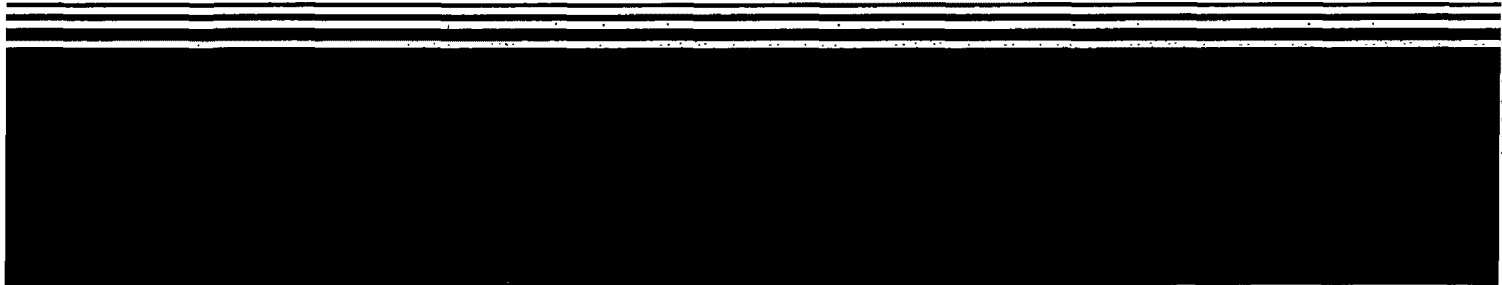




EPA

Superfund Record of Decision:

Savage Municipal Water Supply, NH



Abstract (Continued)

concentrated plume, which contains the highest concentrations of contaminants; and the extended plume, which has the remainder of the contaminated ground water. The primary contaminants of concern affecting the ground water are VOCs including benzene, PCE, TCA, and TCE; and metals including arsenic, chromium, and lead.

The selected remedial action for this site includes onsite pumping and treatment of the concentrated and extended plume areas using air stripping and ultraviolet oxidation; discharging the treated ground water onsite; use of natural attenuation to aid in contaminated ground water remediation until clean-up levels are met; implementing ground water, surface water, and sediment monitoring programs during remediation; and implementing institutional controls including deed and ground water use restrictions. The estimated present worth cost for this remedial action is \$15,500,000, which includes an annual O&M cost of \$1,400,000 for 30 years.

PERFORMANCE STANDARDS OR GOALS: Interim ground water clean-up levels for carcinogenic compounds have been set at the more stringent of MCLs, non-zero MCLGs, or an excess cancer risk of 10^{-6} . Clean-up levels for non-carcinogenic compounds have been set at the non-zero MCLG or an HI=1. Ground water clean-up levels include benzene 5 ug/l (MCL), PCE 5 ug/l (MCL), TCE 5 ug/l (MCL), arsenic 50 ug/l (MCL), chromium 100 ug/l (MCL), and lead 15 ug/l (action). Final protective clean-up levels will be developed after interim levels have been attained or the remedy is otherwise deemed protective.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

DECLARATION FOR THE RECORD OF DECISION

Savage Municipal Water Supply Superfund Site
Milford, New Hampshire

STATEMENT OF PURPOSE

This decision document represents the selected remedial action for the Savage Municipal Water Supply Superfund Site in Milford, New Hampshire, developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, and to the extent practicable, the National Oil and Hazardous Substances Contingency Plan (NCP), 40 CFR Part 300 et seq., as amended. The Region I Administrator has been delegated the authority to approve this Record Of Decision.

The State of New Hampshire has not commented on nor concurred with the selected remedy.

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 Region I Waste Management Division Records Center in Boston, Massachusetts. The Administrative Records Index (Appendix E 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 SELECTED REMEDY

This ROD sets forth the selected remedy for Savage Municipal Water Supply Site, which addresses management of migration to meet cleanup goals. The selected remedy is a comprehensive remedy since no source control component is necessary. This remedy addresses the potential risks to the future uses of the aquifer caused by the groundwater contamination at the site.

The remedial measures to address the groundwater contamination include:

- Installation of a groundwater extraction and treatment system at the concentrated plume area. The system will contain and remove highly contaminated groundwater for treatment using air stripping and ultraviolet oxidation.
- Installation of a groundwater and treatment system within the extended plume area. The system will remove contaminated groundwater from two locations near the middle of the plume and two locations near the end of the plume for treatment using ultraviolet oxidation.
- Reliance on natural attenuation of contaminated groundwater to lower contaminant concentrations through physical, chemical and biological processes until groundwater cleanup levels are met.
- Utilization of institutional controls to reduce the risk to public health from consumption of the groundwater. Institutional controls may include deed restrictions and zoning ordinances to restrict the use of contaminated groundwater. Institutional controls shall be imposed in the area where the risk to public health is outside EPA's acceptable risk range
- Implementation of an environmental monitoring program initiated during remedial design and continuing for three years after attaining groundwater cleanup levels to assess the effectiveness of remediation and to confirm that contaminant concentrations in the groundwater have attained cleanup levels. The program will include monitoring of groundwater, surface water, sediments, and existing households obtaining drinking water from the aquifer.

