed Oil the other hand, one resident believes the lack of data regarding the ISTD-Thermal Well process will only delay implementation of the remedial activities.

EPA Response: EPA granted extensions to the Remedy decision process to review data from Terratherm's ISTD-Thermal Well technology. Specifically, EPA extended the public comment time period on the Proposed Plan for a total of 3 months and granted an additional 3 month delay in making a remedy decision specifically to review submittal of data on the ISTD Thermal Well technology. This data was actually not submitted to the EPA till 3 months after the end of the original 6 month delay in the schedule. Regardless, EPA did not move forward with the selected remedy till after completing our review of the data available to date on the technology.

One of EPA's national experts on thermal remediation has reviewed the data on the technology and visited one of the demonstration sites (Missouri electric Works), where the ISDT-Thermal Wells were being tested for the cleanup of PCBs. EPA's expert reviewed the thermal blanket test version of the ISTD technology as well as the Cape Girardeau, Missouri Electric Works and Mayer Island Thermal Well demonstration reports. These two demonstrations are the only PCB related demonstrations of the ISTD -Thermal Well technology to date whose data was made available to the EPA for review.

EPA's complete review of the ISTD -Thermal Well technology for the Site is available in the Administrative Record for the Site. This Administrative Record is available at the Wadleigh Memorial library and at EPA's record Center in Boston, Massachusetts. The conclusions from EPA's thermal expert, after review of the ISTD - Thermal Well data for a total of over two years (since the concept of the technology was first brought to EPA's attention) concluded that while some improvements have been made to the ISTD-Thermal Well technology with each demonstration, there remains questions as to the protectiveness and effectiveness of the technology. Specifically EPA remains concerned about the release of contaminants during the operation of the technology into the ambient air. Data from the demonstrations show that the ambient air concentrations were elevated during the operation of the technology. While these ambient air concentrations may have been protective of workers on the site, based on OSHA standards, the concentrations would have exceeded the NH Ambient Air Level for PCBs, and therefore would not be protective of human health at the Fletcher's Paint Site, in a similar situation. EPA is extremely concerned about the ambient air results since both the Elm And Mill Street Sites are small in size and residences, schools and Route 101A are in close proximity. Any operation at the Site would have to meet the NH's ambient air standards for the protection of the general public.

Another concern relates to the lack of data from the previous demonstrations that can compare with the conditions at the Fletcher's Paint Site. EPA is concerned about the nature of the fill materials at the Elm Street Site, where the majority of the site is not soil, but fill material comprising of ash, tree stumps, ceramics, glass and tires. In addition a large deposit of resin-like material was also found on the Elm Street Site. The Mill Street Site presents an additional problem as some of the soils requiring remediation are located below the water table. No data submitted on the ISTD- thermal Well technology indicated the ability of the technology to successfully remediate these materials or operate successfully in these types of situations.

While EPA agrees that the ISTD-Thermal Well technology would be less invasive in that large volumes of soil would not have to be excavated to conduct the remediation, there are facets on the implementation of the technology that EPA does not believe were revealed to the public at the informational public meetings held by GE and Terratherm. Specifically, it appeared to the EPA that the public believed that this technology would "not be seen or heard", when compared to the ex-situ thermal desorption technology selected by the EPA. The ISTD-thermal Well technology requires that a well be driven into the subsurface to complete the necessary cleanup. These wells would be located every 5 to 10 feet apart and operate at extremely high temperatures to accommodate heat losses and yield temperatures high enough to result in the desorption of the contaminants at the points between the wells. While this would be done in 3 stages according to Terratherm, this represents a potential for hundred of wells placed on the Elm Street Site alone. The operation of the treatment system would be for 24 hour days for approximately 40- 60 days for each cycle. The noise from this operation is very similar to the ex-situ thermal desorption units, however the ex-situ units can be "shut down" if desired after 8,10, 12 or 16 hours of operation, thereby reducing or eliminating noise inconvenience during the night. GE also reported in their December 1997 Focused Feasibility Report that the operation of the Thermal Wells would include excavation of all soils around the entire perimeter of the Elm Street site, a distance of 8 feet from the boundary of the Site. These soils would be then treated on-site, away from the perimeter.

The costs for the ISTD-Thermal Well technology compare well with the selected remedy, when the same cleanup levels are used to compare the use of the technology in a complete remedial alterative. The estimated time to complete the remedial action also compared well to the selected remedy when again, the same cleanup standards are applied.

EPA will consider new data on the ISTD Thermal Well Technology as it becomes available. EPA does not believe further delay is warranted to wait for additional data on the ISTD-Thermal Wells, since other viable, cost-effective innovative technologies, such as the ex-situ thermal desorption technology, are currently available to safely meet the cleanup criteria at the Site.

6. The Town of Milford and a resident requested that EPA consider an asphalt multi-layer cap in the Elm Street parking area and the Mill Street right-of-way to address PCB, PAH, VOC and metals contamination. At Norwood the remedial conclusions were that cover soil and an asphalt multi-layer cap are suitable containment options to protect the public health and environment from PCB exposure.

EPA Response: The selected remedy requires the excavation and treatment of the surface soils to a depth of 1 foot wherever soil cleanup levels are exceeded; the excavation and treatment of soils within designated utility corridor(s) on the Elm Street Site wherever PCB concentrations exceed 25 mg/kg PCB, and the excavation and treatment of all the remaining soils at the Elm Street site wherever concentrations exceed 100 mg/kg PCB. As stated previously, the Town in a letter dated march 13, 1998 now supports the 100 mg/kg cleanup level for the subsurface.

Placement of an asphalt multi -layer cover (EPA assumes the comment refers to a RCRA Subtitle C or Subtitle D cap) would be protective of human health and the environment if in conjunction with a long-term hydraulic containment system for Mill Street Site. Hydraulic containment would be required because contaminated soils would be allowed to remain in place at concentrations that would impact the groundwater over time. The cap would only prevent the leaching of the contaminants from the unsaturated soils. This alternative is feasible and was presented by EPA in the FS as Source Control 3 - Containment.

Asphalt alone will not prevent the infiltration of precipitation through the remaining contaminated soils, Asphalt cracks over time, and is susceptible to chemical degradation, frost heaves and other environmental and maintenance related factors that would allow over time, even with the best maintenance, the infiltration of precipitation. At 500 mg/kg PCB, any infiltration through the subsurface would be expected to result in a groundwater concentration exceeding the MCL of 0.5 ug/l PCB- Therefore asphalt alone at these concentrations is not protective to the environment.

Containment measures will be required at the Site as part of the selected remedy to promote drainage off of the Site, reduce leachate generation by minimizing the infiltration of precipitation and control erosion of the cover materials.

While containment is less expensive than the selected remedy, EPA considered the selected remedy to offer a greater overall protectiveness, as well as a higher level of long term permanence and protectiveness when compared to the containment alternative. The selected remedy also meets the criteria of reduction in mobility, toxicity and volume through treatment. EPA believes that the selected remedy is cost effective when compared to the containment alternative because high levels of hazardous substances will not be left on the Site at the completion of the selected remedy and groundwater will be managed through a Groundwater Management Zone as part of NH's Comprehensive Groundwater Management Policy.

7. Representative Durnham is concerned about stockpiling contaminated soil in Keyes Park.

EPA Response EPA agrees that stockpiling contaminated soils on the Keyes Field would be a concern. EPA phased the cleanup approach in both the Proposed Plan and the selected remedy to maximize the use of the site itself for remedial activities and minimize any use of the Keyes Field. All remedial action conducted at the Fletcher's Paint site will be staged with the primary goal of minimizing the use of Keyes Field, and should additional space be required for storage, only clean soils, construction equipment, and supplies would be temporarily stored, with permission of the Town. It is not anticipated that the Keyes Field would be heavily impacted during the cleanup action, outside of the need to close a portion of the Keyes Drive during cleanup of the contaminated soils that physically surround the upper portion of the Keyes Drive. Certain remedial actions may also be able to be undertaken during times when the Keyes Field is used the least, to minimize any impact.

The use of Keyes Drive as an access to the Keyes Field during the operation of the Elm Street cleanup will be dependent on the size and layout of the treatment unit and excavation required, as well as the need to consider the safety of both the workers and the users of the Keyes Field. Of most concern is the residents walking or riding bicycles in close proximity to the operating vehicles at the site All actions will be thoroughly reviewed during design to minimize any impacts to the users of the Keyes Field.

8. Milford Power Equipment is concerned that the disruption resulting from the cleanup will impact business, and yet they will receive no compensation.

EPA Response: EPA is also concerned about community disruption during the remedial action, and the changes made to the Proposed Plan and incorporated into the selected remedy should reduce, minimize or eliminate many of the disruptions. But with all remedial actions, there is bound to be some disruption, particularly to those closest to the operations. EPA, as well as General Electric have shown at this site that action can be accomplished with minimal disruption. Five cleanup actions have taken place so far at the site, all undertaken successfully. The "white suits" mentioned in this commentary, as well as other protective measures such as personal breathing apparatus, are required by the site workers to keep their clothing free from contaminated soil and are not meant to scare away potential business for the abutters. EPA will be happy to work with this company, and any other company, during the cleanup action, as was done during the previous cleanup actions at the Mill Street site, by keeping the business and the community at large appraised of upcoming and completed work and any anticipated inconveniences in the community.

9. A resident expressed concern about the culvert and requested that the culvert be upgraded.

EPA Response: The selected remedy includes upgrading the culvert and the drainage ditch such that the long-term drainage from the Mill Street site is away from the site and the adjacent residential homes. While remedial action is not warranted for the protection of human health in the drainage ditch that runs from the Mill Street Pond to the enclosed system under the Elm Street site, improvements on the flow in the drainage system are required to ensure proper drainage away from the Mill Street Site, and to ensure that the system has the capacity to handle the flow at peak times.

The portion of the culvert that transverses Elm Street site will be removed (filled) and replaced, giving the Town access to the culvert for future maintenance. The proposed path of the new culvert is to run along Elm Street to and down Keyes Drive and then to the Souhegan River.

10. Donahoe Lumberyard (abutter to site) expressed concern that the Proposed Remedial Action Plan does not address contamination beneath his property. (ground water issue)

EPA Response: The selected remedy does include the requirement that the Interim Cleanup Levels set for the groundwater be met throughout the entire plume of contamination which spreads from the Mill Street site to the Souhegan River, including the groundwater beneath the above mentioned property. EPA has selected a limited action remedy for the management of this groundwater contamination whereby natural processes are allowed over time to degrade, absorb, and disperse the contamination until the cleanup levels are reached. It is estimated that it will take approximately 20 to 25 years for the VOC contaminant levels in the overburden to reach the cleanup levels, and over 100 years for the PCB contamination to reach its cleanup level. While the full extent of the contamination is not yet known, and more information will be gathered during design, it is anticipated that it will take longer for the bedrock contamination to reach cleanup levels due to the intricate nature of the flow through the bedrock. To date, no DNAPL has been confirmed within either the overburden or bedrock systems, though it is assumed that residual DNAPL, which is currently trapped and no longer mobile, is present in the top several feet of the soils due to the presence of percent level contamination. These soils will be addressed through excavation and treatment, thereby eliminating this source of continuing groundwater contamination.

The ground water contamination at the Fletcher's Paint site does not currently pose a risk to human health because the aquifer that is contaminated is not being used by the town as a drinking water supply and the depth of the aquifer makes exposure unlikely. In discussions with the State and the Milford town officials, there was agreement that the ground water beneath the Fletcher's Paint site is a potential drinking water supply but that it would not be immediately needed; therefore, institutional controls would be placed on the contaminated ground water to restrict its future use, until the cleanup levels were met in the future.

11. One citizen is concerned about the potential reduction in income occurring from the visual detraction of his property as a result of the treatment facility, construction equipment, and piled soils that would

be present during remediation.

EPA Response: EPA phased the implementation of the cleanup action to maximize the use of the Site and minimize and use or disturbance to surrounding properties. Any excavation will be staged with the primary goal of minimizing the use of Keyes Field. If Keyes Field is required to be used, with the Towns permission, an attempt will be made to store only clean soils, construction equipment, and supplies in areas that will minimize their visibility. It is anticipated that these storage areas would be located as far from residences as possible. In addition, engineering controls will be in place during all remedial activities to minimize air emissions, and the EPA would require the remedial actions to be monitored for PCBs, dust, and noise at the fence line (i.e. property boundaries). The EPA is confident that the remedial actions can be implemented without greatly impacting the surrounding community.

Any remedy selected that involves active remediation will likely result in some temporary disruption of the current site appearance. The selected remedy is expected to take just over 2 years to implement. However, over the long term these measures are necessary to protect human health and the environment and will ultimately result in the site having a better appearance than it has currently. The only alternatives to active remediation is either No Action or Monitoring and Institutional Controls. Neither of these alternatives complies with the National Contingency Plan (NCP) evaluation criteria. These two alternatives fail to achieve protectiveness over the period of time that contamination would remain present at the site, fail to comply with applicable or relevant and appropriate requirements, fail to provide a permanent remedy, fail to be effective over the short and long term, and they do not reduce the toxicity, mobility, or volume of contamination. The NCP also indicates that reliance on institutional controls is the least desirable option to provide protection of public health, since such controls can be changed or ignored over time.

12. A former citizen and police officer commented that he had observed discharges to the Souhegan River as a result of Fletcher's Paint activities as early as 1966. In addition, he also observed drum disposal/burial in the parking lot and area that was later built on and he is concerned that it took as long as it did for the site to be closed.

EPA Response: The Fletcher's Paint Site has been investigated by the EPA since 1984, as a result of the closure of the Keyes Municipal Well. The site was officially listed on the National Priorities List in 1989. Testing performed on the subsurface during the RI indicated the presence of 5 underground storage tanks, but no buried drums were observed at the Site. Future cleanup actions will take this observation into consideration when conducting explorations into the subsurface.

Many cleanup actions have already occurred at the Site, thus removing the most immediate threats to human health posed by the Site. These actions included:

- Removal of 863 drums of hazardous substances in 1988 and the placement of a geotextile fabric over the parking areas of the Elm Street and Mill Street sites to mitigate the potential environmental and health threats, and to prevent off-site migration of PCBs;

- Placement of fence at the perimeter of the Elm Street site in 1991 to prevent unauthorized access onto the property;

- Removal of hazardous substances found inside the Elm Street facility as well as the demolition and disposal of the Mill Street building in 1993. This included the removal of 750 bags of dry paint pigments, 327 drums of hazardous substances, 10 bags of friable asbestos and 2,500 miscellaneous substances;

- Removal of contaminated surface soils on residential properties across from the Mill Street Site in 1995; and

- Removal of contaminated surface soils on the property located in front of the Elm Street cemetery so that a Korean War memorial could be placed there.

What remains at the Site is contamination that poses a long-term threat to human health and the environment.

13. A citizen is concerned that the remedy is being implemented without regard to input from the people of the town. This citizen would prefer that the EPA wait for results from the tests on the thermal blanket and also suggests that it may be prudent to actually test the blanket under conditions similar to Milford's. It is preferred that the remediation be done right the first time.

EPA Response: EPA includes public acceptance as one of its evaluation criteria for selecting a remedy. In addition, EPA has held many public informational meetings on the nature of the contamination at the Site, the potential community impacts, and the FS alternatives. These public meetings were to gather public comment prior to EPA issuing the Proposed Plan for the cleanup of the site prior to making a decision on the remedy. With respect to the selected remedy, a thorough evaluation has been conducted with the primary goal of ensuring that human health and the environment are protected, both during implementation and in the future.

Please refer to comment 5 above for EPA response to issues relating to the use of ISTD-Thermal Wells at the site.

14. A citizen supports the EPA actions to cleanup the contamination using thermal desorption. The cleanup could potentially spur economic development and also provide beneficial future use of the Keyes Municipal well.

EPA Response: EPA believes that the use of ex-situ thermal desorption is the best option for the cleanup of the contaminated soils at the Site. Treatment of the soils is consistent with EPA's preference for the use of treatment to eliminate principal health threats at the site, and to reduce the toxicity, mobility, and volume of the hazardous substances at the Site. Thermal desorption, while considered an innovative technology, has been used successfully at many Superfund Sites for the cleanup of PCB contaminated soils.

The future use of the Keyes Well is in question though as the monitored natural attenuation called for as part of the selected remedy will take approximately 25 years for the VOCs to reach cleanup standards and 100 years for the PCBs to reach its cleanup standard. The contamination present in the Keyes Well Field will be addressed as part of Operable Unit two for the Site. Th determination to allow for monitored natural attenuation in the selected remedy was in part based on a review of the Town's future foreseeable drinking water needs and the active restoration of the upgradient Savage Well. Should the Keyes Well Field be used in the future as a drinking water supply, well head protection measures would also have to be considered.

**General Electric/Potential Responsible Party Comments**

**II. Cover Letter to Comments on EPA's Proposed Remedial Action Plan**

15. GE believes that EPA's proposed remedies for Mill and Elm street properties do not adequately take into account the significant potential physical risks of injury or fatality (due to truck traffic, excavation equipment, etc.)

EPA Response: While the ChemRisk calculations are correct and reasonable for the chance of a reportable motor-vehicle accident over the course of the project lifetime, they have been incorrectly interpreted as representing the chance of a fatal accident. Moreover, this estimate of a fatal accident has then been compared to the increase in individual risk from the chemicals on site. A more appropriate assessment and comparison is provided below.

ChemRisk used a basic accident rate of 1 per 400,000 miles or $2.5 \times 10^{-6}$ per mile. The corresponding fatal accident rate is 1.8 per 100,000,000 miles or $1.8 \times 10^{-8}$ per mile (Accident Facts, National Safety Council, 1994). If the rate for large trucks were used, rather than that for all vehicles, the number would be slightly greater, about $3 \times 10^{-8}$ per mile. For the estimated 800 total miles associated with the execution of the project, the estimated risk is, therefore, $2.4 \times 10^{-5}$ or 2.4 chances in 100,000. This is about 100 times lower than the number assumed by GE in their statements. Because of the potential to increase the standard at the Mill street site for the protection of groundwater, the potential also therefore exists to reduce the volume requiring excavation at the Mill street site, thereby reducing the number of trucks and the miles traveled transporting those soils to the Elm Street site for treatment and back. An increase of the Mill Street subsurface standards from the 1 mg/kg PCB to 100 mg/kg PCB (if EPA determines is acceptable) would decrease the soil volume excavated from 13,500 cubic yards to 5,900 cubic yards, a 7,600 cubic yard decrease. At 15 cubic yards per truck, traveling to and from Elm Street, this would potentially reduce the number of truck trips by 500 (one way), thereby further decreasing the risk of accident at the site.

It should also be noted that this risk is the total chance of a fatality, not the increase in risk per person in the neighborhood or on the roads of concern. The same heavy truck statistics indicate that most of the fatalities involve persons other than the truck drivers and that the average number of fatalities per accident is roughly 1. Assuming that there are 100 people who might use the sidewalks or the roads in question while the trucks are in use, the increase in risk to one of those individuals would therefore be roughly $2.4 \times 10^{-5}/100$ or $2.4 \times 10^{-7}$ (2.4 chances in 10,000,000). If there are more people than this who could be at risk, the risk per individual would decrease.

16. EPA's proposed remedy for the Mill Street property is likely to he ineffective and may actually exacerbate existing conditions by mobilizing and spreading PCBs in the subsurface (due to the presence of DNAPL in the subsurface).

EPA Response: EPA disagrees that Mill Street remedy is likely to be ineffective since the majority of contamination presenting a known source to the groundwater would be remediated. Construction activities would result in enhanced ground motion, however. the property is adjacent to a major railway which over time has had the potential to enhance any DNAPL transport to a much greater extent than the expected construction activities. The railway is active several times a day transporting propane and gravel through Milford., It is also possible that the ground motion generated by the railway has facilitated the current vertical extent of contamination currently observed at Mill Street Site, therefore, remediation would limit the volume of material available for further transport through the subsurface.

If it is determined that excavation activities would facilitate an enhanced transport of the PCBs through the subsurface, engineering controls can be used to offset the action, thereby protecting the bedrock. Engineering controls such as horizontal barriers or even freezing techniques have been used with excavation when facilitated transport during excavation is expected. EPA believes, however that because the majority of the contamination at the Mill Street Site resides in the top few feet, and since no free-phase DNAPL has been visually observed at the Site, that excavation of the contaminated soils is feasible. The use of engineering controls will be considered during remedial design.

17. EPA's proposed remedy for the Elm Street property does not recognize the Town of Milford's intended future use of the Elm Street property as a parking lot and realistic risk assessment exposure scenarios.

EPA Response: EPA disagrees with this comment and has worked closely with the Town of Milford over the years to develop a reasonable future use scenario for both the Elm and Mill Street Sites. In doing so, the EPA has altered the Baseline Risk Assessment several times to reflect the Town's anticipated future uses. The selected remedy also incorporated the Town's latest comments whereby the town would prefer to see a designated area for subsurface utilities over a more accessible general use of the subsurface at Elm Street, as was previously related to the EPA. Please refer to comment 1 for more details on how the selected remedy meets the Town's anticipated future uses for the site.

18. The Proposed Plan does not adequately take into account stakeholder inputs oil the remedy because it is proposing a remedy that is more costly than necessary without any corresponding increase in protection of public health and the environment. The proposed remedy is inconsistent with the intent of Superfund reform initiatives to implement fairer, faster and more efficient remedies.

EPA Response: EPA disagrees with the commentor's suggestion that stakeholders inputs were not considered. The entire development of the remedy involved many public meetings, presentations of alternatives, presentations of community impacts, not to mention the numerous meetings and discussions with GE and the Town of Milford, both of which are a PRP at this site. Public input and comment as well as the Town's and GE's input have been considered and where appropriate, incorporated into the selected remedy,

Specifically, EPA has worked with the Town and the State of NH in developing the anticipated future uses of the Site, such that the cleanup goals would be appropriate and consistent with CERCLA and to the extent practicable, the NCP.

EPA has to consider the nine criteria specified in the NCP in selecting a final remedy. These criteria include overall protection of human health and the environment, meeting ARARs, long-term permanence and protection of the remedy, short term impacts, implementability, the reduction of the mobility, volume and toxicity of the hazardous substances through treatment and both State and public acceptance, as well as cost-effectiveness. Costs alone are not sufficient reason for selection of a remedy.