DECLARATION

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate for this remedial action and is cost-effective. This remedy satisfies the statutory preference for remedies that utilize treatment as a principal element to reduce toxicity, mobility, or volume of hazardous substances. In addition, this remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

A review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Sept. 27, 1991
Date 1

Julie Belaga
Julie Belaga
Regional Administrator
U.S. EPA, Region I

SAVAGE MUNICIPAL WATER SUPPLY SUPERFUND SITE

RECORD OF DECISION SUMMARY

September 27, 1991

**RECORD OF DECISION
SAVAGE MUNICIPAL WATER SUPPLY**

TABLE OF CONTENTS

<u>Contents Number</u>	<u>Page</u>
I. SITE NAME, LOCATION AND DESCRIPTION	1
A. General Description	1
B. Hydrology and Geology of the site	1
C. Aquifer Use	4
II. SITE HISTORY AND ENFORCEMENT ACTIVITIES	5
A. Land Use and Response History	5
B. Enforcement History	6
III. COMMUNITY PARTICIPATION	6
IV. SCOPE AND ROLE OF RESPONSE ACTION	7
V. SUMMARY OF SITE CHARACTERISTICS	8
A. Soil	8
B. Groundwater	9
C. Surface Water	12
D. Air	13
E. Sediment	13
VI. SUMMARY OF SITE RISKS	14
VII. DEVELOPMENT AND SCREENING OF ALTERNATIVES	20
A. Statutory Requirements/Response Objectives	20
B. Technology and Alternative Development and Screening	20
VIII. DESCRIPTION OF ALTERNATIVES	21
A. Source Control (SC) Alternatives Analyzed	21
B. Management of Migration (MM) Alternatives Analyzed	21
IX. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES	42
X. THE SELECTED REMEDY	49
A. Interim Groundwater Cleanup Levels	49
B. Description of Remedial Components	52
XI. STATUTORY DETERMINATIONS	58
A. The Selected Remedy is Protective of Human Health and the Environment	58
B. The Selected Remedy Attains ARARs	59
C. The Selected Remedial Action is Cost-Effective	63

D.	The Selected Remedy Utilizes Permanent Solutions and Alternative Treatment or Resource Recovery Technologies to the Maximum Extent Practicable . . .	66
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	68
XII.	DOCUMENTATION OF NO SIGNIFICANT CHANGES	68
XIII.	STATE ROLE	68

APPENDICES

APPENDIX A:	Figures
APPENDIX B:	Tables
APPENDIX C:	ARARs Chart
APPENDIX D:	Responsive Summary
APPENDIX E:	Index to the Administrative Record

**SAVAGE MUNICIPAL WATER SUPPLY SUPERFUND SITE
ROD DECISION SUMMARY
SEPTEMBER 27, 1991**

I. SITE NAME, LOCATION AND DESCRIPTION

A. General Description

The Savage Municipal Water Supply Superfund Site (Savage Well Site or Site) is located in the Town of Milford, New Hampshire about two miles west of the center of town. See Figure 1.

The Site includes a groundwater plume that extends from the intersection of Route 101 and Elm Street eastward approximately 6,000 feet. It is roughly bounded on the north and east by the Souhegan River and on the south by Elm Street and Tucker Brook. The Savage Well Site lies within the floodplain of the Souhegan River. The floodplain is a relatively flat land surface extending through most of the area of the Site. The Souhegan River flows from west to east for the length of the Site area. At the eastern edge of the Site, the River takes a pronounced southward bend before resuming its generally west to east orientation. See Figure 2.

Residential, agricultural, heavy and light industrial, and commercial land uses are found within the Site. Residences are located along Elm Street and Old Wilton Road. A trailer park is located to the north of Elm Street. Agricultural uses including a cornfield and a former sod farm dominate the central and western portions of the Site between Elm Street and the Souhegan River. The heavy industrial uses are located between Elm Street and Old Wilton Road east of Route 101. Light industrial and commercial uses are generally found along Elm Street.

The land use north of the Souhegan River (extending to North River Road) is predominantly agricultural (corn and hay fields) or forested. The forested areas are within the boundary of the State's Milford Fish Hatchery. The Milford Fish Hatchery provides trout for stocking New Hampshire ponds, lakes, and rivers, and Atlantic salmon for Atlantic salmon restoration efforts. Salmon raised in Milford are transported to the coast for release. A private fish hatchery located at the eastern edge of the Site raises trout. Residences are scattered along North River Road.

B. Hydrology and Geology of the Site

Three principal streams flow through the Site: 1) the largest one, the Souhegan River, which flows west to east along the

northern portion of the Site; 2) Tucker Brook which flows from the southwest corner of the Site through several wetland areas, and eventually discharges to the Souhegan River at the eastern end of the site; and 3) the unnamed stream which originates at the Hitchiner and Hendrix facilities (and into which Hitchiner-Hendrix process water has been discharged) and flows northeast across the central portion of the Site to the Souhegan River. Several smaller streams and Purgatory Brook are located north of the Souhegan River. They flow south and discharge into the River.

The unconsolidated overburden materials include thick (up to 130 feet) glacial outwash deposits. Locally those are overlain by surficial alluvium and stream terrace deposits along the Souhegan River and thin (less than 5 feet) layers of organic rich loam. The glacial outwash deposits consist primarily of noncohesive stratified fine to coarse sands and gravels. Lenses of silt and fine sand have been observed at some locations but are not common.

A very dense glacial till consisting of a poorly sorted mixture of fine to medium sand, gravel, silt, clay, and angular rock fragments underlies the stratified sands and gravels. The till layer varies in thickness from 2 to 15 feet and is present as an aerially extensive layer or as isolated lenses along the bedrock surface. In the westernmost portion of the Site the till appears to be thicker (up to 33 feet) and can be subdivided into two distinct types. A coarser, less compact gray to brown discontinuous till layer directly overlies a characteristically olive-green dense lower till.

The stratified sands and gravels containing a minimal amount of fine materials comprise a high yield and highly permeable aquifer. By contrast the dense glacial till is a much less permeable and transmissive stratum because of its compactness and higher percentage of silt and other fine materials.

The bedrock aquifer underlying the glacial outwash deposits is a medium to coarse grained granite and diorite gneiss. The degree of weathering and fracturing in bedrock varies considerably throughout the Site. At locations in the eastern portion of the Site, little weathering and fracturing has been observed. For the most part, weathering is typically less than 10 feet in thickness and the intensity of fracturing appears to decrease with depth. In the westernmost portion of the Site, the weathered and fractured zone is approximately 30 to 40 feet thick.

Two significant features of the bedrock surface beneath the Site are (see Figure 3): 1) a narrow bedrock trough trending from the vicinity of OK Tool eastward and ending in a broad basin structure (bowl) in the vicinity of monitoring wells MW-16, 17,

and 20; and 2) a large broad depression northwest of the Site situated between the Souhegan River and North River Road. East of the trough and basin feature, the bedrock surface is relatively flat, dipping only slightly to the east. The bedrock surface rises steeply toward the south-southeast of the Site where bedrock crops out. Bedrock is also found at or near the land surface northwest and northeast of the Site.

C. Aquifer Use

The aquifer is a high yield aquifer. Past and present groundwater usage indicates that large quantities of water will be available from the aquifer in the future.

Seven large capacity production wells are currently withdrawing or in the past have withdrawn groundwater from the aquifer. The usage in gallons per day (gpd) is shown below unless otherwise indicated:

<u>WELL</u>	<u>RATE OF PRODUCTION (GPD)</u> <u>(PERIOD OF USE)</u>	<u>WATER USE</u>
Savage Well	<u>180,000-240,000</u> 1960-1983	Municipal Water
Hendrix Well	150,000-225,000 <u>1000 gpd present use</u> 1974-1990	Industrial
Hitchiner Well	<u>360,000-400,000</u> 1965-present	Industrial
Granite State Concrete	Variable <u>up to 400gpm</u> 1967-present	Commercial seasonal
NHF&G Well # 4	<u>1,152,000</u> 1988-present (pumped 720,000 1970-1988)	Fish Hatchery
NHF&G Well # 5	<u>1,152,000</u> 1988-present pumped 720,000 1970-1988	Fish Hatchery
Souhegan Valley Aquiculture	<u>200,000</u> 1989-present	Fish Hatchery
Chemserve	<u>7,000 gal/month</u> 1988-present potential yield is 17,000 gpd	Commercial (Original purpose was for purified water production)

Currently, the total groundwater use is approximately 2,900,000 gallons per day.

Other smaller capacity drinking water wells are also located at the Site. A dug well at the Milford Drive-In continues to

provide water during the summer. This is the only well presently used to supply drinking water within the Site area. The Milford Mobile Home Park at one time obtained its drinking water from its own supply well. Its use was discontinued in 1983 due to contamination. Homes north of the Souhegan River on North River Road obtain their drinking water from dug wells or bedrock wells located on their property. No estimates of total household use for the area north of the River have been made.

A more complete description of the Site can be found in the Remedial Investigation (RI) Report at pages 1-1 through 1-18 and 3-1 through 3-61.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

A. Land Use and Response History

The Site and surrounding properties encompass four major industrial facilities, the Savage Municipal Well, and two fish hatcheries. Land use varies from agricultural use to heavy industrial use interspersed by residential and commercial development.

Four major industrial plants are situated to the west of the Savage Well: Hendrix Wire and Cable Corporation, Hitchiner Manufacturing Company, OK Tool Company, and New England Steel Fabricators, Inc. From the 1940s until the 1980s, process waters and wastes from the four industrial facilities were released untreated to the ground or to the surface waters flowing through the Site.

In February, 1983, as part of the first routine sampling of water supplies for organic compounds, the New Hampshire Water Supply and Pollution Control Commission (NHWS&PCC) found several volatile organic compounds (VOCs) above drinking water standards in water from the Savage Well. The VOCs found were: 1,1,1 Trichloroethane (TCA), Trichloroethylene (TCE), Trans-1,2 dichloroethylene (trans-1,2 DCE), Tetrachloroethylene (PCE), and 1,1 Dichloroethane (DCA). VOCs were also found in the water drawn from the well supplying the nearby Milford Mobile Home Trailer Park. The VOCs found at the Mobile Home Park well were: Tetrachloroethylene and Trans-1,2 dichloroethylene. The State of New Hampshire ordered the Town to cease use of the Savage Well in February, 1983.

In March, 1983, at the request of the State, EPA conducted an emergency removal action to supply uncontaminated water to residences of the Milford Mobile Home Trailer Park. EPA's actions included supplying bottled water to residents as an interim measure. The action was completed in May, 1983, when the

Trailer Park's water distribution system was connected to the existing municipal water supply system.

The Site was proposed for inclusion on the EPA National Priorities List (NPL) on September 1, 1983. The Site was included on the final NPL on September 1, 1984.

B. Enforcement History

On June 18, 1985, EPA notified four companies that either owned or operated a facility, generated wastes that were shipped to the facility, arranged for the disposal of wastes at the facility, or transported wastes to the facility of their potential liability with respect to the Site. Negotiations commenced in July, 1985, with those potentially responsible parties (PRPs) regarding the performance of a Remedial Investigation/Feasibility Study (RI/FS) at the Site.

The PRPs formed a steering committee and substantial negotiations occurred. A draft workplan for the Remedial Investigation/Feasibility Study was completed by EPA and presented to the PRPs and to the community. After receiving numerous comments from federal and state agencies and the PRPs, the workplan was revised by EPA to incorporate those comments and to conform with the NCP, as amended in November, 1985. In January, 1987, EPA offered the PRPs a final opportunity to conduct the RI/FS in accordance with the revised workplan. A draft Consent Order was sent to the PRPs and the State in February, 1987. Following negotiations, the PRPs signed an Administrative Order by Consent on June 10, 1987, to perform the RI/FS.

The PRPs have been active in the remedy selection process for this Site. The PRPs performed the RI/FS and were mailed a copy of the Proposed Plan in July, 1991. Technical comments presented by the PRPs as well as comments submitted by the public during the public comment period have been included in the Administrative Record. A summary of those comments as well as EPA's responses to them are included in the Responsiveness Summary which is Appendix D of this document.

III. COMMUNITY PARTICIPATION

Throughout the Site's history, community concern and involvement have been high. EPA has kept the community and other interested parties apprised of the Site activities through informational meetings, fact sheets, press releases, and public meetings.