While several alternatives had estimated present worth costs that were less than the selected remedy, they did not meet the criteria when compared to the selected remedy. Specifically, the no action and limited action source control alternatives were not protective of human health. The containment alternative, supported by GE for the Mill Street portion of the Site, does not meet EPA's preference of addressing principal threats through treatment, and would require extensive long-term operation of a groundwater extraction and treatment system. Since the POTW was not able to consider accepting the extracted groundwater at the time of the selection of the remedy, the groundwater would have to be treated on-site to levels consistent with surface water discharge criteria. Because the containment alternative left wastes in place below the water table, a groundwater treatment system would have been required to operate for as long as the wastes remained, which would have been greater than 100 years. While a feasible cleanup alternative, EPA did not receive any supporting comments for the containment alternative from any party other than GE. The remainder of the cleanup, alternatives that employed the use of treatment, compared favorable in cost with thermal desorption alternative.

EPA also disagrees that the selected remedy is inconsistent with EPA's fairer, faster and cost effective policies since the selected remedy has costs and estimated cleanup time frames comparable to other treatment technologies, including the ISTD-Thermal Well technology, and is $1.5 million less expensive than the Proposed Plan cost. EPA believes that the selected remedy is cost effective since the remedy requires the treatment of all soils that pose the greatest long-term threat to human health and the environment without requiring a continuous, long-term pump and treat operation using hydraulic controls to contain the contamination at the site for more that 100 years.

19. Consider Alternative Remedial Action Plan (ARAP) which will (1) result in equivalent protection of human health and the environment (2) be less disruptive to Milford residents (3) will be completed at significantly lower cost than EPA 's plan. Request EPA's serious consideration of the Alternative Plan, including the Terra Therm In situ Thermal Desorption (ISTD) technology.

EPA Response: GE's proposed alternative cleanup plan is less expensive that the EPA's Proposed plan or the selected remedy because GE's plan does not meet the same cleanup standards required in the selected remedy for the protection of human health and the environment. Further GE's proposed alternative does not meet the NH Env-Ws 410 regulations which require the treatment and removal, if feasible, or containment of sources at the Site.

EPA invited GE to submit a Focused Feasibility Study which incorporated cleanup standards that were used by the EPA in the review of the selected remedy (including the Town's comment on changes to the subsurface soils at the Elm Street Site). GE submitted such a report in December 1997.

The EPA's review of GE's FFS alternative concluded,, in summary, that 1) contamination left in place, in the subsurface at the Mill Street Site is inconsistent with NE's Env0Ws 410 regulations; 2) that GE's containment alternative that did comply with NH's Env-Ws 410 regulations, was similar to EPA's containment alternative as described in the FS and 3) that insufficient information was available to review the use of the ISTD-Thermal Well technology in an alternative against the nine criteria.

The FFS report and EPA's full evaluation of the alternatives proposed in the report can be found in the Administrative Record available at the Wadleigh Memorial Library in Milford or at the EPA records center in Boston, Massachusetts.

20. EPA should consider as part of the remedy decision the results of additional field work that would he conducted to characterize ground water conditions at Mill Street.

EPA Response: The only field work undertaken after the release of the Proposed Plan was the sampling of monitoring well MW-07A for flocculent material. This material was tested for the presence of PCBs. The effort was conducted by GE in November of 1997 and the results reported to the EPA in May, 1998. This information was considered in the selection of the remedy as the data indicated that the flocculent material found in MW-07A contained 1,780 ug/l PCB. This concentration of PCB in the flocculent material is extremely high given the fact that DNAPL materials were not identified in the presence of this material during sampling. This would suggest that the PCBs at the site are very soluble in the paint related compounds that make up the flocculent material. While EPA agrees with GE's position that once in the flocculent state, which apparently is present only in the well screen, the PCBs are not mobile. However, EPA believes that the PCBs are or were solubilized into the paint related compounds at the surface where the contamination was introduced in liquid form. Because the soils data at MW-07A indicate that PCB concentrations fall off drastically before reaching the water table, and finding the floc materials at the bottom of the well screened interval (just above the water table to just above the bedrock), suggests that the PCBs are moving into and with the paint related materials at the surface and are transported down the soil column. Further EPA believes that these materials are entering the well screen at the water table, and with the presence of the iron, is precipitated out in the presence of ambient air in the well screen forming what we have referred to as the flocculent material.

No other field studies were undertaken during the interval from the Proposed Plan (December 1996) and the issuance of this ROD (September 1998). Further investigations are warranted during design on the full extent of the contamination within the bedrock. Only one bedrock well is located in the Mill Street Site, with the next closest bedrock well was on the Elm Street site adjacent to the river, 700 yards away. There is some question outstanding of the potential presence of DNAPL within the bedrock. Please refer to comment 2, for EPA's response relating to the potential for DNAPL at the Site. EPA believes it has sufficient information at hand to select a remedy at this time.

21. EPA should consider results off field tests currently underway on Terratherm's ISTD technology.

EPA Response: EPA has considered the data made available to date on Terratherm's ISTD-Thermal Well technology. Please refer to comment 5 for more information related to EPA's review of the ISTD-Thermal Well technology

**III. GE/PRP Comments on EPA's Proposed Remedial Action Plan**

Mill Street Proper1y

22. GE agrees that removal of soil on the Draper Energy property is appropriate but they believe that the proposed cleanup criterion of 1 ppm is too low and based on unrealistic assumptions. GE proposes a PCB cleanup criterion of 6 ppm for these soils.

EPA Response: EPA set a surface soil cleanup standard at the Site at 1 mg/kg PCB, based on the TSCA Spill Policy for unrestricted access in residential areas. While the Draper Energy property is a commercial property, it is adjacent to residential areas. The exposure pathway considered dermal contact and incidental ingestion and receptor were assumed to be adult and child trespassers.

EPA met with GE and the Town of Milford in August of 1996 following the release of the FS. EPA accepted GE comment suggesting changes to the assumptions used in the risk assessment. Using changes suggested by GE and accepted by the EPA, the 1 mg/kg PCB soil cleanup level represents a 3 x 10 -6 excess cancer risk and a hazard quotient of 0.4. EPA does not see any further justification to move off of the 1 mg/kg PCB soil standard recommended in the TSCA Spill Policy given the potential exposure pathways and receptors at the Site.

23. The removal of soils front the Mill Street property is unnecessary and that a multi-layer cap with deed restrictions to prevent future excavation of soils beneath the cap is the appropriate remedial measure. GE sites the Sullivans Ledge Explanation of Significant it Differences and Norwood PCB site Amended ROD as support for their claim where PCB concentrations of 1200 ppm and 70 ppm respectively were allowed to remain under a cap.

EPA Response: Please refer to EPA's response to comment number 6.

24. Implementation of EPA's method will he very difficult because of special construction measures that will he required including railway and road stability. excess water when excavating soil below the water table, and operating heavy equipment in limited space.

EPA Response: The EPA recognizes that the excavation of soils at the Mills Street Site will be a complex operation. The excavation will be performed in a manner that will be protective of human health and minimize the impact on the surrounding community.

During the design and implementation of the remedy, all of the factors mentioned in the comment will be considered. Monitoring for PCBs, dust, and noise at the fence line of the Mill Street site will be required. If the levels for PCBs, dust, or noise are exceeded at the fence line, the remedial action will be shut down and additional engineering controls will be put in place. Based on past removal actions at the Mill Street Site and EPA's extensive history of excavation as part of remedial cleanup actions at other Superfund Sites, the EPA is confident that excavation of the contaminated soils can be carried out without significant impacts to the surrounding community.

25. GE believes that the 500 ppm soil cleanup criterion selected for the Elm Street. Site should be applied at Mill Street.

EPA Response: Please refer to EPA responses to comments 4 and 6.

26. GE believes, that excavation of soil is not required if chemicals are contained beneath a cap and within a hydraulic containment system.

EPA Response: Please refer to EPA's responses to comments 4 and 6.

27. GE believes that if their proposed alternative is selected it will produce much less impact to nearby residents, the cost will he significantly reduced, the remedy will be equally protective of human health and the environment as the EPA's Proposed Plan, and will he consistent with Region I approaches at other sites (Sullivan's Ledge, and Norwood PCBs).

EPA Response: Please refer to EPA's responses to comments 4, 6 and 23.

28. EPA has not adequately identified or considered the potential risks of injury or fatality to construction workers, truck drivers and pedestrians that may result from implementing the Proposed Plan.

EPA Response: Please refer to EPA's response to comment 15.

29. Noise and dust impacts associated with the implementation of the Proposed Plan are a concern. Although engineering controls will be implemented to minimize dust, noise would remain a nuisance.

EPA Response: Please refer to EPA's response to comment 5 and 23 regarding noise issues at the Site during remedial action.

30. The in-situ thermal desorption process has not been given sufficient consideration by the EPA.

EPA Response: Please refer to EPA's response to comment 5 regarding the ISTD-Thermal Well technology,

Elm Street Property

31. GE believes that underground utility lines should be plugged and relocated along Keyes Drive as part of the remedial action.

EPA Response: EPA agrees with the comment and the selected remedy incorporates a utility corridor, whose exact location will be best determined during design. However EPA agrees that locating the utility lines along the Keyes Drive is the most reasonable.

32. The proposed surface soil cleanup criteria of 1 ppm for unrestricted off-site properties is unnecessary and should be changed to 6 ppm. In addition, GE believes that excavation and off-site removal of soils on the Elm Street property is unnecessary and that placement of a multi-layer cap, the implementation of deed restrictions, and the planned relocation of utilities will provide adequate protection to human health and the environment.

EPA Response: Please refer to EPA's responses to comments number 1,4,6, and

33. The removal of subsurface soils (1 to 10 feet) with PCB concentrations greater than 10 ppm is based on unrealistic assumptions for future site use. They state that the Town's planned future use for the site, the Towns willingness to restrict future use of the site, and the relocation of utilities are sufficient to provide adequate protection of human health and the environment. GE believes that EPA's assumptions regarding risks are flawed in that they assume that subsurface soil will be brought to the surface where routine and prolonged soil contact by children and adults will occur. GE evaluated potential risks resulting from utility worker, inadvertently puncturing the cap and being exposed to PCBs 1 day/year over a 25 year time period and found that, given this scenario, the acceptable soil concentrations would be 943 mg/kg(ppm).

EPA Response: Please refer to EPA's response to comment 1 regarding changes to the subsurface future use at the Elm Street Site. EPA set 25 mg/kg PCB as the cleanup level for soils within the utility corridor at the Elm Street Site. This cleanup level was derived from the TSCA Spill Policy, and is protective of utility workers from dermal contact and incidental ingestion of the contaminated soils. EPA agrees that by limiting future excavations to within the designated utility corridor, subsurface soils will not be re-deposited onto the surface in the future. The selected remedy incorporates this scenario, and also requires restrictions across the Site preventing unauthorized access into the subsurface.

34. With regard to the excavation of stain-like material at Elm Street, GE believes that the application of the in situ thermal desorption process should be evaluated for this area. If the process is proven inappropriate, then soils in this area would be excavated and disposed off-site.

EPA Response: Please refer to EPA's response to comment number 5. To date no data has been submitted to the EPA regarding the potential ability of the ISTD-Thermal Well to successfully remediate these materials.

**Table 27: Fletchers Paint Site, Milford, New Hampshire, Chemical - Specific Applicable or Relevant and Appropriate Regulations (ARARs) for the Source Control Action, Thermal Desorption Treatment**

| Medium | Potential Federal Requirement | Requirement Synopsis | Action to be taken to Attain ARAR | Status |
|---|---|---|---|---|
| Soil | Toxic Substance Control Act (TSCA) PCB Spill Cleanup Policy (40 CFR Part 761, Subpart G) | Pertains to recent PCB spills (of 50 ppm PCB or greater and occurring after 5/4/78) and establishes cleanup goals for sites depending on use and accessibility. | These guidelines will be used in establishing goals for the cleanup of the contaminated soils depending on location, potential for exposure and concentration of PCBs. | To Be Considered |
| Soil | EPA Guidance on Remedial Actions for Superfund Sites with PCB Contamination (1990) | Describes the recommended approach to evaluating and remediating Superfund sites with PCB contamination. | The guidance set forth in this document will be considered when establishing remediation goals for PCB-contaminated media. | To Be Considered. |
| Ground Water | Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) (40 CFR 141.11-141.16, 141.61, 141.62) | Provides enforceable cleanup standards for a number of common organic and inorganic contaminants. These levels regulate the concentration of contaminants in drinking water supplies. | SDWA MCLs will be attained in accordance with the management of migration alternative(s) selected as part of the remedy. | Relevant and Appropriate. |

**Table 27: Fletchers Paint Site, Milford, New Hampshire, Chemical - Specific Applicable or Relevant and Appropriate Regulations (ARARs) for the Source Control Action, Thermal Desorption Treatment**

| Media | Potential Federal Requirement | Requirement Synopsis | Action to be Taken to Attain ARAR | Status |
|---|---|---|---|---|
| Ground Water | EPA Ground Water Protection Strategy | Provides classification and restoration of ground water based on its vulnerability, use, and value. | This strategy will be considered in conjunction with the federal SDWA and | To Be Considered. |
| Ground Water | EPA Final Groundwater Use and Value Determination Guidance | This regional guidance establishes an approach allowing States to play a pivotal role in determining the relative "use" and "value" of site groundwater resources. The determination of the aquifer as a "high", "medium", or "low" use aquifer impacts the appropriateness of restoration time periods and the extent of restoration of the contaminated groundwater plume as called for in the remedial alternatives. | The Site's groundwater aquifer was determined to be of "medium" use and value. The source control actions selected meet the goals of the guidance for medium use and value aquifers, by providing for the future attainment of groundwater cleanup levels within a reasonable time period. | To Be Considered |
| Surface Water/ Ground Water | SDWA Non-Zero MCL Goals (MCLGs) (40 CFR 141.50-141.51) | Provides nonenforceable health goals for public water systems. EPA has promulgated non-zero MCLGs for specific contaminants | SDWA Non-Zero MCLGs will be attained in accordance with the management of migration alternative(s) selected as part of the remedy. | Relevant and Appropriate |

**Table 27: Fletchers Paint Site, Milford, New Hampshire, Chemical - Specific Applicable or Relevant and Appropriate Regulations (ARARs) for the Source Control Action, Thermal Desorption Treatment**

| Media | Potential State Requirement | Requirement Synopsis | Action to be Taken to Attain ARAR | Status |
|---|---|---|---|---|
| Surface Water | Clean Water Act (CWA), Ambient Water Quality Criteria (WQC) for Protection of Human Health and Aquatic Life | AWQCs are developed under the CWA as guidelines from which state develop water quality standards for protection of human health and aquatic organisms. | AWQCs will be attained in surface waters at the end of the remedial action, either through natural attenuation or active remedial measures. | Relevant and Appropriate. |

| Media | Potential State Requirement | Requirement Synopsis | Action to be Taken to Attain ARAR | Status |
|---|---|---|---|---|
| Ground Water | New Hampshire Groundwater Protection Regulations; Ambient groundwater Quality Standards (AGQS) (Part Env-Ws 410.03, Feb. 1993) | Establishes criteria for ground water quality (AGQSs); states that ground water may not contain contaminants above the numerical concentrations set in Env-Ws 410.05. | Remedial actions will be required to treat affected ground water or to eliminate discharge to the ground water. Any discharges to ground water must not cause any degradation to surface water (the Souhegan River) so as to violate surface water quality standards in adjacent surface waters | Applicable. |
| Ground Water | New Hampshire Groundwater Protection Regulations (Part Env-Ws 410.05, Feb. 1993) | Establishes ground water discharge criteria which include the MCLs (and MCLGs) adopted by the Water Supply and Pollution Control Division. | The remedial action will eliminate discharge of contaminants, including VOCs, PCBs, and inorganic contaminants, resulting in ground water contamination concentrations above state MCL and MCLG levels. | Applicable. |

**Table 28 : Fletcher's Paint Site, Milford, new Hampshire, Location -Specific Applicable or Relevant and Appropriate Regulations (ARARs) for the Source Control Action, Thermal Desorption Treatment**

| Medium | Potential Federal Regulation | Requirement Synopsis | Action to be taken to Attain ARAR | Status |
|---|---|---|---|---|
| Sediment | Clean Water Act (CWA) Section 404(b) (40 CFR 230; 33 CFR 320-330) | States that no discharge of dredged or fill material shall be permitted if there is a practicable alternative that has less adverse impact on aquatic ecosystem provided the alternative does not have other significant adverse environmental consequences. | Excavations at the site will not discharge dredged or fill materials into the wetlands. | Applicable. |
| Wetlands | Protection of Wetlands (Executive Order No. 11990) 40 CFR 6, Appendix A (Policy on Implementing E.O. 11990) | Requires that Federal agencies preserve and enhance natural and beneficial values of wetlands and minimize the destruction and loss or degradation of wetlands. | The alternative will be implemented with control of wetlands excavation to the greatest extent possible. Any excavation in the wetlands will meet the requirements of this Executive Order, Mitigation will follow any such excavations. | Applicable to excavation and treatment of contaminated soils and sediments from wetland areas. |
| Floodplains | Floodplain Management (Executive Order No. 11988) 40 CFR 6.302(b) and 40 CFR 6, Appendix A (Policy on Implementing E.0. 11988) | Requires that Federal agencies reduce the risk of flood loss, minimize impacts of floods, and restore and preserve the natural and beneficial value of floodplains. | The alternative will be implemented to minimize the impacts to the risk of flood loss to the greatest extent possible. Any activities in the floodplains will meet the requirements of this Executive Order. Mitigation will follow any such excavations. | Applicable. |
| Surface Water | Fish and Wildlife Coordination Act (16 USC 661-666) | Requires the protection of fish or wildlife resources related to actions that control or modify water bodies. U.S. Fish and Wildlife Service must be consulted if any federal agency proposes to modify water bodies. | The alternative will be in compliance with this regulation. The U.S. Fish and Wildlife Service has been consulted. | Applicable. |

**Table 28 : Fletcher's Paint Site, Milford, new Hampshire, Location - Specific Applicable or Relevant and Appropriate Regulations (ARARs) for the Source Control Action, Thermal Desorption Treatment**

| Medium | Potential State Requirement | Requirement Synopsis | Action to be taken to Attain ARAR | Status |
|---|---|---|---|---|
| Wetlands | Dredging and Control of Runoff (RSA 485-A:17); Dredging rules: Env-Ws Part 415 | Establish criteria for conducting any activity in or near state surface waters which may adversely affect water quality. | Excavations near the Souhegan River will comply with these requirements. | Applicable. |
| Wetlands | New Hampshire Wetlands Act (RSA 482-A, Env-Ws 300-400,600,700) | Established to minimize physical alteration to wetlands so their beneficial functions can be preserved. | Remedial activities in wetlands located in or adjacent to the site will comply with these wetlands protection requirements. | Applicable. |

**Table 29: Fletcher's Paint Site, Milford, New Hampshire: Action - Specific Applicable or Relevant and Appropriate Regulations (ARARs) for the Source Control Actions, Thermal Desorption Treatment.**

| Medium | Potential Federal Requirement | Requirement Synopsis | Action to be Taken to Attain ARAR | Status |
|---|---|---|---|---|
| Air | Resource Conservation and Recovery Act (RCRA) (40 CFR 265 Subpart P) | Regulations contain requirements for air pollutant emissions from thermal units. | The alternative shall meet the requirements set forth in this subpart. | Relevant and Appropriate |
| Air | RCRA (40 CFR 264, Subpart AA) | Regulations contain air pollutant emission standards for process vents, closed vent systems, and control devices at hazardous waste treatment, storage, and disposal facilities. | The alternative shall meet the requirements of these regulations set forth in this subpart. Appropriate if they are not. | Applicable if threshold levels are met; Relevant and |
| Air | RCRA (40 CFR 264, Subpart BB) | Establishes design specification and monitoring requirements for equipment that contains or contacts hazardous wastes with organic concentrations of at least 10% by weight | The thermal desorption equipment will be designed, and monitoring conducted, to comply with this requirement. | Applicable if threshold levels are met; Relevant. and Appropriate if they are not. |
| Air | RCRA (40 CFR 264, Subpart CC) | Would establish emission controls for tanks, containers, and surface impoundments having a volatile concentration equal to or greater than 500 ppmw. | The thermal desorption equipment will be designed to comply with this requirement | Applicable if threshold levels are met; Relevant and Appropriate if they are not. |
| Asbestos | National Emission Standards for Asbestos (40 CFR 61; Subpart M) | Regulations contain requirements for inspecting and demolishing structures that may contain asbestos and disposing of that material found to contain asbestos. | Structure(s) will be inspected and demolished and any material containing asbestos disposed of in accordance with these requirements. | Applicable if asbestos-containing material found in the Fletcher's Elm Street Paint works is scheduled for demolition. |
| Soil | Toxic Substance Control Act (TSCA) (40 CFR 761) | All materials that contain PCBs at concentrations of 50 ppm or greater shall be disposed of in an incinerator or in a chemical waste landfill or, upon application, using a disposal method to be approved by the EPA Region in which the PCBs are located. | Following thermal desorption, effluent will be incinerated off site in accordance with these regulations, | Applicable if PCB concentrations are 50 ppm or greater. |

**Table 29 Fletcher's Paint Site, Milford, New Hampshire: Action - Specific Applicable or Relevant and Appropriate Regulations (ARARs) for the Source Control Actions, Thermal Desorption Treatment.**

| Medium | Potential Federal Requirement | Requirement Synopsis | Action to be Taken to Attain ARAR | Status |
|---|---|---|---|---|
| Soil | TSCA - 40 CFR 761.65(c)(9), 761.65(c)(9)(iv) 761.61(c), Storage and Disposal of Bulk PCB Remediation Waste | This regulation allows for the temporary storage of bulk PCB and remediation wastes, for a duration not to exceed 180 days. The EPA Regional Administrator can approve alternate storage and disposal methods consistent with the "risk-based option". | Requirements will be met. | Applicable |
| Soil | TSCA 40 CFR 761.65(c)(1) and 761.61(c), Storage and Disposal of Liquid PCB Remediation Waste | These regulations address the storage and disposal requirements for the remediation of PCB wastes at facilities where liquids have been contaminated by a PCB spill. Generally, liquid wastes must be disposed of within 30 days. The EPA Regional Administrator can approve alternate storage and disposal methods consistent with the"risk-based option". | Storage requirements will be complied with, or grounds for a waiver will be met. | Applicable if PCJ3 concentrations are 50 ppm or greater. |
| Soil | TSCA Spill Policy (40CFR 761.60[d]) | Policy establishes guidelines for spill cleanups to different levels depending on spill location, potential for exposure, and concentration of PCBs actually spilled. | The Policy will be considered in determining cleanup levels for PCBs. | To Be Considered |
| Soil | Guidance on Remedial Actions for Superfund Sites with PCB Contamination (OSWER Directive 9355.4-01, August, 1990) | Guidance establishes an approach for evaluating and remediating PCB contamination at Superfund Sites. | This guidance will be considered in determining cleanup levels and appropriate technologies, | To Be Considered |
| Soil | Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments, July 1989 (EPA/530-Sw-89-047) | Guidance establishes design specifications for landfill closure that meet RCRA 264 Subpart G (Subtitle C Landfill) closure requirements. | This guidance will be considered when designing the final cover. | To Be Considered |