From 1983 to 1985, most of EPA's activity in the Town of Milford related to the emergency action and to the search for and the subsequent determination of the potentially responsible parties at the Site. As a result of those activities, most of the

interaction at that time occurred among EPA, the State, and the four PRPs.

A public meeting was held in Milford on July 29, 1985. The purpose of the meeting was to explain the RI process. At that time the RI was to be a "fund lead" since the PRPs had not agreed to perform the RI/FS. The study was interrupted due to the Superfund reauthorization process and further negotiations with the PRPs to perform the RI/FS. After lengthy negotiations the PRPs signed an Administrative Order by Consent to perform the RI/FS in June, 1987. The Order became effective in August, 1987.

During October, 1988, EPA released a community relations plan which outlined a program to address community concerns and keep citizens informed about and involved in the process. A Fact Sheet was sent out to all interested parties in December, 1988, which provided information on the RI/FS process and the status of the Site. On August 8, 1990, EPA held an informational meeting in Milford at the Town Hall to discuss the results of the Remedial Investigation.

On July 3, 1991, EPA distributed the Proposed Plan to all known interested parties. On July 12, 1991, EPA made the Administrative Record available for public review at EPA's offices in Boston and at the Wadleigh Memorial Library in Milford. EPA published a notice and brief analysis of the Proposed Plan in The Milford Cabinet on July 10, 1991, and made the plan available to the public at the Wadleigh Memorial Library.

On July 11, 1991, EPA held an informational meeting in Milford to discuss the results of the cleanup alternatives presented in the Feasibility Study and to present the Agency's Proposed Plan. Also during this meeting, the Agency answered questions from the public. From July 12 to August 10, 1991, the Agency held a thirty day public comment period to accept public comment on the alternatives presented in the Feasibility Study and the Proposed Plan and on any other documents previously released to the public. On July 29, 1991, the Agency held a public meeting in Milford to discuss the Proposed Plan and to accept any oral comments. A transcript of that meeting, the comments, and the Agency's response to those comments are included in the attached responsiveness summary.

IV. SCOPE AND ROLE OF RESPONSE ACTION

In summary, the remedy provides for the following: extraction and treatment of contaminated groundwater from the aquifer, natural attenuation of contaminated groundwater located at the downgradient area of the plume, and implementation of institutional controls to prevent the use of contaminated groundwater until restoration of the aquifer is achieved. The

remedial action will address the following threats to human health and the environment posed by contamination at the Site:

1) the overall threat resulting from contamination of a potential drinking water supply and 2) the threat of continued migration of contaminated groundwater to other areas of the aquifer.

V. SUMMARY OF SITE CHARACTERISTICS

Chapter 1 and Section 2.2.1 of Chapter 2 of the Feasibility Study contain an overview of the Remedial Investigation. The significant findings of the RI are summarized below.

A. Soil

VOC contamination was found in soils at ten of thirteen suspected source areas throughout the Site. The highest concentrations of contamination were found between OK Tool Company and the Souhegan River. Acetone was found at a maximum concentration of 310 parts per billion (ppb) and tetrachloroethylene (PCE) at a maximum concentration of 440 ppb. During the Feasibility Study (FS) additional sampling was performed and VOC contamination continued to be found in soils underneath the OK Tool, Hitchiner, and Hendrix buildings. The levels of PCE beneath OK Tool ranged from 83 ppb to 2,400 ppb. Acetone was detected under the Hitchiner facility at 22 ppb. Sampling of soils beneath and within the Hendrix building indicated levels of 100 ppb. Based on modelling it was determined that none of those soils contained levels of VOCs high enough to pose a threat to groundwater quality if the contamination leached from the soils to the groundwater. Chapter 2 and Appendix IX of the FS detail the modeling used to address the threat of VOC contamination in the soils to the groundwater. Very low levels of semi-volatile organic compounds (SVOCs) were also detected.

Metal debris is present in soils at depths of one to five feet below the ground surface between the northeast corner of the OK Tool building and the Souhegan River. Analysis of the soils indicates comparatively elevated levels of a number of metals: arsenic, 204 ppm; total chromium, 15,100 ppm; and lead, 610 ppm. A second area of metal debris was found along the north side of a nearby state owned lot adjacent to the Souhegan River. The levels of arsenic, total chromium, and lead are 42 ppm, 14,000 ppm, and 43 ppm respectively. Additional sampling conducted during the FS and documented separately in the Administrative Record shows that less than 10 ppm of the total chromium is present in the more toxic hexavalent state. Polychlorinated biphenyls (PCBs) were detected near the OK Tool building (within the area of elevated metals discussed above) at levels of 0.633 and 3.48 ppm. PCBs were also detected in one sample location adjacent to the Hendrix facility at a concentration of 24 ppm.

B. Groundwater

The VOC contaminated groundwater plume is shown in Figure 4. VOCs are the most prevalent contaminants found in groundwater samples from the Site. The highest concentrations found are: tetrachloroethylene (PCE) - 19,000 ppb; 1,1,1-trichloroethane (TCA) - 1300 ppb; trichloroethylene (TCE) - 2,300 ppb; and 1,2-dichloroethylene (1,2-DCE) - 1,500 ppb. Other VOCs detected less frequently and at lower concentration are: 1,1-dichloroethylene (1,1-DCE) - 46 ppb; 1,1-dichloroethane (1,1-DCA) - 110 ppb; and methyl-t-butyl ether (MTBE) - 60 ppb. Table 1 presents a statistical summary of analytical data for VOCs in the groundwater.