**Table 29: Fletcher's Paint Site, Milford, New Hampshire: Action - Specific Applicable or Relevant and Appropriate Regulations (ARARs) for the Source Control Actions, Thermal Desorption Treatment.**

| Medium | Potential Federal Requirement | Requirement Synopsis | Action to be Taken to Attain ARAR | Status |
|---|---|---|---|---|
| Ground Water | Clean Water Act (CWA), Section 402, National Pollutant Discharge Elimination System (NPDES) 33 USC 1342; 40 CFR 122-125, 131 | These standards govern discharge of water into surface waters. | Discharge from the water treatment plant associated with the dewatering of the Mill Street soils, will meet AWQCs. | Applicable |
| Ground Water | Guidance of Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites (OSWER Directive 9200.4-17, Dec, 1997) | Guidance establishes implementation guidelines for monitored natural attenuation remedies. | This guidance will be considered during the design and performance of the long-term monitoring of the groundwater. | To Be Considered |
| Ground Water | Guidance on the Presumptive Response Strategy and Ex-situ Treatment technologies for Contaminated Groundwater at CERCLA Sites (EPA 540-R-96-023, Oct 1996) | Guidance establishes design specifications for implementing presumptive groundwater remedial actions. | Guidance will be considered during the development of the long-term groundwater monitoring program and future bedrock studies. | To Be Considered |
| Soil | RSA Chapter 147-A, New Hampshire Hazardous Waste Management Act and Hazardous Waste Rules (Env-Wm 100-1000) | State Hazardous Waste Management Standards operated in lieu of federal RCRA Subtitle C requirements. | Management of hazardous wastes will comply with the substantive standards of these regulations. | Individual sections summarized below. |
| Soil | Siting Requirements (Env-Wm 353.09) and Variances to Siting Requirements (353.10) | Provision establishes siting requirements and variances for hazardous waste facilities near geologic fault areas and flood plains and sets forth state procedures for identifying the boundaries of the flood plains. | The thermal desorption treatment facility will be constructed in compliance with siting requirements or variance criteria. | Waived |
| Soil | Env-Wm 708.03(d) and (d)(1) | Outlines operational requirements for proper and safe management and conditions for containers and tanks. | This alternative will conform with the proper and safe usage of tanks and containers in accordance with these requirements. | Applicable. |

**Table 29: Fletcher's Paint Site, Milford, New Hampshire: Action - Specific Applicable or Relevant and Appropriate Regulations (ARARs) for the Source Control Actions, Thermal Desorption Treatment.**

| Medium | Potential State Requirement | Requirement Synopsis | Action to be Taken to Attain ARAR | Status |
|---|---|---|---|---|
| Soil | Env-Wm 702.09 | Establishes design requirements for hazardous waste facilities. | The thermal desorption treatment facility will be constructed in accordance with design requirements. | Applicable. |
| Soil | Operation Requirements for Hazardous Waste Facilities (Env-Wm-708.02) | Establishes a variety of requirements relating to operation and closure of hazardous waste facilities. | Facility construction, operation, closure, and post-closure will meet these requirements. | Applicable to operation of a facility: Waived for closure requirements depending on action. |
| Soil | UST Regulations and Guidelines (ENV-Ws 411.18) | The NHDES must be notified prior to scheduled closure or removal of USTs. Hazards and potential contamination must be assessed, and the NHDES must inspect site and approve of closure. | To excavate the first ten feet of PCB-contaminated soil, it will be necessary to remove five USTs. This alternative will comply with the regulations and guidelines if UST removal is performed. | Applicable. |
| Ground Water | Nondegradation of Ground water to Protect Surface Water (Env-Ws 410.03) | Provides that ground water shall not contain any contaminant at concentrations such that natural discharge of that ground water to surface water results in a violation of surface water quality standards. | The remedial action will eliminate or prevent any discharges to ground water resulting in a violation of surface water quality at adjacent surface waters or rendering ground water unsuitable for drinking water | Applicable. |
| Ground Water | Env-Ws 410.26 Groundwater Management Zone (GMZ) | These provisions set forth requirements for a GMZ established under 410.03. The requirements include inter alia, isolations, institutional controls, monitoring, restoration of groundwater quality, methods of establishing GMZ boundaries, and means of restricting groundwater extraction. | Monitoring, institutional controls and other actions taken to remediate the GMZ will be consistent with this requirement. | Applicable |

**Table 29: Fletcher's Paint Site, Milford, New Hampshire: Action - Specific Applicable or Relevant and Appropriate Regulations (ARARs) for the Source Control Actions, Thermal Desorption Treatment.**

| Medium | Potential State Requirement | Requirement Synopsis | Action to be taken to Attain ARAR | Status |
|---|---|---|---|---|
| Ground Water | Env-Ws 410.30 Water Quality Sampling, Analysis and Monitoring | Provides requirements for surface water and groundwater sampling, monitoring and analysis. | Surface water and groundwater sampling, monitoring and analysis will comply with these requirements. | Applicable. |
| Ground Water | Env-Ws 410.31 (a) Groundwater Monitoring Wells | Requires monitoring wells to be designed, installed and decommissioned in accordance with the practices of two referenced guidance | Monitoring wells will be designed, installed and decommissioned consistent with the practices in the guidance documents referenced. | Applicable. |
| Air | NH Administrative Code, Air, Chapter 100, Parts 604-606 | Establishes standards for the release of VOCs, particulate matter, and other hazardous air pollutants. | Thermal desorption equipment will be constructed to comply with these emission standards. | Applicable. |
| Air, Ground Water | Env-Wm 702.11 and 702.12 | Provisions establish ground water monitoring requirements and authorize the requirement of other environmental monitoring. | Ground water and air emissions monitoring will be conducted as necessary during remediation. | Applicable. |

**Table 29: Fletcher's Paint Site, Milford, New Hampshire: Action - Specific Applicable or Relevant and Appropriate Regulations (ARARs) for the Source Control Actions, Thermal Desorption Treatment.**

| Medium | Potential State Requirement | Requirement Synopsis | Action to be taken to Attain ARAR | Status |
|---|---|---|---|---|
| Air | Env-A 1002 | Establishes prevention, abatement, and control procedures for fugitive dust emissions due to construction and excavation. | This alternative will follow these procedures to maintain dust control during remediation activities. | Applicable. |
| Air | Env-A 1305 | Establishes requirements for technology and for air impact analysis with respect to devices emitting regulated substances. | Discharges from any new or modified facility will comply with these requirements. | Applicable. |
| Surface Water | Standards for Classifications of Surface Waters of the State (NH Water Quality Criteria Standards, RS Chapter 149:3, Ws 400, Parts 430-439) | Requirements include the prohibition of disposal of wastes that will lower the quality of any surface water below the minimum requirements of surface water classification. Included are environmental-based standards for contaminants associated with specific classes of water. | Discharge of pollutants to surface waters will meet applicable standards. | Applicable. |
| Surface Water | Water Quality Standards (Env-Ws 437); NH Antidegradation Policy (Env-Ws 439) | States that no persons shall place or discharge pollutants into any waters of the state unless the discharge complies with effluent standards and limitations, and will not degrade existing water quality. | Discharges of pollutants to surface waters will meet applicable standards | Applicable. |

**Table 30: Fletcher's Paint Site, Milford, New Hampshire, Chemical - Specific Applicable or Relevant and Appropriate Requirements (ARARs) for the Management of Migration, Limited Action/ Institutional Controls**

| Medium | Potential Federal Requirement | Requirement Synopsis | Action to be Taken to Attain ARAR | Status |
|---|---|---|---|---|
| Soil | Toxic Substance Control Act (TSCA) PCB Spill Cleanup Policy (40 CFR Part 761, Subpart G) | Pertains to recent PCB spills (of 50 ppm PCB or greater and occurring after 5/4/78) and establishes cleanup goals for sites depending on use and accessibility. | Temporary cover system will be maintained; institutional controls will be placed on the property restricting uses and activities on the properties. | To Be Considered |
| Soil/ Ground Water | EPA Guidance on Remedial Actions for Superfund Sites with PCB Contamination (1990) | Describes the recommended approach to evaluating and remediating Superfund sites with PCB contamination. | Guidance will be considered when establishing long-term management activities. | To Be Considered. |
| Ground Water | Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) (40 CFR 141.11-141.16, 141.61, 141.62) | Provides enforceable cleanup standards for a number of common organic and inorganic contaminants. These levels regulate the concentration of contaminants in drinking water supplies. | SDWA MCLs will be attained through natural attenuation. | Relevant and Appropriate. |
| Ground Water | EPA Ground Water Protection Strategy | Provides classification and restoration of ground water based on its vulnerability, use, and value. | This strategy will be considered in conjunction with the federal SDWA and New Hampshire Water Quality Standards. | To Be Considered. |

**Table 30: Fletcher's Paint Site, Milford, New Hampshire, Chemical - Specific Applicable or Relevant and Appropriate Requirements (ARARs) for the Management of Migration, Limited Action/ Institutional Controls**

| Medium | Potential Federal Requirement | Requirement Synopsis | Action to be Taken to Attain ARAR | Status |
|---|---|---|---|---|
| Surface Water/ Ground Water | SDWA Non-Zero MCL Goals (MCLGs) (40 CFR 141.50-141.51) | Provides nonenforceable health goals for public water systems. EPA has promulgated non-zero MCLGs for specific contaminants. | SDWA Non-Zero MCLGs will be attained through natural attenuation. | Relevant and Appropriate. |
| Surface Water | Clean Water Act (CWA), Ambient Water Quality Criteria (WQC) for Protection of Human Health and Aquatic Life | AWQCs are developed under the CWA as guidelines from which state develop water quality standards for protection of human health and aquatic organisms. | AWQCs will be attained in surface waters at the end of remedial action through natural attenuation. | Relevant and Appropriate. |
| Ground Water | EPA Final Groundwater Use and Value Determination Guidance | Provides a rating system for the State to establish restoration goals for a groundwater aquifer based on its vulnerability, use and value. | This guidance was considered in conjunction with the federal SDWA and the New Hampshire Groundwater Protection Rules in order to determine groundwater cleanup levels. The aquifer was classified as medium value. The limited Action/ institutional Control actions selected are consistent with this. | To Be Considered |
| Ground Water | New Hampshire Groundwater Protection Regulations, Ambient Groundwater Quality Standards (AGQS) (Part Env-Ws 410.03, Feb 1993) | Establishes criteria for ground water quality (AGQS), states that ground water may not contain contaminants above the numerical concentrations set in Env-Ws 410.05. | Ground waters will be allowed to naturally attenuate. | Applicable. |
| Ground Water | NB Groundwater Protection Regulations (Part Env-Ws 410.05, Feb. 1993) | Establishes groundwater discharge criteria which include the MCLs (and MCLGs) adopted by the NH WSPC Division. | Groundwater will be allowed to naturally attenuate and will be monitored until standards have been met. | Applicable. |

**Table 31: Fletcher's Paint Site, Milford, New Hampshire, Location- Specific Applicable or Relevant and Appropriate Regulations (ARARS) for the Management of Migration, Limited Action/Institutional Controls**

| Medium | Potential Federal Requirement | Requirement Synopsis | Action to be taken to Attain ARAR | Status |
|---|---|---|---|---|
| Sediment | Clean Water Act (CWA) Section 404(b) (40 CFR 230; 33 CFR 320-330) | States that no discharge of dredged or fill material shall be permitted if there is a practicable alternative that has less adverse impact on aquatic; ecosystem provided the alternative does not have other significant adverse environmental consequences. | No actions will be taken as part of this alternative. | Applicable. |
| Wetlands | Protection of Wetlands (Executive Order No. 11990) 40 CFR 6, Appendix A (Policy on Implementing E.O. 11990) | Requires that Federal agencies preserve and enhance natural and beneficial values of wetlands and minimize the destruction and loss or degradation of wetlands. | No actions will be taken as part of this alternative. | Applicable to excavation and treatment of contaminated soils and sediments from wetland areas. |
| Floodplains | Floodplain Management (Executive Order No. 11988) 40 CFR 6.302(b), 40 CFR 6, Appendix A (Policy on Implementing E.O. 119880 | Requires that Federal agencies reduce the risk of flood loss, minimize impacts of floods, and restore and preserve the natural and beneficial value of floodplains. | No actions will be taken as part of this alternative. | Applicable. |
| Surface Water | Fish and Wildlife Coordination Act (16 USC 661-666) | Requires the protection of fish or wildlife resources related to actions that control or modify water bodies. U.S. F& WL Service must be consulted if any federal agency proposes to modify water bodies. | No actions will be taken as part of this alternative. | Applicable. |

| Medium | Potential State Requirement | Requirement Synopsis | Action to be taken to Attain ARAR | Status |
|---|---|---|---|---|
| Wetlands | Dredging and Control of Runoff (RSA 485-A:17); Dredging rules: Env-Ws Part 415 | Establish criteria for conducting any activity in or near state surface waters which may adversely affect water quality. | No actions will be taken as part of this alternative. | Applicable. |
| Wetlands | New Hampshire Wetlands Act (RSA 482-A, Env-Ws 300-400, 600,700) | Established to minimize physical alteration to wetlands so their beneficial functions can be preserved. | No actions will be taken as part of this alternative. | Applicable. |

**Table 32: Fletcher's Paint Site, Milford, New Hampshire, Action - Specific Applicable or Relevant and Appropriate Requirements (ARARs) for the Management of Migration, Limited Action/ Institutional Controls**

| Medium | Potential Federal Requirement | Requirement Synopsis | Action to be Taken to Attain ARAR | Status |
|---|---|---|---|---|
| Surface Water | Clean Water Act; Sections 301-304 | Establishes Ambient Water Quality Criteria (AWQC) standards for presence of contaminants which could adversely affect aquatic organisms. | Surface waters will be allowed to naturally attenuate and will be monitored until standards have been met. | Applicable. |
| Ground Water | Safe Drinking Water Act; 40 CFR - Part 141 | Establishes Maximum Contaminant Levels (MCLs) for toxic chemicals in public drinking water systems. | Ground waters will be allowed to naturally attenuate and will be monitored until standards have been met. | Applicable. |
| Ground Water | Guidance of the Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites (OSWER Directive 9200.4-17, Dec, 1997) | Guidance is intended for the implementation of monitored natural attenuation remedies. | The guidance will be considered when designing and implementing the long-term monitoring program for the groundwater. | To be Considered |
| Ground Water | Guidance on the Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Groundwater at CERCLA sites (Oct, 1996) (EPA 540-R-96-023) | Guidance establishes design specifications for implementing presumptive groundwater remedial actions. | Guidance will be considered during the development of the long term monitoring program and future bedrock studies. | To be Considered |
| **Medium** | **Potential State Requirement** | **Requirement Synopsis** | **Action to be taken to Attain ARAR** | **Status** |
| Ground Water | Env-Ws 410.07, 410.09, and 410.10. Prohibited Discharge, Groundwater Discharge Zone, Groundwater Discharge permit Compliance Criteria | Prohibits discharges to groundwater without use of BAT; requires controls on use of groundwater within discharge zone; sets limits on discharges to groundwater | Remedial measures involving discharges to groundwater must comply with these requirements. | Applicable if treatment effluent (from the de-watering action) is discharged to the groundwater. |

**Table 32: Fletcher's Paint Site, Milford, New Hampshire, Action - Specific Applicable or Relevant and Appropriate Requirements (ARARs) for the Management of Migration, Limited Action/ Institutional Controls**

| Medium | Potential State Requirement | Requirement Synopsis | Action to be Taken to Attain ARAR | Status |
|---|---|---|---|---|
| Ground Water | Env-Ws 410.26 Groundwater Management Zone (GMZ) | These provisions set forth requirements for a GMZ established under 410.03. The requirements include inter alia, isolation, institutional controls, monitoring, restoration of groundwater quality, methods of establishing GMZ boundaries, and means of restricting groundwater extraction. | Monitoring, institutional controls and other actions taken to remediate the GMZ will be consistent with this requirement. | Applicable |
| Ground Water | Env-Ws 410.30 Water Quality Sampling, Analysis and Monitoring | Provides requirements for surface water and groundwater sampling, monitoring and analysis. | Surface water and groundwater sampling, monitoring and analysis will comply with these requirement. | Applicable |
| Ground Water | Env-Ws 410.3 1 (a) Groundwater Monitoring Wells | Requires monitoring wells to be designed, installed and decommissioned in accordance with the practices of two referenced guidance. | Monitoring wells will be designed, installed and decommissioned consistent with the practices in the guidance documents referenced. | Applicable |

UNITED STATES ENVIRONMENTAL

PROTECTION AGENCY

STATE OF NEW HAMPSHIRE

PUBLIC HEARING RE:
FLETCHER'S PAINT SUPERFUND SITE
TOWN HALL
MILFORD, NEW HAMPSHIRE

BEFORE: RICHARD C. BOYNTON, AS HEARING OFFICER

Wednesday, January 29, 1997
7:00 P.M.
Volume I

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I N D E X

P R O C E E D I N G S

HEARING OFFICER BOYNTON: I am going to welcome everybody to the hearing for the Fletcher's Paint Superfund Site. I am Dick Boynton from the EPA New England Regional Office in Boston.

Before I begin the hearing, I want to make an announcement about our Project Manager, Cheryl Sprague. She had a baby girl on Super Bowl Sunday. The baby's name is Courtney, and she is 7 pounds, 2 ounces, and 20 inches long, and everybody is doing fine; but that is why Cheryl can't be here, but she did call this afternoon at the office.

And to my left is Roger Duwart, our Project Manager from the New Hampshire section. Roger will be helping us with the Fletcher's Paint Site while Cheryl is at home with the baby.

The purpose of tonight's meeting is to accept oral comments on the proposed cleanup plan for the Fletcher's Paint Site. I'll serve as the hearing officer.

The proposed, plan was made public on

December 27, 1996, and was discussed in some detail at the meeting here on January 14, 1997. The public comment period began on January 15th, and is scheduled to end on February 18th.

The hearing will be conducted as follows: First, I will give you a brief overview of the proposed plan, and I will accept comments for the record.

If you wish to comment, please fill out the cards and leave them for me. I already have some cards here. Please use the microphone in the center of the room, state your name, and spell your last name for our court stenographer. I am asking that you limit your comments to 15 minutes. If your statements take more than 15 minutes, please summarize your important points, and provide me with a copy of the text and the comments, and the text will be transcribed into the hearing record.

After the comments have been heard, I will close the hearing. Written comments may be mailed to our Boston office at the address of the proposed plan, and must be postmarked no later than February 18th. All of the oral comments, and the comments received during the comment period, will be responded to in a responsiveness summary, which will be included with the decision for the remedy, for the site. We call it a record of decision.

Are there any questions about our proceedings before, we begin?

We won't be responding to your comments tonight. Those responses will be in writing in response to your comments.

Are there any questions at all before we start?

First, let me just move over here.

AUDIENCE PARTICIPANT: Can we turn up the volume on this. It's not clear.

HEARING OFFICER BOYNTON: To refresh everybody's memory, I'm going to go over the site and put up an agenda. I already did an introduction. I'll talk quickly about the site description, the cleanup alternatives that we looked at, and our proposed cleanup plan, and then we will take oral comments for the record.

First, a picture of the site, and this is the Mill Street property, which is a very condensed area. This shaded area represents the contaminated groundwork; and as you see here, this is the Fletcher Paint property, and the building, and then Keyes Field is out here, and the road is down here.

Very quickly, the cleanup alternatives that we looked at for our dealing with the contamination at the site are as follows: For the soil cleanup, we put that no action is required to do that, but that gives us the background to compare the other alternatives against. Then it means what it says, no action for the site.

The limited action would be involved with monitored and restricted use of the site. There would be some costs associated with that.

Then we look at the containment solution, which includes a flexible membrane cap, removal of about three feet of soil, and a flexible membrane cap to prevent infiltration of water, rainwater to the site, with vertical barriers to protect the groundwater from carrying contamination from the site.

COURT REPORTER: Excuse me. I'm having trouble hearing you with people walking by. Could you move the microphone over, please. Perhaps that will help.

Thank you very much.

HEARING OFFICER BOYNTON: So we look at a containment remedy, which includes a cap, a flexible membrane liner, vertical barriers to prevent the groundwater from entering the site, to prevent it from leaving the site, the groundwater and discarding it, in this case, in the river.

And then we looked at off-site disposal alternatives. That would be excavation of the soil, putting it in trucks or railcars, and transporting it to an approved hazardous waste landfill, or to a hazardous materials incinerator for destruction.

Then lastly, we looked at an on-site alternative. We looked at low temperature thermal desorption, which is a process like a non-contact heating in an oven, and driving the volatiles from the soil into a situation where we can condense them, and consolidate them, and take them off site for disposal. That leaves us with clean soil.

We also looked at stabilization/solidification of the soil, the contaminated soil, which entails mixing them with additives like cement, fly ash, or asphalt, to contain the contamination so it would actually fix it in place, but that still involves a volume increase in the amount of material you have to deal with, and it also involves placing a cap over it.

Then we looked at solvent extraction. This is basically a washing of the soil with a solvent or a surfactant, and then concentrating that solvent and contamination into a solid for off-site disposal. It requires a lot of soil handling and a lot of use of solvent.

And then we looked at how we're going to clean up the groundwater, and we got into a situation where if we had to do that, we looked at a no-action alternative for comparison.

We looked at a limited action, which means we would monitor it for the foreseeable future, foreseeable background basically, and restrict the use of the groundwater, maybe use it as a portable water supply or -- I don't think you can use it for an industrial supply anyway.

Then, lastly, we looked at a treatment

alternative, which is pumping the groundwater directly into the ground, air stripping, where you put it through a situation where you pump air through it, drive the volatile contaminants on to the air stream, and that would activate it into an activated carbon and gaseous state, and remove the contaminants that collect on the carbon.

Again, the second alternative was just passing the liquid phase through the granular activated carbon, and then recycling and regenerating the carbon.

Lastly, we looked at ultraviolet radiation and some kind of oxidant to actually destroy the contaminants in place, and for that we would use ozone or man-made -- some kind of chemical as an oxidant.

That is what we looked at in the whole gamut when we begin to compare all the alternatives.

Then I should talk a little bit briefly about the proposed plan, the preferred cleanup plan, which we broke into two phases, dealing with the Mill Street property first, which we thought was more concentrated or contaminated. And, basically, at Mill Street, what we are proposing to do is move about 15,000 yards of contaminated soil, and truly bring them to the Elm Street site, and treat them with the thermal desorption unit, which as I mentioned before is like a large oven that can separate the PCBs from the soil.

And also in Phase I, we would demolish and take the Fletcher's Paint Works building off the Elm Street site and dispose of the rubble at an approved landfill, and remove the five underground storage tanks that are currently located on the Fletcher's Elm Street property. This would be probably a process of somewhere from 25 to 30 weeks we estimate, once we design what we are going to do and begin activity.

And then the second phase, after we complete the Mill Street clean up, would be to deal with the contaminated soils on the Elm Street property, and this involves treatment of about 29,000 yards of contaminated soils, the way we estimate it, and we also would treat these on-site with the thermal desorption unit, the same unit that we use on Elm Street, and we would excavate -- there are some highly contaminated

soils and wastes in the area, and we would
excavate those and dispose of them off-site; and
then we would place an impermeable, flexible cap
in the drainage area asphalt, and we would assist
with that, and the idea behind this would be it
wouldn't restrict the use of the property for some
industrial purposes.

AUDIENCE PARTICIPANT: What date are
we talking about here now for the second phase,
realistically?

HEARING OFFICER BOYNTON: A couple
years at least before we Clean up that. And then
we believe that if we carry out this proposed
plan, according to the way we estimate it, that we
would not have to come treat the groundwater. We
can naturally attenuate that over time. So that
would mean we would still monitor the groundwater
to see what was there, what was happening with it,
and we think it would probably be 30 or 40 years
before the groundwater would clean up.

AUDIENCE PARTICIPANT: So those cubic
yards that you have already treated at that point
in time should be able to be put back down?

HEARING OFFICER BOYNTON: Those would

go back on the site.

So that was -- basically, I just wanted to do that to refresh everybody's memory of what the proposed plan looked like, and now we will get into the comments.

I would like to also mention we have a couple of people here: Matt Leahy, from Senator Judd Gregg's office in New Hampshire; and Donna Gamache from Senator Smith's office is also here.

Hi, Donna.

Now, for people that would like to get on the record, if they will take the opportunity to come up from General Electric.

JILL SIEBELS: Good evening. My name is Jill Siebels, S-I-E-B-E-L-S, and I am the Remedial Project Manager from General Electric.

Thanks. I am not used to doing too many things.

I appreciate the opportunity tonight to present our view regarding the appropriate remedy for the site, but because this is a community meeting, I am going to keep this brief, and just make a statement regarding our efforts to date. GE is preparing detailed written comments on the proposed remedy that we will submit to EPA before the end of the comment period.

First and foremost, we are committed to identify a remedy protective of both human health and the environment. To that end, we are interested in evaluating Shell's in situ thermal technology for use at the site. The development of the in situ technology is moving ahead quickly, and that makes it sure to be the most appropriate remedy to be applied at this site.

We appreciate that the community has been dealing with this process for quite a long time now; and because of the development of the ISTD, which is in situ thermal desorption technology, because it's so close, we believe it is in everyone's best interest to think about the evaluation for technology before a remedy is selected at the site.

As I said, we recognize that this is your meeting, and we want to make sure that everyone has the chance to provide comments or ask questions of the EPA. However, we are more than willing to share -- sorry. We are more than willing to share our thoughts with the community once we have completed our evaluation; and to that end, anyone who is interested in obtaining additional information can come up to me with your name and address, or we will have a sign-up sheet that we can put over on the table, and we are still in the of process of putting together written comments, but we will share them with anyone who is interested, or sit down with you if you are interested in that.

Thank you.

HEARING OFFICER BOYNTON: Thank you, Jill.

Now, Jack Hirsch from Shell Oil Company. Jack.

JACK HIRSCH: Good evening. My name is Jack Hirsch -- that is H-I-R-S-C-H -- and I am an employee of Shell Oil Company, which is the inventor of the technology, and also Shell is the owner of its subsidiary, TerraTherm, which is offering this service of the in situ thermal desorption technology.

I appreciate the opportunity to be here tonight. I wanted to perhaps clarify some of the questions that we believe were raised at the meeting on the 14th of January.

And the first question is: Where are we in terms of development of the technology?

And several things have happened since the last time we met with you, and among them we had essentially completed the project that we were doing at our test facility in Houston, Texas, and we thank the town and the state for sending representatives down to observe the operation down there, and also where we shared the results with you. We are still finalizing the results from that work; and when it's complete, we will be sharing that with you up here.

In addition, the in situ thermal desorption technology is being commercially applied full-scale in Portland, Indiana. That is a 150-well project that is ongoing as we speak. We are currently in the final heating stages of that project. That is a contaminate of PCE at a depth of about 20 feet.

TerraTherm is also developing proposals for full-scale site remediations for numerous sites nationally. The technology, while still being tested to provide performance and refinements and other cost data to allow us to make the commercial application as efficient as possible, we assure you the testing is not delaying its use in the environmental marketplace.

There were some questions, I believe, concerning the technology and how it's -- where it's been used for PCBs, polychlorinated biphenyls. The in situ thermal desorption technology was successfully demonstrated on PCBs at the Glens Falls Dragstrip site, that is a New York State Super Fund site, in 1996.

It's currently mobilizing the equipment to the Missouri Electric Works, which is an NPL listed Super Fund site in Cape Girardeau, Missouri, where we will be doing a demonstration test, which we will complete by the end of March, this year. The equipment we are already mobilizing on the site as we speak. We will have the full-scale equipment on the site February 10th, and the contaminant treatment process, the same for both the thermal wells and thermal blankets, demonstrated more than six 9's destruction efficiency for polychlorinated biphenyls.

The owner of the Missouri Electric Works site has made the site available for people that might want to come tour the site during our operation. We will be letting you know when that would be convenient; and perhaps again, like you did in Houston, you can come join us there to see what is going on.

Another question that was raised were byproducts of incomplete combustion of polychlorinated biphenyls, such as dioxins. Would they be produced by this technology?

In situ thermal desorption is different from incineration in a very fundamental way. During incineration, products of incomplete combustion may be formed when portions of the contaminants pass through low temperature regions toward the base of the flame. With in situ thermal desorption, however, the contaminants are desorbed within the soil and are transported through a uniformly high temperature region surrounding the heating elements. At the temperatures used in the in situ thermal desorption process, the destruction rate of any byproducts is greater than the rate at which they are formed, and the majority, about 99 percent of the contaminants and byproducts, are destroyed within the soil themselves. So not only is it in situ thermal desorption, but it's also in situ thermal destruction.

Any residual contaminants or byproducts, as they exist in the vapor phase, are drawn through the vacuum extraction system to the flameless thermal oxidizer where the destruction process is completed. Because of the uniform high temperature profiles both surrounding the heating elements in the soil, and contained within the thermal oxidizer, all of the desorbed vapors are exposed to the same high temperatures for nearly instantaneous destruction of contaminants, with minimal formation of byproducts.

The process was tested at the New York site and showed better than six 9's of destruction efficiency, for not only the contaminant PCB, but also any byproducts that might have been formed.

Finally, I believe there was a question as to whether the technology might fit on a small site, and also the social impact of it, noise and such. The in situ thermal desorption technology is very quiet, produces no odors or dust, and that is the in situ process. The small demonstration unit itself is self-contained on a single tractor trailer, so a single, 40-foot-long trailer contains all the equipment. The full-scale unit is complete on three tractor trailer beds, taking up approximately a tenth of an acre of space.

This concludes the questions which I feel were raised. If there are more, then we will hang around afterwards to answer them, and I appreciate the opportunity.

Thank you.

HEARING OFFICER BOYNTON: Thank you, Jack.

EDWARD FRANKAVITZ: My name is Edward Frankavitz. I own Milford Consignment outlet, and I really had more questions at this point in time.

And one being, I notice some contaminants run all the way from Mill Street to Elm Street, and yet nothing is being done throughout that entire region in there.

Why is that?

HEARING OFFICER BOYNTON: Tonight's hearing is to receive comments. We will respond to the comments and questions in our responsiveness summary. So if you wanted to make comments now, for the record, do that, and I will close the hearing, and I will talk to you about --

EDWARD FRANKAVITZ: Primarily, I needed answers to the questions so I could have my comments. So possibly I will speak later.

HEARING OFFICER BOYNTON: We will talk after the hearing.

Is there anyone else that would like to make a comment for the record?

Then I will close the hearing. This hearing is closed.

(There was a discussion off the record.)

HANDWRITTEN SPEECH PREPARED BY JUSTIN DANHOF:

Hi. My name is Justin Danhof. I am an 8th grade student here in town.

For the last couple of months, we have been studying the different sites and the reason for worry. I think that we all agree that there is a problem, and that is why we are all gathered here tonight. Now that we have decided to clean up the sites, some questions come to mind.

How much of the soil do we clean up? I'm not stupid. I realize that the EPA, in the end, is going to do what they want to do. I would just like the EPA to keep the best interest of us, the citizens of Milford, in mind when they do make their decision.

The problem that we are faced with here is a chronological problem, so I do not believe that it would be in our best interest to just wait around for an unstable idea that could possibly pose a risk to us, the citizens of Milford.

In conclusion, I would just like to wish the EPA good luck, and thank you for your time.

(Whereupon, at 7:22 p.m., the hearing was adjourned.)

C E R T I F I C A T I O N

I, Marianne Kusa-Ryll, Registered Professional Reporter, do hereby certify that the foregoing, transcript, Volume I, is a true and accurate transcription of my stenographic notes taken on Wednesday, January 29, 1997.

<IMG SRC 98124P6>

**ADMINISTRATIVE RECORD INDEX** 10/09/98
**FLETCHER'S PAINT WORKS** Page 1
**All Operable Units**

01.03 SITE ASSESSMENT - SITE INSPECTION/INVESTIGATION

Title: Potential Hazardous Waste Site, Site Inspection Report, Fletcher's Paint Works. [Elm Street Site]
Addressee: DONALD SMITH - U.S. EPA REGION I
Authors: JOHN A. GOLDEN, JR - NUS CORPORATION
Date: April 15, 1986
Format: FORM No. Pgs: 17
AR No. 01.03.1 Document No. 000002

Title: Fletcher's Paint Works Final Site Inspection Report. [Elm Street Site]
Addressee: DONALD SMITH - U.S. EPA REGION I
Authors: JOHN A. GOLDEN, JR - NUS CORPORATION
Date: September 5, 1986
Format: REPORT, STUDY No. Pgs: 24
AR No. 01.03.2 Document No. 000001

Title: Potential Hazardous Waste Site, Site Inspection Report, Fletcher's Paint Storage Facility. [Mill Street Site)
Addressee: DAVID NEWTON - U.S. EPA REGION I
Authors: JAMES S. YOUNG - NUS CORPORATION
Date: December 30, 1986
Format: FORM No. Pgs: 14
AR No. 01.03.3 Document No. 000003

Title: Final Site Inspection, Fletcher's Paint Storage Facility. [Mill Street Site]
Addressee: U.S. EPA REGION I
Authors: JAMES S. YOUNG - NUS CORPORATION
Date: January 6, 1987
Format: REPORT, STUDY No. Pgs: 15
AR No. 01.03.4 Document No. 000004

01.05 SITE ASSESSMENT - CORRESPONDENCE RELATED TO SITE ASSESSMENT

Title: Letter from Edward J. Schmidt, NHDES, to Lee Mayhew, Town of Milford Administrator, (July 12, 1993). Concerned status of two facilities.
Addressee: LEE F. MAYHEW - MILFORD BOARD OF SELECTMEN
Authors: EDWARD J SCHMIDT - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: July 12, 1993
Format: LETTER No. Pgs: 2
AR No. 01.05.1 Document No. 000226

01.06 SITE ASSESSMENT - HAZARD RANKING SYSTEM PACKAGES

Title: Attachments I-VIII Draft Sampling Task/Summary Report, Fletcher's Paint Works. [Vol. 2 of the H.R.S. Package] [Available in Records Center]
Addressee: U.S. EPA REGION I
Authors: NUS CORPORATION
Date:
Format: REPORT, STUDY No. Pgs: 187
AR No. 01.06.1 Document No. 000006

Title: National Priorities List Superfund Hazardous Waste Site Listed Under CERCLA as Amended in 1986: Fletcher's Paint Works Plant and Storage.
Date: 1986
Format: FACT SHEET, PRESS RELEASE No. Pgs: 1
AR No. 01.06.2 Document No. 000025

Title: Hazard Ranking System Package, Fletcher's Paint Works and Storage Facility, Milford, New Hampshire. [Vol. 1] [Available in Records Center]
Addressee: U.S. EPA REGION I
Authors: NUS CORPORATION
Date: January 25, 1988
Format: REPORT, STUDY — No. Pgs: 179
AR No. 01.06.3 — Document No. 000005

02.01 REMOVAL RESPONSE - CORRESPONDENCE

Title: Concurrence on June 22, 1993, Action Memorandum to Fund SACM Early Removal Action.
Addressee: JANIS K. TSANG - U.S. EPA REGION I/ESD
Authors: PHILIP J. O'BRIEN - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: August 13, 1993
Format: LETTER — No. Pgs: 2
AR No. 02.01.1 — Document No. 000007

Title: Letter from Charles Berube, NHDES, to Jill Siebels, General Electric, (July 3, 1996). Encloses sampling & analysis data letter report.
Addressee: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Authors: CHARLES BERUBE - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: July 3, 1996
Format: LETTER — No. Pgs: 1
AR No. 02.01.2 — Document No. 000242
*Attached to Document No. 000241 In 02.03

Title: Letter from Cheryl Sprague, US EPA RI, to Jill Siebels, General Electric, (August 6, 1996). EPA Comments on voluntary soil removal work plan by ESE.
Addressee: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: August 6, 1996
Format: LETTER — No. Pgs: 4
AR No. 02.01.3 — Document No. 000247

Title: Letter from Charles Berube, NHDES, to Jill Siebels, General Electric, (August 7, 1996). Comments regarding GE's voluntary soil removal work plan.
Addressee: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Authors: CHARLES BERUBE - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: August 7, 1996
Format: LETTER — No. Pgs: 1
AR No. 02.01.4 — Document No. 000240
*Attached to Document No. 000239 In 02.06

Title: Letter from A. Lee Gustafson, Environmental Science & Engineering, Inc. to Cheryl Sprague, US EPA RI, (August 9, 1996). Response to EPA comments.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: A. LEE GUSTAFSON
Date: August 9, 1996
Format: LETTER — No. Pgs: 1
AR No. 02.01.5 — Document No. 000234

Title: Facsimile from A. Lee Gustafson, ESE, to Cheryl Sprague, US EPA RI, (August 9, 1996). Fax of comments which followed by mail.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: A. LEE GUSTAFSON
Date: August 9, 1996
Format: CORRESPONDENCE — No. Pgs: 1
AR No. 02.01.6 — Document No. 000236
*Attached to Document No. 000234 In 02.01

Title: Letter from A. Lee Gustafson, ESE, to Cheryl Sprague, Charles Berube, Lee Mayhew, (August 12, 1996). Revised work plan enclosed.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: A. LEE GUSTAFSON
Date: August 12, 1996
Format: LETTER — No. Pgs: 2
AR No. 02.01.7 — Document No. 000237

Title: Letter from Lee Mayhew, Town of Milford Administrator, to Jill Siebels, General Electric, (September 6, 1996). Korean War Memorial removal.
Addressee: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Authors: LEE F. MAYHEW - MILFORD BOARD OF SELECTMEN
Date: September 6, 1996
Format: LETTER No. Pgs: 1
AR No. 02.01.8 Document No. 000233

Title: Facsimile from Jill Siebels, General Electric, to Cheryl Sprague, US EPA RI, (September 27, 1996). Draft completion work report, Korean War Memorial.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Date: September 27, 1996
Format: CORRESPONDENCE No. Pgs: 1
AR No. 02.01.9 Document No. 000231

02.02 REMOVAL RESPONSE - REMOVAL RESPONSE REPORTS

Title: Site Assessment, Fletcher's Paint Works, Milford, New Hampshire. [Elm Street and Mill Street] [original Photos Available in Records Center]
Addressee: U.S. EPA REGION I
Authors: ROY F. WESTON, INC.
Date: November 23, 1987
Format: REPORT, STUDY No. Pgs: 44
AR No. 02.02.1 Document No. 000008

Title: Fletcher's Paint Facility Drum Inventory and Sampling. [Original Photographs Available in Records Center]
Addressee: U.S. EPA REGION I
Authors: ROY F. WESTON, INC.
Date: December 10, 1987
Format: REPORT, STUDY No. Pgs: 40
AR No. 02.02.2 Document No. 000009

Title: Removal Program Preliminary Assessment/Site Investigation for Fletcher's Paint Works Site, Elm Street.
Addressee: U.S. EPA REGION I
Authors: ROY F. WESTON, INC.
Date: August 1991
Format: REPORT, STUDY No. Pgs: 41
AR No. 02.02.3 Document No. 000010

Title: Removal Program Preliminary Assessment/Site Investigation for Fletcher's Paint Works Site, Mill Street, Milford, NH.
Addressee: U.S. EPA REGION I/ESD
Authors: ROY F. WESTON, INC.
Date: August 1991
Format: REPORT, STUDY No. Pgs: 48
AR No. 02.02.4 Document No. 000026

Title: Addendum to Removal Program Preliminary Assessment/Site Investigation for Fletcher's Paint Works Site (Mill Street).
Addressee: U.S. EPA REGION I/ESD
Authors: ROY F. WESTON, INC.
Date: June 1992
Format: REPORT, STUDY No. Pgs: 62
AR No. 02.02.5 Document No. 000029

Title: Chronological Summary of Site Visit Conducted April 20, 1993, by Joseph A. Resca, Roy F. Weston, Inc., (April 27, 1993).
Addressee: FILE
Authors: JOSEPH A. RESCA - ROY F. WESTON, INC.
Date: April 27, 1993
Format: REPORT, STUDY No. Pgs: 42
AR No. 02.02.6 Document No. 000245

Title: Indoor Dust Survey Sampling Quality Assurance/Quality Control Plan.
Addressee: U.S. EPA REGION I/ESD
Authors: ROY F. WESTON, INC.
Date: October 1994
Format: REPORT, STUDY  No. Pgs: 32
AR No. 02.02.7  Document No. 000030

Title: Chronological Summary for the Fletcher's Paint (Mill Street) Site, July 28, 1995 through September 11, 1995.
Authors: ROY F. WESTON, INC.
Date: October 1995
Format: REPORT, STUDY  No. Pgs: 132
AR No. 02.02.8  Document No. 000244

02.03 REMOVAL RESPONSE - SAMPLING & ANALYSIS DATA

Title: Letter Report from Charles Berube, NHDES, to Rosario Ricciardi, Milford Board of Selectmen, (June 21, 1996) . Sampling results.
Addressee: ROSARIO RICCIARDI - MILFORD BOARD OF SELECTMEN
Authors: CHARLES BERUBE - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: June 21, 1996
Format: REPORT, STUDY  No. Pgs: 2
AR No. 02.03.1  Document No. 000241

02.04 REMOVAL RESPONSE - POLLUTION REPORTS

Title: POLREP 1, Fletcher Paint-Elm Street
Authors: AMYJEAN STRUNK - U.S. EPA REGION I/ESD
Date: November 18, 1991
Format: REPORT, STUDY  No. Pgs: 2
AR No. 02.04.1  Document No. 000083

Title: POLREP 2 and Final, Fletcher Paint-Elm Street.
Authors: AMYJEAN LUSSIER - U.S. EPA REGION I/ESD
Date: January 28, 1992
Format: REPORT, STUDY  No. Pgs: 2
AR No. 02.04.2  Document No. 000084

Title: POLREP #1 - Removal Action, Elm Street and Mill Street.
Authors: JANIS K. TSANG - U.S. EPA REGION I/ESD
Date: August 2, 1993
Format: REPORT, STUDY  No. Pgs: 5
AR No. 02.04.3  Document No. 000011

Title: POLREP #2 - Removal Action, Elm Street and Mill Street.
Authors: JANIS K. TSANG - U.S. EPA REGION I/ESD
Date: August 17, 1993
Format: REPORT, STUDY  No. Pgs: 3
AR No. 02.04.4  Document No. 000012

Title: POLREP #3 - Removal Action, Elm Street and Mill Street.
Authors: JANIS K. TSANG - U.S. EPA REGION I/ESD
Date: September 27, 1993
Format: REPORT, STUDY  No. Pgs: 3
AR No. 02.04.5  Document No. 000013

Title: POLREP #4 - Removal Action, Elm Street and Mill Street.
Authors: JANIS K. TSANG - U.S. EPA REGION I/ESD
Date: November 11, 1993
Format: REPORT, STUDY  No. Pgs: 3
AR No. 02.04.6  Document No. 000014

Title: POLREP #5 - Removal Action, Elm Street.
Authors: JANIS K. TSANG - U.S. EPA REGION I/ESD
Date: January 4, 1994
Format: REPORT, STUDY  No. Pgs: 2
AR No. 02.04.7  Document No. 000015

Title: POLREP #7 - Removal Action, Elm Street.
Authors: JANIS K. TSANG - U.S. EPA REGION I/ESD
Date: June 25, 1994
Format: REPORT, STUDY No. Pgs: 2
AR No. 02.04.8 Document No. 000016

02.05 REMOVAL RESPONSE - ON-SCENE COORDINATOR REPORTS

Title: Draft Completion of Work Report Korean War Memorial Removal Action Fletcher's Paint Works Superfund Site.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: September 1996
Format: REPORT, STUDY No. Pgs: 11
AR No. 02.05.1 Document No. 000232
*Attached to Document No. 000231 In 02.01

02.06 REMOVAL RESPONSE - WORK PLANS AND PROGRESS REPORTS

Title: Letter Report from A. Lee Gustafson, Environmental Science & Engineering, Inc., to Janis Tsang, US EPA RI, (August 28, 1995). Progress Report.
Addressee: JANIS K. TSANG - U.S. EPA REGION I
Authors: A. LEE GUSTAFSON
Date: August 28, 1995
Format: REPORT, STUDY No. Pgs: 1
AR No. 02.06.1 Document NO. 000243

Title: Letter from Jill Siebels, General Electric, to Cheryl Sprague, Charles Berube, Lee Mayhew, (July 25, 1996). Encloses War Memorial Removal Action Work
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Date: July 25, 1996
Format: LETTER No. Pgs: 2
AR No. 02.06.2 Document No. 000249