Metals concentrations were found to be in excess of their respective MCLs at three locations. The locations, metals, and concentrations of concern are as follows (locations of monitoring wells are shown in Figure 4):

<u>Location</u>	<u>Monitoring Well</u>	<u>Metal</u>	<u>Field Concentration(ppb)</u>	<u>MCL(ppb)</u>
OK Tool	MI-24 MI-25	Antimony	40	3 *
		Beryllium	32	1 *
		Lead	160	15
Hitchiner	MW-6A	Arsenic	200	50
		Beryllium	82	1 *
		Chromium	141	100
		Lead	110	15
		Nickel	165	100
Hendrix	MW-8A	Antimony	20	3 *
		Beryllium	27	1 *
		Lead	75	15

* Proposed MCL

Beryllium was also found to exceed its MCL (proposed) at the following locations:

<u>Well</u>	<u>Concentration (ppb)</u>
1C	9
4A	12
6B	4
9C	14
10	2
16	8
18A	12
19A	7
19B	2
20B	7
22	14

The observed VOC plume is approximately 6,000 feet long and 2,500 feet wide. The plume extends from the vicinity of OK Tool and Hitchiner Manufacturing in the west to the Souhegan River in the east and from Old Wilton Road in the south to just north of the Souhegan River in the north. PCE is the most widespread contaminant and has the highest concentrations of any of the VOCs detected in groundwater. Its distribution and extent mimics that of total VOCs (see Figure 5). The distribution of TCA, also a widespread contaminant present in high concentrations, is shown in Figure 6.

In general, the groundwater flows west to east at OK Tool and then northeasterly in the eastern portion of the Site. The current configuration of the contaminant plume is the result of a number of manmade influences in addition to natural groundwater flow patterns. Manmade influences include historical pumping at the Hitchiner, Hendrix, and Savage wells. Based on hydraulic and chemical data, it also appears that contaminated groundwater at the leading edge of the plume flows beneath the Souhegan River to the north side of the river. This may be due in part to groundwater withdrawals at the Souhegan Valley Aquiculture Hatchery. Production wells at the State Fish Hatchery do not appear to influence groundwater flow south of the River but do induce infiltration from the river and groundwater flow north of the river. Analysis of the surface water-groundwater relationship shows that some sections of all of the streams within the Site lose water to the aquifer while other sections gain water from the aquifer. Contaminated groundwater is discharging to the Souhegan River at the eastern portion of the Site. The length of the discharge zone along the river varies with the season of year and the amount of rainfall during each year.

Groundwater sampling results indicate that PCE concentrations increase with depth in the unconsolidated aquifer. The highest concentrations at multiple well cluster sites have been consistently observed in wells screened at or near the bedrock surface. In the central portion of the contaminant plume within the bedrock channel, PCE contamination shows a twenty fold increase in concentration with depth. The coincidental location of the relatively narrow plume of concentrated VOCs with the location of the bedrock channel suggests that the bedrock channel may influence the migration of contaminants in a lateral direction.

The FS divided the plume into two zones: the concentrated plume and the extended plume. The concentrated plume includes the areas near the OK Tool and Hitchiner facilities that contain the highest concentrations of contaminants. VOC levels in those areas are presently as high as 22,100 ppb. The extended plume includes the remainder of the contaminated groundwater which has concentrations of contamination ranging from trace levels to about 10,000 ppb. Contamination found to date has been dissolved in the groundwater. However, high levels of VOCs found in the concentrated plume suggest the presence of undissolved liquid chemicals referred to as dense non-aqueous phase liquids (DNAPLs).

Contamination was detected at several locations in the bedrock aquifer. The shallow bedrock at the upper zone is weathered and fractured. The fracturing becomes more intermittent and isolated with increasing depth. Groundwater can readily move into and out of the unconsolidated sediments above. Contaminant concentrations in the bedrock aquifer are significantly lower than those detected in the overlying overburden aquifer. MW-16R, located in the bedrock channel, had the highest concentrations at 3,810 ppb of VOCs. The adjacent deep overburden well (See Figure 7 for the location of total VOCs in the bedrock), MW-16C, had VOC concentrations of 6,400 ppb. The results of sampling at MW-31, located north of the river approximately 4,800 feet downgradient at the leading edge of the overburden plume, suggest that a highly transmissive fracture zone may exist. The sampling indicates that 13 ppb of TCE is present. At MW-30, located north of the river at the western part of the Site, PCE was found in concentrations from 80 ppb to 26 ppb. Because the overburden aquifer is not contaminated at that location, the results appear to indicate contaminant migration in low yield fractures that intersect the open bedrock interval.

Residences located on North River Road use bedrock and overburden wells for drinking water purposes. Water quality data from those wells indicate no detectable concentrations of VOCs.

C. Surface Water

VOCs were detected in surface water within the study area only in samples collected from the NPDES-permitted Hitchiner-Hendrix discharge stream. The single exception was the detection of low levels of PCE, TCE, and 1,2-DCE in the surface water body directly southwest of the Savage Well referred to herein as Savage Pond. The VOCs detected in Savage Pond are likely derived from the groundwater contaminant plume.

The highest total VOC concentrations, in excess of 400 ppb, were found in samples collected from permitted outfalls at the Hitchiner facility (SW-5, which discharges to the ponded area at the upstream end of the stream) and the Hendrix facility (SW-19). The most prevalent contaminants detected in surface water along the Hitchiner-Hendrix discharge stream are acetone, TCA, and PCE which were detected at maximum concentrations of 300 ppb, 260 ppb, and 29 ppb, respectively. VOC concentrations decrease rapidly downstream from the outfalls, in large part due to volatilization and dilution.

The 1985 New Hampshire Water Supply and Pollution Control Commission (NHWSPPC) Hydrogeological Investigation sampling performed at Hitchiner outfalls (including the ponded area) in 1983 and 1984 indicated the presence of acetone at concentrations up to 2,010 ppb, TCA at concentrations up to 1,800 ppb, and PCE at concentrations up to 56 ppb. Other VOCs previously detected include 1,1-DCA, 1,1-DCE, 1,2-DCE, TCE, methyl ethyl ketone, methyl isobutyl ketone, toluene, and benzene. The outfall locations are shown on Figure 8.

Concentrations of individual VOCs were at various times higher or lower in discharge stream samples than in the Hitchiner production well. Variations in reported concentrations may be due to a number of factors including variations in sampling methodologies and locations, variations in pumping rates, and variations in discharge rates.

During the RI, acetone and TCA were detected in the upper portion of the discharge stream (south of Elm Street) and in the lower portion of the discharge stream (stations SW-8 and SW-9). PCE has been detected downstream of the Hendrix outfalls and throughout the length of the lower discharge stream at concentrations less than 20 ppb. Other VOCs detected in the Hendrix outfalls included TCA, toluene, benzene, acetone, styrene, acrolein, and MTBE. Permitted discharges from the Hendrix facility ceased in March, 1990, when Hendrix installed a process water recycling system. PCE concentrations detected during the RI at MW-8 (10 to 74 ppb), located immediately upgradient of the Hendrix production well, were comparable and in some cases higher than concentrations in the Hendrix outfalls (up to 20 ppb) prior to the cessation of discharges. Data compiled

by NHWSPCC prior to the RI also indicates higher PCE concentrations in the production well than in the Hendrix outfall or in the discharge stream downstream of Hendrix. Other VOCs were in some instances higher in the outfall and the discharge stream and in some instances lower.

D. Air

Ambient air monitoring detected low levels of acetone, TCA, methylene chloride, and PCE at the Site. The detected values are substantially below the Acceptable Ambient Air Levels (AALs), as obtained from the New Hampshire Air Resources Agency.

E. Sediment

VOCs were detected in stream sediments primarily at locations adjacent to or immediately downstream of NPDES-permitted process water outfalls from the Hitchiner facility. The principal VOC contaminants detected in sediments were acetone, TCA, and 1,1-DCA. All are likely derived from process water discharges from the Hitchiner facility as discussed above in regard to surface water contaminants. Toluene and chloroethane were also detected in sediments near the Hitchiner outfalls. Levels of VOCs in sediments drop off rapidly further downstream from the Hitchiner outfalls. Acetone, PCE, and 1,2-DCE were also detected in low levels in sediments at the Savage Pond, located approximately 100 feet southwest of the Savage Well. TCE and 1,2-DCE detected at that location are likely derived from groundwater recharge to the pond.

Several semi-volatile compounds (ABNs) were detected in sediments along the upper portion of the discharge stream, with elevated levels limited to sediments immediately downstream from the Hitchiner outfalls. Fluoranthene and bis(2-ethylhexyl)phthalate were the most commonly detected compounds and appear to be derived from discharges from the Hitchiner facility.

A number of ABNs were also detected in sediments at the upstream end of the Souhegan River. The source of those contaminants has not been determined, but is clearly located upstream from the study area.

During the sampling of surface water systems, PCBs were detected only in sediments immediately adjacent to the Hitchiner outfalls at concentrations up to 6.5 mg/kg.

A complete discussion of site characteristics can be found in the Remedial Investigation Report at Pages 4-1 to 4-72 and 5-1 to 5-24.

VI. SUMMARY OF SITE RISKS

A Risk Assessment (RA) was 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 which identified those hazardous substances which, given the specifics of the Site, were of significant concern; 2) exposure assessment which identified actual or potential exposure pathways, characterized the potentially exposed populations, and determined the extent of possible exposure; 3) toxicity assessment which considered the types and magnitude of adverse health effects associated with exposure to hazardous substances, and 4) risk characterization which integrated 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 Savage Municipal Well Site are discussed below followed by the conclusions of the environmental risk assessment.

Twenty-two contaminants of concern, listed in Tables 3 through 13 found in Appendix B of the ROD were selected for evaluation in the risk assessment. Those contaminants constitute a representative subset of the more than thirty contaminants identified at the Site during the Remedial Investigation. The twenty-two contaminants of concern were selected to represent potential site related hazards based on toxicity, concentration, frequency of detection, and mobility and persistence in the environment. A summary of the health effects of each of the contaminants of concern can be found in Section 2.0 of the Baseline Health Risk Assessment (the RA).

Potential human health effects associated with exposure to the contaminants of concern were estimated quantitatively through the development of several hypothetical exposure pathways. Those 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.

Exposure Pathways

Potential human health effects associated with exposure to the contaminants of concern were estimated quantitatively through the development of the following hypothetical exposure pathways:

- Future potential use of groundwater (household use and drinking water)
- Future potential use of groundwater for irrigation
- Incidental ingestion and dermal contact with surface water and sediment while wading in the trailer park brook and Hitchiner/Hendrix discharge stream

- Incidental ingestion and dermal contact with soils at the OK Tool and Hitchiner/Hendrix properties
- Inhalation of contaminants monitored in ambient air

Exposure via ingestion of groundwater at the Milford Drive-In was not evaluated because only one contaminant was detected at a very low concentration and the exposure frequency is very low.

Those 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. The following is a brief summary of the exposure pathways evaluated. A more thorough description can be found in Section 3.0 of the RA.

For each pathway evaluated, an average and a reasonable maximum exposure (RME) estimate was generated corresponding to the average and the maximum concentration detected and estimated exposure in that particular medium.

Future Residential Use of Groundwater

Since groundwater at the Site is not being used currently as a residential drinking water supply, only a future use scenario was evaluated. Ingestion of 2 liters per day over a 70-year lifetime was assumed for both average and RME estimates. Inhalation of volatile contaminants during household use of water such as showering was estimated as well.

Future Use of Groundwater for Irrigation

Volatile contaminants would be released to the ambient air if the groundwater were used for irrigation of a proposed golf course. Modeling was used to conservatively estimate ambient air contaminant concentrations that would result and health risks were estimated for a worker exposed 4 hours per day, 120 days per year for 30 years. Only a RME scenario was considered as a screening step.

Surface Water and Sediment

Trailer Park Brook

Children may be exposed to surface water while wading and to sediment via incidental ingestion and dermal contact. Both current and future risks were estimated assuming exposure occurred 3 days per week for 6 months for 15 years (ages 2 through 16).