Title: War Memorial Removal Action Work Plan, Fletcher's Paint Works Superfund Site, (July 25, 1996).
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: July 25, 1996
Format: WORK PLAN No. Pgs: 10
AR No. 02.06.3 Document No. 000250
*Attached to Document No. 000249 In 02.06

Title: Facsimile from Charles Berube, NHDES, to Cheryl Sprague, US EPA RI,(August 7, 1996). Encloses comments on War Memorial Removal.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: CHARLES BERUBE - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: August 7, 1996
Format: CORRESPONDENCE No. Pgs: 1
AR No. 02.06.4 Document No. 000239

Title: Response to EPA Comments regarding Korean War Memorial Voluntary Soil Removal Work Plan, prepared by ESE
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: A. LEE GUSTAFSON
Date: August 9, 1996
Format: REPORT, STUDY No. Pgs: 53
AR No. 02.06.5 Document No. 000235
*Attached to Document No. 000234 In 02.01

Title: War Memorial Removal Action Work Plan.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: A. LEE GUSTAFSON
Date: August 12, 1996
Format: WORK PLAN No. Pgs: 12
AR No. 02.06.6 Document No. 000238
*Attached to Document No. 000237 In 02.01

02.09 REMOVAL RESPONSE - ACTION MEMORANDA

Title: Fletcher's Paint Works (Elm St.), Removal Site Administrative Record: Index
Authors: U.S. EPA REGION I
Date: May 9, 1989
Format: MISCELLANEOUS No. Pgs: 6
AR No. 02.09.1 Document No. 000019

Title: Fletcher's Paint Works (Mill St.) Removal Site Administrative Record: Index.
Authors: U.S. EPA REGION I
Date: May 9, 1989
Format: MISCELLANEOUS No. Pgs: 6
AR No. 02.09.2 Document No. 000020

Title: Fletcher's Paint Works Elm Street Site Administrative Record: Index.
Addressee: U.S. EPA REGION I
Authors: ROY F. WESTON, INC.
Date: November 19, 1991
Format: MISCELLANEOUS No. Pgs: 4
AR No. 02.09.3 Document No. 000022

Title: Fletcher Paint Superfund Site, Removal Action III, Administrative Record File and Index.
Addressee: U.S. EPA REGION I/ESD
Authors: ROY F. WESTON, INC.
Date: July 27, 1993
Format: MISCELLANEOUS No. Pgs: 174
AR No. 02.09.4 Document No. 000033

Title: Fletcher's Paint Works and Storage Facility Superfund Site Removal Action IV Administrative Record File.
Addressee: U.S. EPA REGION I/ESD
Authors: ROY F. WESTON, INC.
Date: September 1995
Format: MISCELLANEOUS No. Pgs: 402
AR No. 02.09.5 Document No. 000032

02.15 REMOVAL RESPONSE - REMOVAL RESPONSE SUBCONTRACTOR DOCUMENTS

Title: HASP Approval form from Environmental Science & Engineering, Inc., signed November 17 and November 18, 1994.
Date: November 17, 1994
Format: REPORT, STUDY No. Pgs: 19
AR No. 02.15.1 Document No. 000248

03.01 REMEDIAL INVESTIGATION - CORRESPONDENCE

Title: Request for Review of Wood Coring Sampling Results.
Addressee: AMYJEAN LUSSIER - U.S. EPA REGION I/ESD
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: August 6, 1992
Format: MEMORANDUM No. Pgs: 3
AR No. 03.01.1 Document No. 000034

Title: Letter from Cheryl Sprague, US EPA RI, to Robert Courage, Milford Town Dept. of Public Works, (November 18, 1993). Concerned water line-Keyes Well.
Addressee: ROBERT COURAGE - TOWN OF MILFORD
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: November 18, 1993
Format: LETTER No. Pgs: 2
AR No. 03.01.2 Document No. 000227

Title: Notification of Evidence of Groundwater Contamination Apparently Emanating from the Citgo Station Area.
Addressee: KENYON OIL COMPANY
Authors: DANIEL COUGHLIN - U.S. EPA REGION I
Date: January 25, 1994
Format: LETTER No. Pgs: 2
AR No. 03.01.3 Document No. 000040

Title: Letter from Kenneth Finkelstein, NOAA, to Cheryl Sprague, US EPA RI, (May 24, 1994). Concerning ecological risk assessment NOAA; PCB impact on fish
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: KENNETH FINKELSTEIN
Date: May 24, 1994
Format: LETTER No. Pgs: 3
AR No. 03.01.4 Document No. 000230

Title: Transmittal of the Preliminary Ecological Assessment and the Phase 1B, Remedial Investigation Workplan.
Addressee: THERESA BURKE - BINGHAM, DANA AND GOULD
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: June 6, 1994
Format: LETTER No. Pgs: 1
AR No. 03.01.5 Document No. 000036

Title: Letter from William J. Miller, ERM-Northeast, to Cheryl Sprague, US EPA RI, (September 14, 1994) Review of Remedial Investigation for GE.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: WILLIAM J MILLER
Date: September 14, 1994
Format: LETTER No. Pgs: 7
AR No. 03.01.6 Document No. 000210

Title: Letter from Lee Mayhew, Milford Town Administrator, to Cheryl Sprague, US EPA RI, (May 1, 1995). Risk Assessment exposure scenario.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: LEE F. MAYHEW - MILFORD BOARD OF SELECTMEN
Date: May 1, 1995
Format: LETTER No. Pgs: 2
AR No. 03.01.7 Document No. 000211

## 03.02 REMEDIAL INVESTIGATION - SAMPLING & ANALYSIS DATA

Title: Sampling & Analysis Data: Availability for Review
Format: No. Pgs: 1
AR No. 03.02.1 Document No. 000261

Title: Polychlorinated Biphenyl Analysis in Transformer Fluid and Waste Oils - Fletcher's Paint Works.
Addressee: MARY ELLEN STANTON - U.S. EPA REGION I/ESD
Authors: ELAYNE LEE, DEBORAH THIEM, RICHARD SISCANAW - U.S. EPA REGION I/ESD
Date: August 2, 1991
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 2
AR No. 03.02.2 Document No. 000088
*Attached to Document No. 000086 In 03.02

Title: Analysis of Sample Numbers 85504 and 85506.
Addressee: MARY ELLEN STANTON - U.S. EPA REGION I/ESD
Authors: STEVEN HELLER - U.S. EPA REGION I/ESD
Date: August 16, 1991
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 8
AR No. 03.02.3 Document No. 000087
*Attached to Document No. 000086 In 03.02

Title: Transmittal of Analytical Results for Samples Collected on July 30, 1991.
Addressee: MARY FLETCHER
Authors: AMYJEAN STRUNK - U.S. EPA REGION I/ESD
Date: September 10, 1991
Format: LETTER No. Pgs: 1
AR No. 03.02.4 Document No. 000086

Title: Field Sampling Plan for Remedial Planning Activities at the Fletcher's Paint Site Milford, NH, Phase IA, Revision No. 1.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: October 25, 1991
Format: REPORT, STUDY No. Pgs: 246
AR No. 03.02.5 Document No. 000017

Title: Report to Residents on Soil Samples Taken from Drainage Ditch Adjacent to Their Property.
Addressee: ORSON H BRAGDON
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: September 1, 1992
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 3
AR No. 03.02.6 Document No. 000089

Title: Indoor Air and Soil Gas Survey - Results, Jacques Elementary School.
Addressee: U.S. EPA REGION I
Authors: U.S. EPA REGION I/ESD
Date: October 1992
Format: REPORT, STUDY No. Pgs: 31
AR No. 03.02.7 Document No. 000091
*Attached to Document No. 000090 In 03.02

Title: Transmittal of report: "Indoor Air and Soil Gas Survey - Results."
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: PETER R KAHN - U.S. EPA REGION I/ESD
Date: October 27, 1992
Format: MEMORANDUM No. Pgs: 1
AR No. 03.02.8 Document No. 000090

Title: Letter Report from Charles Berube, NHDES, to Cheryl Sprague, US EPA RI, (November 9, 1992) Sampling Rounds October 20 through 21, 1992.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: CHARLES BERUBE - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: November 9, 1992
Format: REPORT, STUDY No. Pgs: 44
AR No. 03.02.9 Document No. 000224

Title: Letter Report from Charles Berube, NHDES, to Cheryl Sprague, US EPA RI, (July 21, 1993). Results of October 20 through 21, 1992 sampling rounds.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: CHARLES BERUBE - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: July 21, 1993
Format: REPORT, STUDY No. Pgs: 7
AR No. 03.02.10 Document No. 000225

Title: Letter Report from Charles Berube, NHDES, to Cheryl Sprague, US EPA RI,(August 30, 1993) Results from August 3, 1993 sampling.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: CHARLES BERUBE - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: August 30, 1993
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 8
AR No. 03.02.11 Document No. 000209

Title: Field Sampling Plan for Remedial Planning Activities at the Fletcher's Paint Site Milford, NH, Phase IB, Addendum No. 1.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: September 1, 1993
Format: REPORT, STUDY    No. Pgs: 23
AR No. 03.02.12    Document No. 000018

Title: Field Sampling Plan for Remedial Planning Activities at the Fletcher's Paint Site, Milford, NH, Addendum No. 2.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: October 21, 1994
Format: REPORT, STUDY    No. Pgs: 17
AR No. 03.02.13    Document No. 000229

Title: ChemServe Quality Assurance Quality Control Manual, Revision Date March 1996,
Date: March 1996
Format: REPORT, STUDY    No. Pgs: 42
AR No. 03.02.14    Document No. 000246

03.04 REMEDIAL INVESTIGATION - INTERIM DELIVERABLES

Title: Site Management Plan for Remedial Planning at the Fletcher's Paint Site, Milford, NH.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: August 20, 1991
Format: REPORT, STUDY    No. Pgs: 17
AR No. 03.04.1    Document No. 000021

Title: Health and Safety Project Plan for RI/FS Phase IA Activities at the Fletcher's Paint Site, Milford, NH.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: August 23, 1991
Format: REPORT, STUDY    No. Pgs: 50
AR No. 03.04.2    Document No. 000023

Title: Quality Assurance Project Plan, RI/FS Phase IA for the Fletcher's Paint Site in Milford, New Hampshire, Revision No. 1.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: October 23, 1991
Format: REPORT, STUDY    No. Pgs: 64
AR No. 03.04.3    Document No. 000027

Title: Health and Safety Project Plan, Addendum No. 1 for RI/FS Activities at the Fletcher's Paint Site, Milford, New Hampshire.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: September 3, 1993
Format: REPORT, STUDY    No. Pgs: 23
AR No. 03.04.4    Document No. 000024

Title: Quality Assurance Project Plan, RI/FS for the Fletcher's Paint Site in Milford, New Hampshire, Addendum No. 1.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: September 9, 1993
Format: REPORT, STUDY    No. Pgs: 25
AR No. 03.04.5    Document No. 000028

03.06 REMEDIAL INVESTIGATION - REMEDIAL INVESTIGATION REPORTS

Title: Technical Memorandum for Fletcher's Paint Site, Milford, NH, Phase 1A, Remedial Investigation Rev. No. 1, Vol. 1, Sect. 1-3
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: August 1993
Format: REPORT, STUDY — No. Pgs: 184
AR No. 03.06.1 — Document No. 000141

Title: Technical Memorandum for Fletcher's Paint Site, Milford, NH, Phase 1A, Remedial Investigation, Rev. No. 1, Vol. II, Sect. 4 & 5.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: August 1993
Format: REPORT, STUDY — No. Pgs: 164
AR No. 03.06.2 — Document No. 000142

Title: Technical Memorandum for Fletcher's Paint Site, Milford, NH, Phase 1A, Remedial Investigation, Rev. No. 1, Vol. III, Appendices A-E.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: August 1993
Format: REPORT, STUDY — No. Pgs: 297
AR No. 03.06.3 — Document No. 000143

Title: Technical Memorandum for Fletcher's Paint Site, Milford, NH, Phase 1A, Remedial Investigation, Rev. No. 1, Vol. IV, Appendices F-J.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: August 1993
Format: REPORT, STUDY — No. Pgs: 349
AR No. 03.06.4 — Document No. 000144

Title: Technical Memorandum for Fletcher's Paint Site, Milford, NH, Phase 1A, Remedial Investigation, Rev. No. 1, Vol. V, Appendices K-P.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: August 1993
Format: REPORT, STUDY — No. Pgs: 162
AR No. 03.06.5 — Document No. 000145

Title: Final Report for Preliminary Ecological Assessment at the Fletcher's Paint Site, Milford, NH, Phase IA, Technical Memorandum Supplement.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: March 15, 1994
Format: REPORT, STUDY — No. Pgs: 156
AR No. 03.06.6 — Document No. 000031

Title: Final Remedial Investigation for Fletcher's Paint Site, Milford, NH, Revision No. 1, Volume I, Sections 1-3.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: July 1, 1994
Format: REPORT, STUDY — No. Pgs: 186
AR No. 03.06.7 — Document No. 000079

Title: Final Remedial Investigation for Fletcher's Paint Site, Revision No. 1, Volume II, Sections 4-7.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: July 1, 1994
Format: REPORT, STUDY — No. Pgs: 409
AR No. 03.06.8 — Document No. 000080

Title: Final Remedial Investigation for Fletcher's Paint Site, Revision No. 1, Volume III Appendices A-J.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: July 1, 1994
Format: REPORT, STUDY    No. Pgs: 865
AR No. 03.06.9    Document No. 000081

Title: Final Remedial Investigation for Fletcher's Paint Site, Revision No. 1. Volume IV, Appendices K-0.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: July 1, 1994
Format: REPORT, STUDY    No. Pgs: 294
AR No. 03.06.10    Document No. 000082

## 03.07 REMEDIAL INVESTIGATION - WORK PLANS AND PROGRESS REPORTS

Title: Work Plan for RI/FS Activities at the Fletcher's Paint Site, Revision No. 1.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: July 19, 1991
Format: WORK PLAN    No. Pgs: 184
AR No. 03.07.1    Document No. 000035

Title: Work Plan Amendment No. 2, Remedial Investigation/Feasibility Study Activities at the Fletcher's Paint Site, Revision No. 1.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: August 4, 1993
Format: REPORT, STUDY    No. Pgs: 36
AR No. 03.07.2    Document No. 000037

Title: Work Plan Amendment No. 4, Remedial Investigation/Feasibility Study Activities at the Fletcher's Paint Site, Phase IB, Revision No. 1.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: February 3, 1994
Format: REPORT, STUDY    No. Pgs: 39
AR No. 03.07.3    Document No. 000039

## 03.09 REMEDIAL INVESTIGATION - HEALTH ASSESSMENTS

Title: ATSDR Report to Congress 1993, 1994, 1995
Authors: U.S. A.T.S.D.R.
Date:
Format: REPORT, STUDY    No. Pgs: 2
AR No. 03.09.1    Document No. 000259

Title: Preliminary Health Assessment for Fletcher's Paint Works and Storage Facility Hazardous Waste Site.
Addressee: U.S. A.T.S.D.R.
Authors: N.H. BUREAU OF HEALTH RISK ASSESSMENT
Date: June 11, 1990
Format: REPORT, STUDY    No. Pgs: 15
AR No. 03.09.2    Document No. 000085

Title: Health Consultation: Fletcher's Paint Site (CR# 10A2).
Addressee: TED BAZENAS - U.S. A.T.S.D.R.
Authors: KENNETH G. ORLOFF - U.S. A.T.S.D.R.
Date: July 10, 1992
Format: REPORT, STUDY    No. Pgs: 5
AR No. 03.09.3    Document No. 000092

Title: ATSDR Record of Activity.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: KENNETH G. ORLOFF - U.S. A.T.S.D.R.
Date: August 28, 1992
Format: REPORT, STUDY    No. Pgs: 2
AR No. 03.09.4    Document No. 000038

Title: Health Consultation: Evaluation of Chemical Contamination of Fish from the Souhegan River Area of the Fletcher's Paint Storage Facility.
Authors: U.S. A.T.S.D.R.
Date: December 10, 1997
Format: REPORT, STUDY    No. Pgs: 14
AR No. 03.09.5    Document No. 000267

03.10 REMEDIAL INVESTIGATION - ENDANGERMENT/BASELINE RISK ASSESSMENTS

Title: Final Baseline Human Health Risk Assessment for Fletcher's Paint Site, Section 6 of Remedial Investigation, Revision No. 1.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: July 1, 1994
Format: REPORT, STUDY    No. Pgs: 217
AR No. 03.10.1    Document No. 000041

Title: Focused Feasibility Report.
Addressee: GENERAL ELECTRIC COMPANY
Authors: ENVIRONMENTAL SCIENCE & ENGINEERING, INC
Date: June 2, 1995
Format: REPORT, STUDY    No. Pgs: 121
AR No. 03.10.2    Document No. 000094
*Attached to Document No. 000093 In 03.10

Title: Comments on the Baseline Risk Assessment.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Date: June 6, 1995
Format: LETTER    No. Pgs: 1
AR No. 03.10.3    Document No. 000093

04.01 FEASIBILITY STUDY - CORRESPONDENCE

Title: "ERACE--Electrical Remediation at Contaminated Environments" by Pacific Northwest Laboratory/Battelle Memorial Institute.
Format: MISCELLANEOUS    No. Pgs: 3
AR No. 04.01.1    Document No. 000132
*Attached to Document No. 000129 In 04.01

Title: Environmental Remediation Services by Maxymillian Technologies
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Format: MISCELLANEOUS    No. Pgs: 15
AR No. 04.01.2    Document No. 000139
*Attached to Document No. 000173 In 04.01

Title: Off-Site Incineration, State of the Market, Presentation to the EPA by Rollins Environmental Services, Date unknown.
Format: NOTES-MEETING    No. Pgs: 32
AR No. 04.01.3    Document No. 000156

Title: "Facts about In Situ Thermal Desorption Technology," Meeting Handout from Shell Technologies.
Format: FACT SHEET, PRESS RELEASE    No. Pgs: 4
AR No. 04.01.4    Document No. 000172

Title: "Cost Effective Solutions - Former Manufactured Gas Plant Remediation Services" Maxymillian Technologies brochure.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Format: MISCELLANEOUS  No. Pgs: 4
AR No. 04.01.5  Document No. 000222
*Attached to Document No. 000221 In 04.01

Title: General Electric's Work Plan for Gasmer Road Thermal Well Field Test, Houston, TX
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: GENERAL ELECTRIC COMPANY
Date:
Format: REPORT, STUDY  No. Pgs: 10
AR No. 04.01.6  Document No. 000199
*Attached to Document No. 000198 In 04.01

Title: U.S. PATENT No. 5,190,405, Vacuum Method for Removing Soil Contaminants Utilizing Thermal Conduction Heating
Date: March 2, 1993
Format: MISCELLANEOUS  No. Pgs: 13
AR No. 04.01.7  Document No. 000201

Title: Letter Report from David Major, Beak Consultants, "Soil Treatment Strategy for the Fletcher's Paint Site in Milford, NH." (February 18, 1995).
Addressee: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Authors: DAVID W. MAJOR - BEAK CONSULTANTS LIMITED
Date: February 28, 1994
Format: REPORT, STUDY  No. Pgs: 16
AR No. 04.01.8  Document No. 000161
*Attached to Document No. 000160 In 04.01

Title: Six-Phase Soil Heating Accelerates VOC Extraction from Clay Soil, Proceedings of Spectrum '94: International Nuclear and Hazardous Waste Management.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: J GAUGLITZ
Date: August 14, 1994
Format: MISCELLANEOUS  No. Pgs: 9
AR No. 04.01.9  Document No. 000130
*Attached to Document No. 000129 In 04.01

Title: "Six-Phase Soil Heating for Enhanced Removal of Contaminants: Volatile Organic Compounds in Non-Arid Soils Integrated Demonstration, Savannah River"
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: J GAUGLITZ
Date: October 1994
Format: MISCELLANEOUS  No. Pgs: 65
AR No. 04.01.10  Document No. 000131
*Attached to Document No. 000129 In 04.01

Title: In Situ Vitrification Fact Sheet.
Authors: GEOSAFE CORPORATION
Date: November 1994
Format: MISCELLANEOUS  No. Pgs: 4
AR No. 04.01.11  Document No. 000099
*Attached to Document No. 000098 In 04.01

Title: SITE Technology Capsule: Geosafe Corporation In Situ Vitrification Technology.
Authors: U.S. ENVIRONMENTAL PROTECTION AGENCY
Date: November 1994
Format: MISCELLANEOUS  No. Pgs: 9
AR No. 04.01.12  Document No. 000101
*Attached to Document No. 000098 In 04.01

Title: Large-Scale Commercial Applications of the In Situ Vitrification Remediation Technology.
Authors: GEOSAFE CORPORATION
Date: November 1994
Format: MISCELLANEOUS No. Pgs: 11
AR No. 04.01.13 Document No. 000102
*Attached to Document No. 000098 In 04.01

Title: Facsimile from Coleen Fuerst, General Electric, to Cheryl Sprague, U.S. EPA RI, (November 9, 1994). Outline of treatability plan, shipping sample.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Date: November 9, 1994
Format: CORRESPONDENCE No. Pgs: 7
AR No. 04.01.14 Document No. 000157

Title: State of New Hampshire Groundwater Sampling.
Addressee: CHARLES BERUBE - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: November 16, 1994
Format: LETTER No. Pgs: 2
AR No. 04.01.15 Document No. 000095

Title: Letter from Donald J. Coughlin, NH Superfund Section, to Coleen Fuerst, General Electric, (November 29, 1994). Concerned FS alternatives.
Addressee: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Authors: DANIEL COUGHLIN - U.S. EPA NEW ENGLAND
Date: November 29, 1994
Format: LETTER No. Pgs: 3
AR No. 04.01.16 Document No. 000158

Title: "Development of an Indirectly Heated Thermal Desorption System for PCB Contaminated Soil," Presented at the 1995 Superfund XVI Conference.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: ANTHONY PISANELLI, NEAL A. MAXYMILLIAN
Date: 1995
Format: REPORT, STUDY No. Pgs: 16
AR No. 04.01.17 Document No. 000137
*Attached to Document No. 000173 In 04.01

Title: "Indirect System Progress Photos" by Maxymillian Technologies
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: 1995
Format: PHOTO, MICROFORM, VIDEO No. Pgs: 18
AR No. 04.01.18 Document No. 000138
*Attached to Document No. 000173 In 04.01

Title: Letter from Mario Leclerc, Milford Wastewater Treatment Facility, to Michael Marando, ADL, (not dated). Concerning groundwater.
Addressee: MICHAEL A MARANDO - ARTHUR D. LITTLE, INC.
Authors: MARIO LECLERK - MILFORD WASTEWATER TREATMENT FACILITY
Date: 1995
Format: LETTER No. Pgs: 1
AR No. 04.01.19 Document No. 000166
*Attached to Document No. 000164 In 04.01

Title: Letter from Michael A. Marando, ADL, to Mario Leclerk, Milford Wastewater Treatment Facility, (January 17, 1995). Concerning groundwater.
Addressee: MARIO LECLERK - MILFORD WASTEWATER TREATMENT FACILITY
Authors: MICHAEL A MARANDO - ARTHUR D. LITTLE, INC.
Date: January 17, 1995
Format: LETTER No. Pgs: 1
AR No. 04.01.20 Document No. 000165
*Attached to Document No. 000164 In 04.01

Title: Letter from Coleen Fuerst, General Electric, to Cheryl Sprague, US EPA RI, (February 13, 1995). Concerning Feasibility Study alternatives.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Date: February 13, 1995
Format: LETTER No. Pgs: 3
AR No. 04.01.21 Document No. 000159

Title: Soil Treatment Strategy for the Fletcher's Paint Site in Milford, New Hampshire.
Addressee: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Authors: DAVID W. MAJOR - BEAK CONSULTANTS LIMITED
Date: February 28, 1995
Format: REPORT, STUDY No. Pgs: 16
AR No. 04.01.22 Document No. 000097
*Attached to Document No. 000096 In 04.01

Title: Limited Soil Excavation and/or Treatment Approach.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Date: March 2, 1995
Format: LETTER No. Pgs: 1
AR No. 04.01.23 Document No. 000096

Title: Letter from Coleen Fuerst, General Electric, to Cheryl Sprague, US EPA RI, (March 2, 1995). Concerning limited soil excavation.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Date: March 2, 1995
Format: LETTER No. Pgs: 1
AR No. 04.01.24 Document No. 000160

Title: Memorandum from David Major, Beak Consultants, Ltd., to Coleen Fuerst, General Electric, (March 3, 1995). Concerning transport of PCB in groundwater.
Addressee: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Authors: DAVID W. MAJOR - BEAK CONSULTANTS LIMITED
Date: March 3, 1995
Format: CORRESPONDENCE No. Pgs: 3
AR No. 04.01.25 Document No. 000163
*Attached to, Document No. 000162 In 04.01

Title: Letter from Coleen Fuerst, General Electric, to Cheryl Sprague, US EPA RI, (March 6, 1995). Concerning transport of PCB in groundwater.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Date: March 6, 1995
Format: LETTER No. Pgs: 1
AR No. 04.01.26 Document No. 000162

Title: Facsimile from Ken Cahill, Arthur D. Little, Inc., to Cheryl Sprague, US EPA RI, (March 10, 1995). Concerning Milford POTW groundwater assessment.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: KEN CAHILL - ARTHUR D. LITTLE, INC.
Date: March 10, 1995
Format: CORRESPONDENCE No. Pgs: 1
AR No. 04.01.27 Document No. 000164

Title: Letter from George Kingsley, CF Systems, to Cheryl Sprague, US EPA RI, (March 16, 1995). Concerns treatability study. (Study is Confidential.)
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: GEORGE KINGSLEY
Date: March 16, 1995
Format: LETTER No. Pgs: 1
AR No. 04.01.28 Document No. 000168

Title: Letter from Lee F. Mayhew, Town of Milford Administrator, to Cheryl Sprague, US EPA RI, (March 20, 1995). Concerning Feasibility Study.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: LEE F. MAYHEW - MILFORD BOARD OF SELECTMEN
Date: March 20, 1995
Format: LETTER No. Pgs: 1
AR No. 04.01.29 Document No. 000167

Title: Letter from Lee F. Mayhew, to Cheryl Sprague, US EPA RI, (March 28, 1995). Concerning Feasibility Study.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: LEE F. MAYHEW - MILFORD BOARD OF SELECTMEN
Date: March 28, 1995
Format: LETTER No. Pgs: 1
AR No. 04.01.30 Document No. 000170

Title: Letter from Cheryl Sprague, US EPA RI, to Coleen Fuerst, General Electric, (April 2, 1995). Concerning proposed technology update meeting.
Addressee: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: April 2, 1995
Format: LETTER No. Pgs: 1
AR No. 04.01.31 Document No. 000171

Title: Letter Commenting on the Remedial Approach Outlined in April 12, 1995 Letter to Cheryl Sprague.
Addressee: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Authors: JOHN REGAN - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: May 3, 1995
Format: LETTER No. Pgs: 5
AR No. 04.01.32 Document No. 000263

Title: Letter from James H. Maxymillian, Maxymillian Technologies, to Cheryl Sprague, US EPA RI, (August 22, 1995). Concerns thermal systems.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: JAMES H. MAXYMILLIAN
Date: August 22, 1995
Format: LETTER No. Pgs: 1
AR No. 04.01.33 Document No. 000173

Title: "Thermal Blanket For In-Situ Remediation of Surficial Contamination: A Pilot Test," Pre-print of article submitted to Environ. Science & Tech. 8/30/95
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: I.E.T. IBEN - GENERAL ELECTRIC COMPANY
Date: August 30, 1995
Format: REPORT, STUDY No. Pgs: 27
AR No. 04.01.34 Document No. 000200

Title: In Situ Vitrification Technology Update.
Authors: GEOSAFE CORPORATION
Date: November 1995
Format: MISCELLANEOUS No. Pgs: 6
AR No. 04.01.35 Document No. 000100
*Attached to Document No. 000098 In 04.01

Title: Follow-up on Meeting of 10/30/95.
Addressee: RUTH BLEYLER - U.S. EPA REGION I
Authors: DALE M. TIMMONS - GEOSAFE CORPORATION
Date: November 6, 1995
Format: LETTER No. Pgs: 1
AR No. 04.01.36 Document No. 000098

Title: Letter from A. Lee Gustafson & Dennis R. Sasseville, Environmental Science & Engr., Inc. to John M. Regan, NHDES, (November 9, 1995).
Addressee: N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: November 9, 1995
Format: LETTER No. Pgs: 5
AR No. 04.01.37 Document No. 000174

Title: "Soil-Heating Technology Shown to Accelerate the Removal of Volatile Organic Compounds from Clay Soils," Bergsman et al.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: THERESA BERGSMAN
Date: December 1995
Format: MISCELLANEOUS No. Pgs: 11
AR No. 04.01.38 Document No. 000133
*Attached to Document No. 000129 In 04.01

Title: Letter Concerning the Information Required in the Focused Feasibility Study Being Prepared by Beak on Behalf of GE.
Addressee: MICHAEL IANNIELLO - GENERAL ELECTRIC COMPANY
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: December 5, 1995
Format: LETTER No. Pgs: 4
AR No. 04.01.39 Document No. 000266

Title: "Facts about In Situ Thermal Desorption Technology" from Shell Technology Ventures Inc.
Addressee: MILFORD BOARD OF SELECTMEN
Date: January 1996
Format: FACT SHEET, PRESS RELEASE No. Pgs: 4
AR No. 04.01.40 Document No. 000184
*Attached to Document No. 000183 In 04.01

Title: Letter from Coleen Fuerst, General Electric, to Cheryl Sprague, US EPA RI, (February 20, 1996). Concerning Maxymillian and Shell thermal technology.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: COLEEN M. FUERST GENERAL ELECTRIC COMPANY
Date: February 20, 1996
Format: LETTER No. Pgs: 1
AR No. 04.01.41 Document No. 000175

Title: Letter from Stephen D. Ramsey, General Electric, to John DeVillars, US EPA RI, (February 28, 1996). Concerning feasibility study.
Addressee: JOHN DEVILLARS - U.S. EPA REGION I
Authors: GENERAL ELECTRIC COMPANY
Date: February 28, 1996
Format: LETTER No. Pgs: 2
AR No. 04.01.42 Document No. 000176

Title: Letter from Coleen Fuerst, General Electric, to Cheryl Sprague, US EPA RI, (March 11, 1996). Concerning thermal desorption technologies.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Date: March 11, 1996
Format: LETTER No. Pgs: 1
AR No. 04.01.43 Document No. 000177

Title: A Citizen's Guide to Thermal Desorption, Technology Fact Sheet, (April 1996).
Addressee: LEE F. MAYHEW - MILFORD BOARD OF SELECTMEN
Authors: U.S. ENVIRONMENTAL PROTECTION AGENCY
Date: April 1996
Format: FACT SHEET, PRESS RELEASE No. Pgs: 4
AR No. 04.01.44 Document No. 000192
*Attached to Document No. 000189 In 04.01

Title: "Cotton Bugs Eat Wastes" ENR, (April 22, 1996), p. 18.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: April 22, 1996
Format: NEWS CLIPPING No. Pgs: 1
AR No. 04.01.45 Document No. 000179
*Attached to Document No. 000178 In 04.01

Title: Letter from Lisa Hogen, Maxymillian Technologies, to Cheryl Sprague, US EPA RI, (April 24, 1996). Enclosed literature on indirect system.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: LISA H0GEN
Date: April 24, 1996
Format: LETTER No. Pgs: 1
AR No. 04.01.46 Document No. 000221
*Attached to Document No. 000139 In 04.01

Title: Entretech "1" Informational description from internet.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: May 1, 1996
Format: FACT SHEET, PRESS RELEASE No. Pgs: 3
AR No. 04.01.47 Document No. 000180
*Attached to Document No. 000178 In 04.01

Title: Letter from Lee F. Mayhew, Town of Milford Administrator, to Cheryl Sprague, US EPA RI, (May 2, 1996). Concerning cotton fiber discovery.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: LEE F. MAYHEW - MILFORD BOARD OF SELECTMEN
Date: May 2, 1996
Format: LETTER No. Pgs: 1
AR No. 04.01.48 Document No. 000178

Title: Letter from John DeVillars, US EPA RI, to Stephen D. Ramsey, General Electric, (May 7, 1996). Concerning meeting schedules and feasibility study.
Addressee: STEPHEN D RAMSEY - GENERAL ELECTRIC COMPANY
Authors: JOHN DEVILLARS - U.S. EPA REGION I
Date: May 7, 1996
Format: LETTER No. Pgs: 1
AR No. 04.01.49 Document No. 000181

Title: "Demonstration Test Report PCB Disposal by Non-Thermal Alternative Methods, South Glens Falls Drag Strip, Saratoga Cty., NY, vols. 1 & 2.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: May 9, 1996
Format: REPORT, STUDY No. Pgs: 272
AR No. 04.01.50 Document No. 000135

Title: Letter from John H. Guswa, GeoTrans, Inc., to Coleen Fuerst, General Electric, (May 22, 1996). Comments on Final Feasibility Study.
Addressee: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Authors: JOHN H. GUSWA
Date: May 22, 1996
Format: LETTER No. Pgs: 5
AR No. 04.01.51 Document No. 000187
*Attached to Document No. 000185 In 04.01

Title: Letter from Coleen Fuerst, General Electric, to Marilyn Kenison, Town of Milford, dated 5/23/96, concerning public meeting on thermal technologies.
Addressee: MILFORD BOARD OF SELECTMEN
Authors: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Date: May 23, 1996
Format: LETTER No. Pgs: 1
AR No. 04.01.52 Document No. 000183
*Attached to Document No. 000182 In 04.01

Title: Letter from Julie A. Stickney & Russell E. Keenan, ChemRisk, to Coleen Fuerst, GE, (May 23, 1996). Comments on Final Feasibility Study.
Addressee: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Authors: JULIE A. STICKNEY, RUSSELL E. KEENAN
Date: May 23, 1996
Format: LETTER No. Pgs: 19
AR No. 04.01.53 Document No. 000186
*Attached to Document No. 000185 In 04.01

Title: Comments (May 24, 1996) from Coleen Fuerst, General Electric, on the Final Feasibility Study.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Date: May 24, 1996
Format: MISCELLANEOUS No. Pgs: 13
AR No. 04.01.54 Document No. 000185

Title: Facsimile from Lee F. Mayhew, Town of Milford Administrator, to Cheryl Sprague, US EPA RI, (May 30, 1996). Encloses letter from Coleen Fuerst, GE.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: LEE F. MAYHEW - MILFORD BOARD OF SELECTMEN
Date: May 30, 1996
Format: CORRESPONDENCE No. Pgs: 1
AR No. 04.01.55 Document No. 000182

Title: Memorandum from Eva L. Davis, EPA Research Hydrologist, to Cheryl Sprague, (June 19, 1996). Concerning thermal remediation techniques.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: EVA L. DAVIS - U.S. ENVIRONMENTAL PROTECTION AGENCY
Date: June 19, 1996
Format: MEMORANDUM No. Pgs: 4
AR No. 04.01.56 Document No. 000190
*Attached to Document No. 000189 In 04.01

Title: Memorandum from Bryan Olson, EPA RI, to Cheryl Sprague, EPA RI, (June 19, 1996). Concerning information on comparable site for thermal wells demo.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: BRYAN OLSON - U.S. EPA REGION I
Date: June 19, 1996
Format: MEMORANDUM No. Pgs: 1
AR No. 04.01.57 Document No. 000191
*Attached to Document No. 000189 In 04.01

Title: Letter from Cheryl Sprague, US EPA RI, to Lee Mayhew, Town of Milford Administrator, (June 28, 1996). Concerning Feasibility Study alternatives.
Addressee: LEE F. MAYHEW - MILFORD BOARD OF SELECTMEN
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: June 28, 1996
Format: LETTER No. Pgs: 3
AR No. 04.01.58 Document No. 000189

Title: Letter from Cheryl Sprague, US EPA RI, to Lee Mayhew, Town of Milford Administrator, (July 3, 1996). Clarification of June 28, 1996 letter.
Addressee: LEE F. MAYHEW - MILFORD BOARD OF SELECTMEN
Authors: CHERYL L. SPRAGUE U.S. EPA REGION I
Date: July 3, 1996
Format: LETTER No. Pgs: 1
AR No. 04.01.59 Document No. 000193

Title: Letter from Jill Siebels, General Electric, to Lee Mayhew, Town of Milford Administrator, (July 3, 1996). Answers questions posed on thermal wells.
Addressee: LEE F. MAYHEW MILFORD BOARD OF SELECTMEN
Authors: JILL SIEBELS GENERAL ELECTRIC COMPANY
Date: July 3, 1996
Format: LETTER No. Pgs: 6
AR No. 04.01.60 Document No. 000194

Title: Letter from Jill Siebels, General Electric, to Philip O'Brien, NHDES, (July 10, 1996). Concerning site tour and meeting July 5, 1996.
Addressee: PHILIP J. O'BRIEN - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Authors: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Date: July 10, 1996
Format: LETTER No. Pgs: 1
AR No. 04.01.61 Document No. 000195

Title: Letter from Larry Brill, US EPA RI, to Philip O'Brien, NHDES, (July 17, 1996). Concerning meeting to discuss goals of clean-up.
Addressee: PHILIP J. O'BRIEN - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Authors: LARRY BRILL - U.S. EPA NEW ENGLAND
Date: July 17, 1996
Format: LETTER No. Pgs: 5
AR No. 04.01.62 Document No. 000197

Title: Letter from David E. Ott, Terra Vac to Cheryl Sprague, EPA Region I (July 18, 1996). Concerning Six. Phase Soil Heating (SPSH) technology.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: DAVID OTT
Date: July 18, 1996
Format: LETTER No. Pgs: 1
AR No. 04.01.63 Document No. 000129

Title: Letter from Philip O'Brien, NHDES, to Larry Brill, US EPA NE, (July 22,1996). Concerning revised clean up goals and performance standards.
Addressee: LARRY BRILL - U.S. EPA NEW ENGLAND
Authors: PHILIP J. O'BRIEN - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: July 22, 1996
Format: LETTER No. Pgs: 1
AR No. 04.01.64 Document No. 000196

Title: Letter from Jill Siebels, General Electric, to Cheryl Sprague, Charles Berube, Lee Mayhew (July 25, 1996). Enclosing work plan for Gasmer Road.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Date: July 25, 1996
Format: LETTER No. Pgs: 1
AR No. 04.01.65 Document No. 000198

Title: Letter Concerning Attached Work Plan for the Use of Is-Situ Thermal Desorption at a Texas Site.
Addressee: EVA L. DAVIS - U.S. ENVIRONMENTAL PROTECTION AGENCY
Authors: J. M. HIRSCH - SHELL TECHNOLOGY VENTURES, INC.
Date: July 30, 1996
Format: LETTER No. Pgs: 20
AR No. 04.01.66 Document No. 000292

Title: Letter from Julie Stickney, ChemRisk, to Jill Siebels, General Electric, (August 1, 1996). Concerning predicted residual risks to utility workers.
Addressee: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Authors: JULIE A. STICKNEY
Date: August 1, 1996
Format: LETTER No. Pgs: 19
AR No. 04.01.67 Document No. 000203
*Attached to Document No. 000202 In 04.01

Title: Letter from Jill Siebels, General Electric, from Cheryl Sprague, US EPA RI, (August 6, 1996). Concerning technical justification for remedies.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Date: August 6, 1996
Format: LETTER No. Pgs: 2
AR No. 04.01.68 Document No. 000202

Title: Letter from Thomas A. Krug, Beak Consultants Ltd., to Jill Siebels, General Electric, (August 6, 1996). Concerning potential PCB transport.
Addressee: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Authors: THOMAS A. KRUG - BEAK CONSULTANTS LIMITED
Date: August 6, 1996
Format: LETTER No. Pgs: 10
AR No. 04.01.69 Document No. 000204
*Attached to, Document No. 000202 In 04.01

Title: Letter from John Regan, NHDES, to Cheryl Sprague, US EPA RI, (August 6, 1996). Concerning groundwater protection rules and GE's comments on FS.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: JOHN REGAN - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: August 6, 1996
Format: LETTER No. Pgs: 2
AR No. 04.01.70 Document No. 000205

Title: Letter Concerning Topics to be Discussed at August 8, 1996 Meeting.
Addressee: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: August 6, 1996
Format: LETTER No. Pgs: 1
AR No. 04.01.71 Document No. 000283

Title: Letter from Marilyn Kenison, Milford Board of Selectmen, to Jill Siebels, General Electric, (August 12, 1996). Supports GE's demonstration.
Addressee: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Authors: MARILYN KENISON - MILFORD BOARD OF SELECTMEN
Date: August 12, 1996
Format: LETTER No. Pgs: 2
AR No. 04.01.72 Document No. 000206

Title: Memorandum Concerning January 16, 1997 Visit to TerraTherm to Tour Thermal Wells Demonstration.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: EVA L. DAVIS - U.S. ENVIRONMENTAL PROTECTION AGENCY
Date: January 23, 1997
Format: MEMORANDUM No. Pgs: 7
AR No. 04.01.73 Document No. 000293

Title: Letter with Comments and Questions on the Demonstration Test Plan Prepared for the Missouri Electric Works Superfund Site.
Addressee: J. M. HIRSCH - TERRATHERM ENVIRONMENTAL SERVICES, INC.
Authors: EVA L. DAVIS - U.S. ENVIRONMENTAL PROTECTION AGENCY
Date: January 31, 1997
Format: LETTER No. Pgs: 2
AR No. 04.01.74 Document No. 000294

Title: Memorandum Concerning Thermal Blankets and Thermal Wells, with Enclosed Summary of Notes on Visit to Missouri Electric Works Superfund Site.
Addressee: ROGER DUWART - U.S. EPA REGION I
Authors: EVA L. DAVIS - U.S. EPA NEW ENGLAND
Date: May 30, 1997
Format: MEMORANDUM No. Pgs: 6
AR No. 04.01.75 Document No. 000295

Title: Letter Concerning Attached Updated Cost Estimates for the December 1997 Proposed Plan.
Addressee: MICHAEL IANNIELL0 - GENERAL ELECTRIC COMPANY
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: March 6, 1998
Format: LETTER No. Pgs: 31
AR No. 04.01.76 Document No. 000270

Title: Letter Urging EPA to Adopt a Remediation Plan Providing the Most Cleanup for the Least Cost.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: LEE F. MAYHEW - TOWN OF MILFORD
Date: March 23, 1998
Format: LETTER No. Pgs: 5
AR No. 04.01.77 Document No. 000271

Title: Letter Clarifying Future Land Use Expectations and Town's Cleanup Position.
Addressee: LEE F. MAYHEW - TOWN OF MILFORD
Authors: CHERYL L. SPRAGUE - U.S. REGION I
Date: May 13, 1998
Format: LETTER No. Pgs: 2
AR No. 04.01.78 Document No. 000272

Title: Letter Report on Application of In Situ Thermal Desorption Technology.
Addressee: THOMAS E. ROY - ARIES ENGINEERING INC.
Authors: THOMAS A. KRUG - BEAK CONSULTANTS LIMITED
Date: May 15, 1998
Format: REPORT, STUDY
AR No. 04.01.79 Document No. 000298

Title: Response to EPA Letter Concerning Future Use of Elm St. and Mill St. Properties.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: LEE F. MAYHEW - TOWN OF MILFORD
Date: June 1, 1998
Format: LETTER No. Pgs: 2
AR No. 04.01.80 Document No. 000276

Title: Letter Commenting on the Memorandum from Dr. Eva Davis Concerning the Application of TerraTherm's ISTD Process.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: HAROLD J. VINEGAR, GEORGE L. STEGEMEIER - SHELL E & P TECHNOLOGY COMPANY
Date: June 19, 1998
Format: LETTER No. Pgs: 29
AR No. 04.01.81 Document No. 000277

Title: Letter Concerning Additional Questions Regarding In Situ Thermal Desorption.
Addressee: THOMAS E. ROY - ARIES ENGINEERING INC.
Authors: RICHARD B. SHELDON - GENERAL ELECTRIC COMPANY
Date: July 9, 1998
Format: LETTER No. Pgs: 9
AR No. 04-01.82 Document No. 000279

Title: Letter Requesting Meeting of All Parties and Encourages a Demonstrations of the Full-Scale Application of ISTD on PCBs.
Addressee: ANTOINETTE POWELL - U.S. EPA REGION I
Authors: JOHN E. PELTONEN - SHEEHAN, PHINNEY, BASS & GREEN
Date: July 10, 1998
Format: LETTER No. Pgs: 2
AR No. 04.01.83 Document No. 000280

04.02 FEASIBILITY STUDY - SAMPLING & ANALYSIS DATA

Title: Sampling & Analysis Data: Availability for Review
Format: No. Pgs: 1
AR No. 04.02.1 Document No. 000262