Hitchiner/Hendrix Discharge Stream

Risks to workers exposed to surface water and sediment were estimated assuming an exposure frequency of 30 days per year

and a duration of 30 years. Future potential risks were estimated for children using the same assumptions as for the trailer park.

Soils at OK Tool

Risks to children aged 2 through 16 who may trespass on the OK Tool property under current use conditions were estimated. Potential exposure via dermal contact was assumed to occur 30 days per year over the 15-year exposure period.

Risks for a future potential residential use were estimated by assuming that exposure would occur 160 days per year over a 70 year lifetime.

Soils at Hitchiner/Hendrix Properties

Potential risks to workers under the current industrial use scenario were estimated. Exposure via dermal contact and incidental ingestion was assumed to occur 30 days per year for 40 years.

Risks under a future potential residential scenario were estimated assuming an exposure frequency of 100 days over a 70 year lifetime.

Ambient Air

Exposure to ambient air contaminants under current conditions was estimated. Exposure to measured ambient air concentrations was assumed to occur 24 hours per day over a 70-year lifetime.

The Baseline Risk Assessment

Excess lifetime cancer risks were determined for each exposure pathway by multiplying the exposure level with the chemical specific cancer potency 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 very unlikely to be greater than the risk predicted. The resulting risk estimates are expressed in scientific notation as a probability (e.g. 1×10^{-6} for 1/1,000,000) and indicate (using this example), that an individual is not likely to have greater than a one in a million chance of developing cancer over 70 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. The hazard index is calculated by dividing the exposure level by the reference dose (RfD) or other suitable benchmark for non-carcinogenic health effects. 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 index 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 index is only considered additive for compounds that have the same or similar toxic endpoints (for example, the hazard index for a compound known to produce liver damage should not be added to a second whose toxic endpoint is kidney damage).

Tables 3-13 found in Appendix B depict the carcinogenic and non-carcinogenic risk summary for the contaminants of concern for the above pathways.

Results of Baseline Risk Assessment

Residential Use of Groundwater

The average and reasonable maximum exposure (RME) case carcinogenic risks associated with the potential future household use and consumption of groundwater were approximately 2 cancer cases in 1000 (2×10^{-3}) and 2 cases in 10 (2×10^{-1}), respectively. Tetrachloroethylene, arsenic, and beryllium comprised the majority of the risk for both the average and RME scenarios. Tetrachloroethylene comprised over 85% of the RME case risk. Other chemicals which contributed a risk of greater than one in a million were benzene; 1,1 dichloroethylene; 1,2 dichloroethane; methylene chloride; and trichloroethylene.

The average and RME case Hazard Indices were 7.4 and 1400, respectively. Tetrachloroethylene, lead and arsenic comprised the majority of the Hazard Index (HI). Ingestion of those compounds may cause damage to the liver, central nervous system, and skin, respectively. Tetrachloroethylene comprised more than 90% of the HI for the RME scenario.

Use of Groundwater for Irrigation

The RME case carcinogenic risk associated with the potential future use of groundwater for irrigation was approximately 9 in ten million

(9×10^{-7}) and the RME case HI for noncarcinogenic compounds was less than one.

Surface Water and Sediment at Trailer Park Brook

The average and RME case carcinogenic risks associated with exposure via wading in surface water and incidental ingestion and dermal contact with sediment under both current and future use of the trailer park were approximately one in a million (1×10^{-6}) and 5 in one million (5×10^{-6}). The Hazard Indices for both exposures were well below one.

Surface Water and Sediment at the Hitchiner/Hendrix Property

The average and RME case carcinogenic risks associated with current use (worker exposure) to surface water and sediment were approximately one in a million (1×10^{-6}) and four in one million (4×10^{-6}), respectively. The Hazard Indices for both exposures were below one.

The average and RME case carcinogenic risks associated with future residential use of the Hitchiner/Hendrix property were approximately four in one million (4×10^{-6}) and 1.4 in 100,000 (1.4×10^{-5}). Arsenic and PCBs comprised the majority of the risk. The Hazard Indices were below one for both exposures.

Soils at OK Tool Property - Current Use

The average and RME case carcinogenic risks associated with current use of the OK Tool Property (trespassing) were approximately 8 in one million (8×10^{-6}) and 3 in 100,000 (3×10^{-5}). Arsenic and PCBs comprised the majority of the risk.

The average and RME Hazard Indices were well below one.

Soils at OK Tool Property - Future Use

The average and RME case carcinogenic risks associated with future residential use of the OK Tool property were approximately 3 in 100,000 (3×10^{-5}) and 2 in 10,000 (2×10^{-4}), respectively. Arsenic and PCBs comprised the majority of the risk.

The average Hazard Index for the future residential use was well below one. The RME Hazard Index for arsenic slightly exceeded one (1) for the toxic endpoint of keratosis (skin discoloration).

Soils at the Hitchiner/Hendrix Property - Current Industrial Use

The average and RME case carcinogenic risks associated with current industrial use of the Site were approximately one in a million (1×10^{-6}) and two in 100,000 (2×10^{-5}), respectively.

The average and RME case Hazard Indices were well below one.

Soils at the Hitchiner/Hendrix Property - Future Use

The average and RME case carcinogenic risks associated with future residential use of the Site were approximately one in 100,000 (1×10^{-5}) and one in 10,000 (1×10^{-4}), respectively. PCBs comprised 85% of the RME case risk.

The average and RME case Hazard Indices were both below one.

Ambient Air - Current Scenario

The average and RME case carcinogenic risks associated with exposure to volatile compounds in the ambient air were approximately seven in a billion (7×10^{-9}) and seven in a million (7×10^{-6}), respectively. The Hazard Indices were well below one.