Title: Water Quality Analysis - Sample #242698 & 242702.
Addressee: SUSAN LEVESQUE
Authors: CHARLES BERUBE - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: August 31, 1993
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 3
AR No. 04.02.2 Document No. 000106

Title: Analytical Results for Three Samples Taken in March 1994.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: CHARLES BERUBE - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: April 29, 1994
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 16
AR No. 04.02.3 Document No. 000105

Title: Ten Locations for Residential PCB Surface Soil Sampling.
Addressee: CHARLES BERUBE - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: September 14, 1994
Format: LETTER No. Pgs: 3
AR No. 04.02.4 Document No. 000104

Title: Analytical Results from the PCB Soil Sampling on September 19, 1994.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: CHARLES BERUBE - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: October 14, 1994
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 12
AR No: 04.02.5 Document No. 000103

Title: Results of November 1997 Sampling at the Mill Street Property.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: THOMAS A. KRUG - BEAK CONSULTANTS LIMITED
Date: May 25, 1998
Format: SAMPLING AND ANALYSIS DAT
AR No. 04.02.6 Document No. 000275

## 04.04 FEASIBILITY STUDY - INTERIM DELIVERABLES

Title: Thermal Desorption Remedy Selection Level Treatability Study Report for the Fletcher's Paint Site.
Addressee: U.S. ENVIRONMENTAL PROTECTION AGENCY
Authors: IT CORPORATION
Date: January 1995
Format: REPORT, STUDY No. Pgs: 88
AR No. 04.04.1 Document No. 000107

Title: Recalculation of risks associated with soil cleanup levels for the Fletcher's Paint Superfund Site
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: ANN-MARIE BURKE - U.S. ENVIRONMENTAL PROTECTION AGENCY
Date: October 8, 1996
Format: LETTER No. Pgs: 3
AR No. 04.04.2 Document No. 000260

## 04.06 FEASIBILITY STUDY - FEASIBILITY STUDY REPORTS

Title: Focused Feasibility Report.
Authors: ENVIRONMENTAL SCIENCE & ENGINEERING, INC
Date: June 2, 1995
Format: REPORT, STUDY
AR No. 04.06.1 Document No. 000264

Title: Comments on the Focused Feasibility Report Dated June 1995.
Addressee: COLEEN M. FUERST - GENERAL ELECTRIC COMPANY
Authors: JOHN REGAN - N.H. DEPT. OF ENVIRONMENTAL SERVICES
Date: June 27, 1995
Format: LETTER No. Pgs: 4
AR No. 04.06.2 Document No. 000265

Title: Final Feasibility Study for the Fletcher's Paint Site Milford, NH.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: April 26, 1996
Format: REPORT, STUDY    No. Pgs: 762
AR No. 04.06.3    Document No. 000140

Title: Focused Feasibility Study Report.
Addressee: GENERAL ELECTRIC COMPANY
Authors: BEAK CONSULTANTS LIMITED
Date: December 15, 1997
Format: REPORT, STUDY
AR No. 04.06.4    Document No. 000268

Title: Letter Commenting on the Proposed Focused Feasibility Study Alternatives Contained in the Focused Feasibility Study Report Submitted by Beak Consultants.
Addressee: MICHAEL IANNIELLO - GENERAL ELECTRIC COMPANY
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: February 27, 1998
Format: LETTER    No. Pgs: 14
AR No. 04.06.5    Document No. 000269

Title: Memorandum from EPA Hydrologist Evaluating TerraTherm's In Situ Thermal Desorption Processes.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: EVA L. DAVIS - U.S. ENVIRONMENTAL PROTECTION AGENCY
Date: April 21, 1998
Format: MEMORANDUM    No. Pgs: 9
AR No. 04.06.6    Document No. 000274
*Attached to Document No. 000273 In 04.06

Title: Memorandum: Review of Additional Investigation Activities at Mill Street Property .... Workplan & Sampling and Analysis Plan Prepared by BEAK, 7/97.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: A. F. BELIVEAU - U.S. EPA REGION I/ESD
Date: April 27, 1998
Format: MEMORANDUM    No. Pgs: 4
AR No. 04.06.7    Document No. 000297
*Attached to Document No. 000296 In 04.06

Title: Letter Concerning the Proposed DNAPL Investigation.
Addressee: MICHAEL IANNIELLO - GENERAL ELECTRIC COMPANY
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: May 8, 1998
Format: LETTER    No. Pgs: 7
AR No. 04.06.8    Document No. 000296

Title: Third and Final Comment Letter to the Focused Feasibility Study, Evaluating TerraTherm's ISTD (Thermal Well) Technology.
Addressee: MICHAEL IANNIELLO - GENERAL ELECTRIC COMPANY
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: May 22, 1998
Format: LETTER    No. Pgs: 11
AR No. 04.06.9    Document No. 000273

## 04.09 FEASIBILITY STUDY - PROPOSED PLANS FOR SELECTED REMEDIAL ACTION

Title: Proposed Plan, Fletcher's Paint Superfund Site, Milford New Hampshire (December, 1996)
Authors: CHERYL L. SPRAGUE - U.S. ENVIRONMENTAL PROTECTION AGENCY
Date: December 1996
Format: FACT SHEET, PRESS RELEASE    No. Pgs: 23
AR No. 04.09.1    Document No. 000251

05.01 RECORDS OF DECISION - CORRESPONDENCE

Title: National Remedy Review Board Recommendation on the Fletcher Paint Superfund Site
Addressee: LINDA M. MURPHY - U.S. EPA NEW ENGLAND
Authors: BRUCE K. MEANS
Date: December 5, 1996
Format: MEMORANDUM No. Pgs: 3
AR No. 05.01.1 Document No. 000257

05.02 RECORDS OF DECISION - APPLICABLE OR RELEVANT & APPROPRIATE REQUIREMENTS

Title: Applicable or Relevant and Appropriate Requirements (ARARs), Location-Specific.
Date: June 28, 1993
Format: MISCELLANEOUS No. Pgs: 3
AR No. 05.02.1 Document No. 000109

Title: Applicable or Relevant and Appropriate Requirements (ARARs), General Action-Specific.
Date: June 28, 1993
Format: MISCELLANEOUS No. Pgs: 6
AR No. 05.02.2 Document No. 000110

Title: Action-Specific ARARS, Alternatives 2 through 10.
Date: June 28, 1993
Format: MISCELLANEOUS No. Pgs: 25
AR No. 05.02.3 Document No. 000111

Title: Applicable or Relevant and Appropriate Requirements (ARARs), Chemical-Specific.
Date: December 3, 1993
Format: MISCELLANEOUS No. Pgs: 2
AR No. 05.02.4 Document No. 000108

05.04 RECORDS OF DECISION - RECORD OF DECISION

Title: Record of Decision
Authors: U.S. EPA REGION I
Date: September 30, 1998
Format: REPORT, STUDY
AR No. 05.04.1 Document No. 000299

06.01 REMEDIAL DESIGN CORRESPONDENCE

Title: Handwritten Notes on Meeting with GE, Shell, EPA, NHDES & Town Selectmen,
Format: NOTES-MEETING No. Pgs: 6
AR No. 06.01.1 Document No. 000284

Title: The Advantages of In-Situ Thermal Technology.
Authors: GENERAL ELECTRIC COMPANY
Format: LIST No. Pgs: 5
AR No. 06.01.2 Document No. 000286

Title: In Situ Thermal Desorption for the Remediation of PCBs and other Hydrocarbons.
Authors: RICHARD B. SHELDON - GENERAL ELECTRIC COMPANY
Date: May 17, 1996
Format: REPORT , STUDY No. Pgs: 18
AR No. 06.01.3 Document No. 000285

09.10 STATE COORDINATION - STATE TECHNICAL AND HISTORICAL RECORDS

Title: Complaint - Suspected Illegal Industrial Discharges, Milford, New Hampshire.
Addressee: LORRAINE CARSON - MILFORD CONSERVATION COMMISSION
Authors: LYNN A. WOODARD - N.H. WATER SUPPLY AND POLL. CONTROL COM.
Date: March 5, 1981
Format: LETTER No. Pgs: 1
AR No. 09.10.1 Document No. 000077

Title: N.H. Municipal Records Board Rules, 1985, Mur 300.
Authors: N.H. MUNICIPAL RECORDS BOARD
Date: 1985
Format: MISCELLANEOUS No. Pgs: 14
AR No. 09.10.2 Document No. 000074

10.01 ENFORCEMENT/NEGOTIATION - CORRESPONDENCE

Title: EPA Activities at the Fletcher's Paint Site Milford, NH.
Addressee: ED FRANKOVITZ - MILFORD CONSIGNMENT SHOP
Authors: DANIEL COUGHLIN U.S. EPA REGION I
Date: July 1, 1993
Format: LETTER No. Pgs: 2
AR No. 10.01.1 Document No. 000043

10.08 ENFORCEMENT/NEGOTIATION - EPA CONSENT DECREES

Title: Consent Decree, United States of America v. General Electric Company and Windsor-Embassy Corporation, Civil No. 91-467-M.
Addressee: U.S. DISTRICT COURT, NEW HAMPSHIRE
Authors: U.S. DEPARTMENT OF JUSTICE
Date: March 23, 1994
Format: LITIGATION No. Pgs: 46
AR No. 10.08.1 Document No. 000044

11.05 POTENTIALLY RESPONSIBLE PARTIES - MULTIPLE PRP DOCUMENTS

Title: Notice of Potential Liability at the Fletcher Paint Superfund Site, Milford, NH
Addressee: MARILYN KENISON - MILFORD BOARD OF SELECTMEN
Authors: LINDA M. MURPHY - U.S. ENVIRONMENTAL PROTECTION AGENCY
Date: October 11, 1996
Format: LETTER No. Pgs: 29
AR No. 11.05.1 Document No. 000255

11.09 POTENTIALLY RESPONSIBLE PARTIES - PRP-SPECIFIC DOCUMENTS

Title: Letter regarding issuance of additional General Notice Letters
Addressee: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Authors: CHERYL L. SPRAGUE - U.S. ENVIRONMENTAL PROTECTION AGENCY
Date: October 17, 1996
Format: CORRESPONDENCE No. Pgs: 2
AR No. 11.09.1 Document No. 000254

13.01 COMMUNITY RELATIONS - CORRESPONDENCE

Title: Feasibility Study Public Comments
Addressee: CHERYL L. SPRAGUE - U.S. ENVIRONMENTAL PROTECTION AGENCY
Format: No. Pgs: 19
AR No. 13.01.1 Document No. 000253

Title: Open Letter to Citizens of Milford, New Hampshire.
Authors: VICTORIA FLETCHER
Date: September 25, 1991
Format: LETTER No. Pgs: 1
AR No. 13.01.2 Document No. 000O52

Title: Milford N.H. Concerns and Interests Regarding Savage Well and Fletcher Paint Situations.
Addressee: SUSAN FRANK - U.S. EPA REGION I
Authors: WILLIAM B. ROTCH - MILFORD CABINET AND WILTON JOURNAL
Date: December 13, 1991
Format: LETTER No. Pgs: 2
AR No. 13.01.3 Document No. 000053

Title: EPA Cleanup of Fletcher Paint Works - Convening Meeting.
Addressee: AD HOC CITIZENS' ADVISORY COMMITTEE
Authors: ARNIE WIGHT - PRINCIPLED NEGOTIATIONS, INC.
Date: December 14, 1991
Format: MEMORANDUM No. Pgs: 1
AR No. 13.01.4 Document No. 000054

Title: Request for Meeting About Drainage Under the Fletcher Site.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: LEE F. MAYHEW - TOWN OF MILFORD
Date: February 12, 1992
Format: LETTER No. Pgs: 1
AR No. 13.01.5 Document No. 000050

Title: Public Participation in Clean Up of Fletcher Paint Site.
Addressee: AD HOC CITIZENS' ADVISORY COMMITTEE
Authors: ARNIE WIGHT - PRINCIPLED NEGOTIATIONS, INC.
Date: May 2, 1992
Format: LETTER No. Pgs: 1
AR No. 13.01.6 Document No. 000048

Title: EPA/Fletcher Paint Site Clean Up, Goals and Objectives of Citizen Advisory Group.
Addressee: AD HOC CITIZENS' ADVISORY COMMITTEE
Authors: ARNIE WIGHT - AD HOC CITIZENS' ADVISORY COMMITTEE
Date: June 2, 1992
Format: MEMORANDUM No. Pgs: 4
AR No. 13.01.7 Document No. 000049
*Attached to Document No. 000048 In 13.01

Title: Questions and Suggestions Related to Well Testing and the School Site Investigation.
Addressee: DANIEL COUGHLIN - U.S. EPA REGION I
Authors: ARNIE WIGHT - PRINCIPLED NEGOTIATIONS, INC.
Date: July 24, 1992
Format: LETTER No. Pgs: 1
AR No. 13.01.8 Document No. 000047

Title: EPA Response to Questions Pertaining to the Investigations at the Site.
Addressee: ARNIE WIGHT - PRINCIPLED NEGOTIATIONS, INC.
Authors: DANIEL COUGHLIN - U.S. EPA REGION I
Date: August 24, 1992
Format: LETTER No. Pgs: 2
AR No. 13.01.9 Document No. 000046

Title: Chemical Contamination and Drainage System Problems at the Site.
Addressee: LEE F. MAYHEW - TOWN OF MILFORD
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: October 19, 1992
Format: LETTER No. Pgs: 4
AR No. 13.01.10 Document No. 000045

Title: Officials Seek Public input on Superfund Site.
Authors: N.H. DEPT. OF HEALTH & HUMAN SERVICES
Date: May 10, 1994
Format: FACT SHEET, PRESS RELEASE No.Pgs: 1
AR No. 13.01.11 Document No. 000112

Title: Fletcher's Paint Site, Milford, NH 2/16/95 Meeting with Milford Selectmen: Agenda.
Authors: U.S. EPA REGION I
Date: February 16, 1995
Format: MISCELLANEOUS No. Pgs: 20
AR No. 13.01.12 Document No. 000065

Title: Letter from Milford Board of Selectmen, to Cheryl Sprague, US EPA RI, (February 27, 1995). Official position on site, goals of clean-up.
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Authors: JOHN E RUONALA, RICHARD H MACE, ROSARIO RICCIARDI, MARILYN KENISON - MILFORD BOARD OF SELECTMEN
Date: February 27, 1995
Format: LETTER No. Pgs: 3
AR No. 13.01.13 Document No. 000188

Title: Meeting Notes, EPA Region I, NHDES, GE, Town of Milford (August 8, 1996). FS Discussion.
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: August 8, 1995
Format: NOTES-MEETING No. Pgs: 4
AR No. 13.01.14 Document No. 000153

Title: Public Comments Received from May 1996 Public Meeting (Names redacted).
Addressee: U.S. EPA REGION I
Date: May 1996
Format: PUBLIC MEETING RECORDS No. Pgs: 8
AR No. 13.01.15 Document No. 000149

Title: Letter from Cheryl Sprague, US EPA RI, to Jill Siebels, General Electric Co., (August 6, 1996).
Addressee: JILL SIEBELS - GENERAL ELECTRIC COMPANY
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: August 6, 1996
Format: LETTER No. Pgs: 1
AR No. 13.01.16 Document No. 000151

Title: Summary of FS Remedies vs GE's Proposed Remedy, Handout from General Electric at meeting held August 8, 1996.
Addressee: CHERYL, L. SPRAGUE - U.S. EPA REGION I
Authors: GENERAL ELECTRIC COMPANY
Date: August 8, 1996
Format: NOTES-MEETING No. Pgs: 2
AR No. 13.01.17 Document No. 000154
*Attached to Document No. 000153 In 13.01

## 13.02 COMMUNITY RELATIONS - COMMUNITY RELATIONS PLANS

Title: One Paragraph; Summary of Community Relations Actions for a Removal by EPA.
Format: NOTES-GENERAL No. Pgs: 1
AR No. 13.02.1 Document No. 000072

Title: Community Relations Plan for Remedial Planning Activities at the Fletcher's Paint Site, Milford, NH.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: February 11, 1993
Format: REPORT, STUDY No. Pgs: 18
AR No. 13.02.2 Document No. 000071

## 13.03 COMMUNITY RELATIONS - NEWS CLIPPINGS/PRESS RELEASES

Title: News Release, Initiation of Local Committee Supported by Technical Assistance Grant Program.
Authors: AD HOC CITIZENS' ADVISORY COMMITTEE
Format: FACT SHEET, PRESS RELEASE No. Pgs: 1
AR No. 13.03.1 Document No. 000055

Title: "EPA Cleans Up Files."
Authors: JANET PHELPS - MILFORD CABINET AND WILTON JOURNAL
Format: NEWS CLIPPING No. Pgs: 1
AR No. 13.03.2 Document No. 000126

Title: "Milford's Stone Bridge."
Authors: MILFORD CABINET AND WILTON JOURNAL
Date: August 26, 1992
Format: NEWS CLIPPING No. Pgs: 1
AR No. 13.03.3 Document No. 000113

Title: Photograph of a Milford Tannery on the Editorial Page.
Authors: MILFORD CABINET AND WILTON JOURNAL
Date: October 14, 1992
Format: NEWS CLIPPING No. Pgs: 1
AR No. 13.03.4 Document No. 000114

Title: EPA Awards Initial $15,000 Grant to CUPS! To Monitor Fletcher's Paint Works & Storage Superfund Site Cleanup.
Authors: U.S. EPA REGION I
Date: June 10, 1993
Format: FACT SHEET, PRESS RELEASE No. Pgs: 2
AR No. 13.03.5 Document No. 000056

Title: "Fletcher's Clean-Up," The Milford Cabinet and Wilton Journal - Milford, NH (July 28, 1993)
Authors: MILFORD CABINET AND WILTON JOURNAL
Date: July 28, 1993
Format: NEWS CLIPPING No. Pgs: 1
AR No. 13.03.6 Document No. 000219

Title: Photograph of "The Blacksmith Shop" on Elm Street on the Editorial Page.
Authors: MILFORD CABINET AND WILTON JOURNAL
Date: March 30, 1994
Format: NEWS CLIPPING No. Pgs: 1
AR No. 13.03.7 Document No. 000115

Title: "EPA Concludes Keyes Field Safe for Recreation," EPA Environmental News. EPA Region I (July 27, 1994).
Authors: U.S. EPA REGION I
Date: July 27, 1994
Format: FACT SHEET, PRESS RELEASE No. Pgs: 2
AR No. 13.03.8 Document No. 000223

Title: "Keyes Field OK, River Off Limits."
Authors: MILFORD CABINET AND WILTON JOURNAL
Date: August 3, 1994
Format: NEWS CLIPPING No. Pgs: 2
AR No. 13.03.9 Document No. 000116

Title: Public Workshop to Discuss Potential Impacts of the Clean Up of Fletcher's Paint Superfund Site.
Authors: U.S. EPA NEW ENGLAND
Date: January 12, 1995
Format: FACT SHEET, PRESS RELEASE No. Pgs: 1
AR No. 13.03.10 Document No. 000064

Title: "EPA Finds Few Friends in Milford."
Authors: MILFORD CABINET AND WILTON JOURNAL
Date: January 18, 1995
Format: NEWS CLIPPING No. Pgs: 2
AR No. 13.03.11 Document No. 000117

Title: Letter to the Editor: "Leave Well Enough Alone."
Addressee: MILFORD CABINET AND WILTON JOURNAL
Authors: KIM B LABELLE
Date: February 1, 1995
Format: NEWS CLIPPING No. Pgs: 1
AR No. 13.03.12 Document No. 000118

Title: "General Electric's Role Comes to Light."
Authors: MILFORD CABINET AND WILTON JOURNAL
Date: February 22, 1995
Format: NEWS CLIPPING No. Pgs: 2
AR No. 13.03.13 Document No. 000119

Title: Letter to the Editor, "It's time to decide for life or death," Milford Cabinet and Wilton Journal (March 1, 1995).
Authors: MICHELLE KUNKEL
Date: March 1, 1995
Format: NEWS CLIPPING No. Pgs: 1
AR No. 13.03.14 Document No. 000213

Title: "Selectmen complain about EPA, open bids, form fireworks group," The Milford Cabinet and Wilton Journal - Milford, NH (July 19, 1995). Mill St. site.
Authors: BOB MACKINTOSH - MILFORD CABINET AND WILTON JOURNAL
Date: July 19, 1995
Format: NEWS CLIPPING No. Pgs: 1
AR No. 13.03.15 Document No. 000220

Title: "Superfund Cleanup Blues."
Authors: BETH A MARCHESE - MILFORD CABINET AND WILTON JOURNAL
Date: July 23, 1995
Format: NEWS CLIPPING No. Pgs: 2
AR No. 13.03.16 Document No. 000120

Title: "EPA Bulldozers in Milford Stirring Up Mixed Feelings."
Authors: BETH A. MARCHESE - MILFORD CABINET AND WILTON JOURNAL
Date: July 23, 1995
Format: NEWS CLIPPING No. Pgs: 2
AR No. 13.03.17 Document No. 000121
*Attached to Document No. 000120 In 13.03

Title: "EPA, General Electric Reach Accord on Work."
Authors: JANET PHELPS - MILFORD CABINET AND WILTON JOURNAL
Date: August 2, 1995
Format: NEWS CLIPPING No. Pgs: 2
AR No. 13.03.18 Document No. 000122

Title: "EPA, General Electric reach accord on work," The Milford Cabinet and Wilton Journal - Milford, NH (August 2, 1995).
Authors: JANET PHELPS - MILFORD CABINET AND WILTON JOURNAL
Date: August 2, 1995
Format: NEWS CLIPPING No. Pgs: 2
AR No. 13.03.19 Document No. 000214

Title: "25 Years Ago this Week - 1970."
Authors: MILFORD CABINET AND WILTON JOURNAL
Date: August 9, 1995
Format: NEWS CLIPPING No. Pgs: 1
AR No. 13.03.20 Document No. 000123

Title: "Dustbusters."
Authors: MILFORD CABINET AND WILTON JOURNAL
Date: August 9, 1995
Format: NEWS CLIPPING No. Pgs: 1
AR No. 13.03.21 Document No. 000124

Title: "Milford: Mill Street Cleanup on Schedule."
Authors: THE TELEGRAPH
Date: August 10, 1995
Format: NEWS CLIPPING No. Pgs: 1
AR No. 13.03.22 Document No. 000125

Title: "EPA releases Fletcher's cleanup choices," The Milford Cabinet and Wilton Journal - Milford, NH (May 1, 1996).
Authors: JANET PHELPS - MILFORD CABINET AND WILTON JOURNAL
Date: May 1, 1996
Format: NEWS CLIPPING No. Pgs: 2
AR No. 13.03.23 Document No. 000216

Title: "Milford may be liable for part of Fletcher's cleanup costs," The Telegraph - Nashua, NH (May 23, 1996).
Authors: DARREN GARNICK
Date: May 23, 1996
Format: NEWS CLIPPING No. Pgs: 2
AR No. 13.03.24 Document No. 000215

Title: GE Public Meeting Notice: "GE has hot new solution for cleanup"
Authors: COLEEN M. FUERST, JILL SIEBELS - GENERAL ELECTRIC COMPANY
Date: June 4, 1996
Format: MISCELLANEOUS No. Pgs: 3
AR No. 13.03.25 Document No. 000252

Title: "Korean War Memorial soil removal to begin in Milford, New Hampshire," EPA Region I, GE, NHDES (August 9, 1996).
Authors: U.S. EPA REGION I
Date: August 9, 1996
Format: FACT SHEET, PRESS RELEASE No. Pgs: 1
AR No. 13.03.26 Document No. 000155

Title: Draft Press Release from EPA Region I of Settlement with General Electric, (August 26, 1994).
Authors: U.S. EPA REGION I
Date: August 26, 1996
Format: FACT SHEET, PRESS RELEASE No. Pgs: 1
AR No. 13.03.27 Document No. 000212

Title: EPA Environmental News: "EPA Proposes Phased Cleanup Approach for Fletcher's Paint Superfund Site"
Authors: CHERYL L. SPRAGUE, KRISTEN CONROY - U.S. EPA NEW ENGLAND
Date: December 27, 1996
Format: FACT SHEET, PRESS RELEASE No. Pgs: 2
AR No. 13.03.28 Document No. 000256

Title: Remediation: Thermal Desorption Technique Keeps Pollution Under Wraps.
Authors: WILLIAM J. ANGELO
Date: February 23, 1998
Format: NEWS CLIPPING No. Pgs: 2
AR No. 13.03.29 Document No. 000282

Title: Hazardous Waste News: EPA Testing New Remediation Process That Could Heat-Vaporize Pollutants.
Date: April 20, 1998
Format: FACT SHEET, PRESS RELEASE No. Pgs: 1
AR No. 13.03.30 Document No. 000281

## 13.04 COMMUNITY RELATIONS - PUBLIC MEETINGS/HEARINGS

Title: Fletcher's Paint Works and Storage Facility Site Kick-off Meeting Agenda, September 25, 1991.
Authors: U.S. EPA REGION I
Format: MEMORANDUM No. Pgs: 1
AR No. 13.04.1 Document No. 000051

Title: Meeting Agenda, EPA Region I (May 17, 1994). Concerning Feasibility Study.
Authors: U.S. EPA REGION I
Date: May 17, 1994
Format: PUBLIC MEETING RECORDS No. Pgs: 5
AR No. 13.04.2 Document No. 000147

Title: Fletcher's Paint Works & Storage Superfund Site; Remedial Investigation Meeting.
Authors: U.S. EPA REGION I
Date: August 17, 1994
Format: PUBLIC MEETING RECORDS No. Pgs: 46
AR No. 13.04.3 Document No. 000134
*Attached to Document No. 000128 In 13.04

Title: Summary of August 17, 1994 Public Meeting Fletcher's Paint Site.
Addressee: U.S. EPA REGION I
Authors: ARTHUR D. LITTLE, INC.
Date: September 12, 1994
Format: PUBLIC MEETING RECORDS No. Pgs: 5
AR No. 13.04.4 Document No. 000128

Title: Impact Meeting Sign-in Sheets.
Addressee: U.S. EPA REGION I
Date: January 17, 1995
Format: LIST No. Pgs: 5
AR No. 13.04.5 Document No. 000042

Title: Attendance List, EPA Region I, ADL, GE, B&M, NHDES, (February 16, 1995).
Date: February 16, 1995
Format: LIST No. Pgs: 1
AR No. 13.04.6 Document No. 000148

Title: Superfund: The Road to Cleanup. U.S. EPA RI Public Meeting Presentation (May 1996).
Authors: U.S. EPA REGION I
Date: May 1996
Format: PUBLIC MEETING RECORDS No. Pgs: 15
AR No. 13.04.7 Document No. 000136

Title: Attendance List, EPA, NHDES, GE, Town of Milford, (August 8, 1996).
Date: August 8, 1996
Format: PUBLIC MEETING RECORDS No. Pgs: 1
AR No. 13.04.8 Document No. 000152

## 13.5 COMMUNITY RELATIONS - FACT SHEETS/INFORMATION UPDATES

Title: Informational Folder from TerraTherm Environmental Services, Inc. [Available at EPA Region I Records Center, Boston, MA].
Authors: TERRATHERM ENVIRONMENTAL SERVICES, INC.
Format:
AR No. 13.05.1 Document No. 000289

Title: EPA Begins Remedial Investigation and Feasibility Study at the Fletcher's Paint Site.
Authors: U.S. EPA REGION I
Date: September 1991
Format: FACT SHEET, PRESS RELEASE No. Pgs: 8
AR No. 13.05.2 Document No. 000062

Title: EPA to Remove Contaminated Material.
Authors: U.S. EPA REGION I
Date: July 12, 1993
Format: FACT SHEET, PRESS RELEASE No. Pgs: 5
AR No. 13.05.3 Document No. 000060

Title: Superfund Fact Sheet, Remedial Studies Results & Shed Removal Update.
Authors: U.S. EPA REGION I
Date: September 1993
Format: FACT SHEET, PRESS RELEASE No. Pgs: 11
AR No. 13.05.4 Document No. 000059

Title: Superfund Program Remedial Investigation Fact Sheet, Fletcher's Paint Site Investigation Results.
Authors: U.S. EPA REGION I
Date: August 1994
Format: FACT SHEET, PRESS RELEASE — No. Pgs: 11
AR No. 13.05.5 — Document No. 000057

Title: "Superfund Fact Sheet, Fletcher's Paint Works Storage Facility Superfund Site, Milford, NH, (January 1995). Informal Workshop announced.
Authors: U.S. EPA REGION I
Date: January 1995
Format: FACT SHEET, PRESS RELEASE — No. Pgs: 4
AR No. 13.05.6 — Document No. 000218

Title: "Cleanup Alternatives for the Fletcher's Paint Site, Milford, NH" EPA Region I (April, 1996). Concerned potential alternative cleanup choices
Authors: U.S. EPA REGION I
Date: April 1996
Format: FACT SHEET, PRESS RELEASE — No. Pgs: 21
AR No. 13.05.7 — Document No. 000217

Title: Project Status Fact Sheet: In Situ Thermal Desorption Using Thermal Wells.
Authors: GENERAL ELECTRIC COMPANY
Date: July 1997
Format: FACT SHEET, PRESS RELEASE — No. Pgs: 2
AR No. 13.05.8 — Document No. 000288

Title: TerraTherm Update - Spring 1998.
Authors: TERRATHERM ENVIRONMENTAL SERVICES, INC.
Date: June 17, 1998
Format: FACT SHEET, PRESS RELEASE — No. Pgs: 2
AR No. 13.05.9 — Document No. 000287

## 13.07 COMMUNITY RELATIONS - TECHNICAL ASSISTANCE GRANTS

Title: Response to Questions from C.U.P.S.! on the Fletcher Paint Superfund Site.
Addressee: JAMES D. SMITH - CLEAN UP PAINT SITE (C.U.P.S.!)
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: November 23, 1992
Format: LETTER — No. Pgs: 8
AR No. 13.07.1 — Document No. 000067

Title: Results of the October, 1992 NHDES Sampling, Milford Transfer Station & Keyes Field.
Addressee: JAMES D. SMITH - CLEAN UP PAINT SITE (C.U.P.S.!)
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: December 3, 1992
Format: LETTER — No. Pgs: 1
AR No. 13.07.2 — Document No. 000068

Title: Request for Hazardous and Toxic Material Removal, Mill Street Warehouse, Fletcher Paint Site, [December 11, 1991].
Addressee: MILFORD BOARD OF SELECTMEN
Authors: JAMES D. SMITH - CLEAN UP PAINT SITE (C.U.P.S.!)
Date: December 11, 1992
Format: LETTER — No. Pgs: 3
AR No. 3.07.3 — Document No. 000070

Title: Application for Federal Assistance, Superfund Technical Assistance Grant.
Addressee: U.S. EPA REGION I
Authors: JAMES D. SMITH - CLEAN UP PAINT SITE (C.U.P.S.!)
Date: January 28, 1993
Format: FORM — No. Pgs: 20
AR No. 13.07.4 — Document No. 000066

Title: Transmittal of the Preliminary Ecological Assessment and Notification of Preliminary Survey of the Souhegan River.
Addressee: JAMES D. SMITH - CLEAN UP PAINT SITE (C.U.P.S.!)
Authors: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: June 6, 1994
Format: LETTER    No. Pgs: 1
AR No. 3.07.5    Document No. 000058

Title: CUPS! Clean Up Paint Site! Community Informational Sheet.
Authors: JAMES D. SMITH - CLEAN UP PAINT SITE (C.U.P.S.!)
Date: January 17, 1995
Format: MISCELLANEOUS    No. Pgs: 2
AR No. 13.07.6    Document No. 000061

Title: Letter from Michael McGagh, TAG Project Manager, US EPA RI, to James D.Smith, Clean Up Paint Site! (C.U.P.S!), (March 27, 1996).
Addressee: JAMES D. SMITH - CLEAN UP PAINT SITE (C.U.P.S.!)
Authors: MICHAEL MCGAGH - U.S. EPA REGION I
Date: March 27, 1996
Format: LETTER    No. Pgs: 2
AR No. 13.07.7    Document No. 000146

## 14.01 CONGRESSIONAL RELATIONS - CORRESPONDENCE

Title: Concern About the Clean up options for the Site, and a Request for Update on Work at the Site.
Addressee: JOHN DEVILLARS - U.S. EPA REGION I
Authors: JUDD GREGG - U.S. CONGRESS. SENATE
Date: July 11, 1995
Format: LETTER    No. Pgs: 1
AR No. 14.01.1    Document No. 000063

Title: Meeting Agenda, Fletcher Paint Site Visit by U.S. Senator Bob Smith, Milford, NH, (July 5, 1996).
Addressee: CHERYL L. SPRAGUE - U.S. EPA REGION I
Date: July 5, 1996
Format: NOTES-MEETING    No. Pgs: 1
AR No. 14.01.2    Document No. 000150

Title: Letter from U.S. Senator Bob Smith, to John DeVillars, US EPA RI, (September 9, 1996). Concerning support for delay in ROD to test ISTD.
Addressee: JOHN DEVILLARS - U.S. EPA REGION I
Authors: BOB SMITH - U.S. CONGRESS. SENATE
Date: September 9, 1996
Format: LETTER    No. Pgs: 2
AR No. 14.01.3    Document No. 000208
*Attached to Document No. 000207 In 14.01

Title: Letter from U.S. Senator Bob Smith, to Elliott Laws, EPA Washington, (September 10, 1996). Concerning letter to John DeVillars attached.
Addressee: ELLIOTT LAWS - U.S. ENVIRONMENTAL PROTECTION AGENCY
Authors: BOB SMITH - U.S. CONGRESS. SENATE
Date: September 10, 1996
Format: LETTER    No. Pgs: 1
AR No. 14-01.4    Document No. 000207

Title: Congressional Correspondence regarding Fletcher Paint Superfund Site.
Addressee: BOB SMITH - U.S. CONGRESS. SENATE
Authors: JOHN DEVILLARS - U.S. EPA REGION I
Date: October 8, 1996
Format: CORRESPONDENCE    No. Pgs: 2
AR No. 14.01.5    Document No. 000258

16.04 NATURAL RESOURCE TRUSTEE - TRUSTEE NOTIFICATION FORM AND SELECTION GU

Title: Site Exposure Potential, Fletcher's Paint Works and Storage, Milford, NH, Region I, NHD001079649
Authors: U.S. EPA REGION I
Format: REPORT, STUDY    No. Pgs: 3
AR No. 16.04.1    Document No. 000228

17.07. SITE MANAGEMENT RECORDS - REFERENCE DOCUMENTS

Title: Geohydrology of, and Simulation of Ground-Water Flow in, the Milford-Souhegan Glacial-Drift Aquifer, Milford, New Hampshire.
Authors: PHILIP T. HARTE, THOMAS J. MACK - U.S. GEOLOGICAL SURVEY
Date: 1992
Format: REPORT, STUDY    No. Pgs: 109
AR No. 17.07.1    Document No. 000127

17.08 SITE MANAGEMENT RECORDS - FEDERAL AND LOCAL TECHNICAL AND HISTORICAL

Title: Minutes of the April 14, 1981 Meeting.
Authors: MILFORD CONSERVATION COMMISSION
Format: NOTES-MEETING    No. Pgs: 1
AR No. 17.08.1    Document No. 000075

Title: Short Description of Fletcher Paint Works and the Windsor-Embassy Chemical Corporation, Excerpt from Town History.
Date: 1979
Format: MISCELLANEOUS    No. Pgs: 1
AR No. 17.08.2    Document No. 000076

Title: Suspected Pollution of Water Sources in Milford.
Addressee: LYNN A. WOODARD - N.H. WATER SUPPLY AND POLL. CONTROL COM.
Authors: LORRAINE CARSON - MILFORD CONSERVATION COMMISSION
Date: February 12, 1981
Format: LETTER    No. Pgs: 2
AR No. 17.08.3    Document No. 000078

Title: Town of Milford, New Hampshire 03055, Rules & Regulations of Sewer Use, Article III, Use of the Public Sewers.
Authors: TOWN OF MILFORD
Date: May 1987
Format: MISCELLANEOUS    No. Pgs: 7
AR No. 17.08.4    Document No. 000073

**APPENDIX D**

<IMG SRC 98124P7>

Ms. Linda Murphy, Director
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency
John F. Kennedy Federal Building
1 Congress Street
Boston, MA 02203-2211

SUBJECT: MILFORD, Fletcher Paint Site, Groundwater Use and Value Determination

Dear Ms. Murphy:

The New Hampshire Department of Environmental Services (Department) has completed the groundwater use and value determination for the Fletcher Paint Superfund Site in Milford, New Hampshire. The Department made the determination at the request of the U.S. Environmental Protection Agency (EPA) using EPA's guidance document entitled, "Ground Water Use and Value Determination Guidance, Final Draft, dated April 3,1996".

Following the procedures outlined in the guidance document, the Department has determined that the groundwater in the vicinity of the Fletcher Paint Site is Medium Use and Value, Attached is a worksheet summarizing the site-specific use and value considerations and a list of the sources of information used for the determination.

EPA and DES recognize this determination should not be used mechanically to direct a particular remedial outcome, but instead should be used as a management tool for remedial action development and selection. The Department believes that the use and value determination provides the foundation for selecting a remedy that is resource-based and incorporates several of the features of EPA's guidance document in that it: 1) recognizes an increased State role for Superfund decision-making in accordance with the principles of the Comprehensive State Groundwater Protection Program (CSGWPP); 2) creates the framework for a cost-effective and practical decision relative to groundwater remediation within a reasonable time-frame based on the value and expected use of groundwater; 3) reflects the Town of Milford's intentions with respect to their long term plans for use of the Keyes Well and the groundwater in the vicinity of the Fletcher Paint Site; and 4) facilitates making a decision that is consistent with the state and federal corrective action programs. The Department has an increased role since EPA-New England endorsed New Hampshire's CSGWPP program in 1994.

The use and value determination is consistent with past discussions between the agencies in which the Department has emphasized the selection of a remedy that 1) achieves treatment, removal or containment of the source of groundwater contamination and 2) restores groundwater quality to Ambient Groundwater Quality Standards (AGQS), i.e., drinking water standards, through natural attenuation while managing the plume within a Groundwater Management Zone.

The Department is implementing this approach at nearby sites where releases of petroleum and other contaminants have impacted groundwater quality. This pragmatic approach is designed so that the combined remedial actions taken at the Fletcher Paint Site and other sites will restore the quality of groundwater over time. This is consistent with the Town's long term strategy to reevaluate the use of the groundwater in this area as an alternative to meet future water supply demand. The Fletcher Paint Site is located in an area mapped by the U.S. Geological Survey as a stratified drift aquifer, and the nearby Keyes Well had a demonstrated yield of 350 gallons per minute prior to the discovery of contaminants in 1984. The proximity of the Keyes Well to several sites where contaminants have been released, and remedial actions are ongoing, does not preclude future use of the well as a water supply. However, the following factors make short term reuse of the Keyes Well unlikely: 1) the Town has taken actions to provide a dependable and ample source of drinking water through its interconnection to the Pennichuck Water Works system, 2) the Town and the Department have a greater interest in restoration and reuse of the groundwater in the much more extensive aquifer located near the Savage Well, 3)) the proximity of the Keyes Well to the Souhegan River may subject it to the treatment requirements of the Safe Drinking Water Act as groundwater under the influence of surface water, and 4) there are multiple plumes in addition to the Fletcher Paint Site in the vicinity of the Keyes Well that will take time before groundwater quality is restored.

If you have any questions on this declaration, please contact Carl Baxter at (603) 271-2909.

<IMG SRC 98124P8>

cc. Philip J. O'Brien, Ph.D., Director, WMD
Harry Stewart, P.E.
Carl Baxter, P.E.
Larry Brill, EPA
Richard Boynton, EPA

**FLETCHER PAINT SITE, MILFORD NEW HAMPSHIRE**
**APPENDIX A**
**SUMMARY OF GROUNDWATER SITE-SPECIFIC USE AND VALUE CONSIDERATIONS**

| FACTORS | HIGH | MEDIUM | LOW | COMMENTS |
|---|---|---|---|---|
| 1. QUANTITY | X | | | Transmissivity ranges from 4000-8000 ft#/day. The Keyes Well, an inactive municipal well, is located within 1100 feet of the site. The Keyes Well had a capacity of approximately 250,000 gallons per day (GPD) before it was closed due to contamination from the Fletcher Paint site and other sources in the area. Daily production is estimated based on 12 hours usage daily. |
| 2. QUALITY | | X | | Some occurrence of elevated concentrations of iron and manganese. The Keyes Well is within 100 feet of surface water and may require treatment or relocation to meet the Safe Drinking Water Act (SDWA) treatment requirements for groundwater under the influence of surface water in order to be used in the future, irrespective of the Fletcher Paint site status. |
| 3. CURRENT PUBLIC WATER SUPPLY SYSTEMS (PWSS) | | | X | Keyes Municipal Well inactive since 1984. Town uses other groundwater sources and installed connection to Pennichuck water system. |
| 4. CURRENT PRIVATE DRINKING WATER SUPPLY WELLS | | | X | Municipal water available to all properties located in the study area Groundwater Management Zone will be established to control future use. |

**FLETCHER PAINT SITE, MILFORD NEW HAMPSHIRE**
**APPENDIX A**
**SUMMARY OF GROUNDWATER SITE-SPECIFIC USE AND VALUE CONSIDERATIONS**

| | | | |
|---|---|---|---|
| 5. LIKELIHOOD AND IDENTIFICATION OF FUTURE DRINKING WATER USE | X | | The town has other groundwater sources and Pennichuck Water Works connection to address foreseeable needs. Current source capacity, including Pennichuck, is 1.8 million GPD. The average daily demand for water in Milford was 966,000 GPD in 1994 with a daily maximum of 1,460,000 GPD. A long term goal is to make the Keyes Well available for use. If developed in the future, the Keyes Well may require treatment to meet the Safe Drinking Water Act requirements for "groundwater under the influence of surface water." As a result, the future feasibility and cost effectiveness of treating or re-siting the Keyes Well is unknown but may be low relative to the use of other current (such as Pennichuck Water Works) and/or potential future sources. For example, the redevelopment of the Savage Well superfund site after aquifer restoration is likely to be both more cost-effective and a higher priority due to the substantially higher well yields available from that aquifer. |
| 6. OTHER CURRENT OR REASONABLE EXPECTED GROUNDWATER USE(S) IN REVIEW AREA | | X | Municipal water available to site area and other significant groundwater withdrawals in the area are unlikely. Groundwater Management Zone will control future use of groundwater. |
| 7. ECOLOGICAL VALUE VALUE | X | | Groundwater discharges to Souhegan River, Class B surface water (swimmable, fishable and with treatment can be used as drinking water source). River is used for recreational purposes; canoeing, swimming and fishing. |
| 8. PUBLIC OPINION | X | | Town does not plan to use the Keyes Well in the foreseeable future. Long term goal is that Keyes Well has value as future potential water supply source. |

**APPENDIX E**

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
JFK Federal Building, Boston, MA 02203-2211

DATE: October, 8, 11996
SUBJ: Recalculation of risks associated with soil cleanup levels for the Fletcher's Paint Superfund Site

FROM: Ann-Marie Burke, Toxicologist
Technical Support Section

TO: Cheryl Sprague, RPM
NH, RI Superfund Section

The following is a recalculation of the cancer risk associated with the cleanup level for PCBs in soils at the Fletcher's Paint Superfund Site. This recalculation of risks is the result of a meeting held between EPA, GE, the State of NH and the Town of Milford, NH on August 8, 1996. At this meeting GE proposed certain changes to the risk assessment assumptions for PCBs in soils at the Fletcher's site. EPA agreed to some changes, disagreed with others and introduced additional changes based on new scientific information about exposure to PCBs released after the amended baseline risk assessment (ABRA) was completed. This results in a different risk associated with a soil concentration for PCBs than was calculated in the ABRA. It has been decided that the ABRA will not be amended again but these changes in exposure and risk assumptions will be conveyed in the ROD for this site. If you have any questions about this calculation, do not hesitate to call me at (617)223-5528.

Surface soils 0-1 foot

Cleanup levels for surface soils at the Elm and Mill Street site are protective for an adult or child visitor who might contact soils in these areas. The Elm Street site is expected to be a future park and the Mill Street site is expected to remain a commercial area close enough to residents so that young children could trespass. The cleanup levels for PCBs in surface soils for both areas is 1ppm.

The equation for the risk associated with a particular cleanup level for the oral and dermal routes of exposures is presented below:

<IMG SRC 98124P9>
<IMG SRC 98124Q>
<IMG SRC 98124Q1>
<IMG SRC 98124Q2>
<IMG SRC 98124Q3>

## APPENDIX F

<IMG SRC 98124Q4>
<IMG SRC 98124Q5>
<IMG SRC 98124Q6>
<IMG SRC 98124Q7>
<IMG SRC 98124Q8>