Summary of Baseline Risk Assessment

The Baseline Risk Assessment showed that the average and RME case carcinogenic risks associated with future potential residential use of groundwater are outside EPA's risk range of 1×10^{-4} to 1×10^{-6} . The chance of getting cancer from ingestion and household use of the contaminated water over a 70 year lifetime ranges from an average of 2 in 100 (2×10^{-2}) to 2 in 10 (2×10^{-1}). This means that an individual is not likely to have a greater than a 2 in 1000 to 2 in 100 risk of developing cancer as a result of exposure to groundwater contaminants under the scenario defined above.

The Baseline Risk Assessment also indicated the potential for adverse health effects other than cancer from lifetime exposure to the contaminated groundwater. The HI for each of the following chemicals exceeded one: tetrachloroethylene, lead, and arsenic. This means that contaminant levels exceed those levels that are likely to be without an appreciable risk of an adverse health effect. Tetrachloroethylene, lead and arsenic may affect the liver, central nervous system, and skin, respectively.

Risks from exposure to other media were within EPA's risk range (10^{-4} to 10^{-6}) for carcinogenic compounds and met the hazard index goal of one for compounds with noncarcinogenic effects. Lead levels in soil are within EPA's interim guidelines for soil lead cleanup levels at Superfund sites. Therefore no remedial actions are warranted with respect to those other media.

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

and substantial potential threat to public health could result from drinking groundwater.

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 of 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. Those remedial action objectives were developed to mitigate existing and future potential threats to public health and the environment. The response objectives were:

Prevent ingestion of contaminated groundwater that would pose an unacceptable risk to human health;

Restore groundwater quality to meet federal and state ARARs.

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 those requirements, a range of alternatives was developed for the Site. Those alternatives are set forth in the Feasibility Study and the Addendum to the Feasibility Study.

With respect to groundwater response action, the RI/FS developed a limited number of remedial alternatives that attain site-specific remediation levels within different time frames using different technologies. The FS Addendum evaluated three alternatives using a different treatment technology.

As discussed in Chapter 2 of the Feasibility Study, the RI/FS identified, assessed, and screened technologies based on implementability, effectiveness, and cost. Those technologies were combined into management of migration (MM) alternatives. Chapter 3 of the Feasibility Study and Section 3 of the Feasibility Study Addendum 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 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 and screened in Chapter 3 of the FS and Section 3 of the FS Addendum.

In summary, of the seventeen remedial alternatives screened for groundwater cleanup, ten were retained for detailed analysis. Three alternatives were screened out and four alternatives entailed management strategies sufficiently similar to other alternatives that a separate analysis was not warranted. The three alternatives evaluated in the FS Addendum have the same well location and pumping rates as three of the alternatives in the FS. They differ only in the treatment technology used, ultraviolet oxidation, which was not evaluated in detail in the FS. Table 2 in Appendix B identifies the 10 alternatives that were retained through the screening process, as well as those alternatives that were eliminated from further consideration.

VIII. DESCRIPTION OF ALTERNATIVES

This Section provides a narrative summary of each alternative evaluated.

A. Source Control (SC) Alternatives Analyzed

The risks from exposure to potential contaminant source areas were evaluated for carcinogenic compounds and non-carcinogenic compounds. The risks were found to be within EPA's risk range (10^{-4} to 10^{-6}) for carcinogenic compounds and also met the Hazard Index goal of one for compounds with non-carcinogenic effects. In addition, contaminants were not found at sufficiently high concentrations to contribute to the overall groundwater contamination.

No source control actions are warranted for this Site.

B. Management of Migration (MM) Alternatives Analyzed

The development of the management of migration alternatives was done using the available information, historical knowledge of the Site area, and generally applied scientific approaches to solving hydrogeologic issues. Extraction well locations and pumping rates for all of the alternatives are approximate. The range of estimated

time frames for cleanup of the aquifer reflects low and high contaminant retardation factors used in modelling the aquifer. It is not possible to determine precisely rates of contaminant movement within the groundwater. The lower end of the range reflects estimates of contaminant movement based on soil flushing tests performed on soils from the Site. The upper end of the range is based on published scientific studies. Portions of the aquifer where concentrations are low may achieve MCLs in much less time than 30 years after treatment begins.

Design studies will be performed prior to cleanup to determine the number, pumping rate, and placement of extraction wells that will most effectively capture, recover, and treat the contaminants. Consideration of hydrodynamic controls which may be beneficial to speeding the cleanup or directing the contaminant plume will also be part of those studies. Hydrodynamic controls include but are not limited to: recharge wells or ponds, withdrawal wells, sheet piling, and slurry walls. Those studies would adjust the final design of the extraction and treatment system to account for changes in location and concentration of the plume that are likely to occur between now and the beginning of treatment. Similarly, the exact location and method of discharge for treated water may be altered if negative impacts on wetlands or agriculture in the area are predicted through the design studies or become apparent after the cleanup has started.

An aspect of the design studies that will be further investigated is the existence of DNAPLs within the concentrated plume area. The presence of DNAPLs may alter cleanup time estimates of less than 30 years for the concentrated plume to an unknown length of time. Even if DNAPLs are determined to be present, this remedy will initially contain that portion of the plume containing DNAPLs so that the remainder of the contaminated aquifer can be restored to beneficial use. EPA may perform periodic reviews of advances in groundwater cleanup technology to determine if new techniques have been developed to effectively remediate DNAPL conditions. Consistent with CERCLA and the NCP, EPA will determine whether any modifications to the remedy are appropriate.

Management of migration alternatives address contaminants that have migrated from the original source of contamination. At the Savage Municipal Water Supply Site, contaminants have migrated from the west to the east. Contamination that has migrated to the upper bedrock will be withdrawn using wells placed to remove the groundwater at that zone. Contamination in the less fractured zone of bedrock is expected to diminish as groundwater remediation progresses in the shallow bedrock and overburden. Water quality in this deeper zone will be monitored, and if it appears to be deteriorating, EPA will address the need for expanding the extraction and treatment systems.

The Management of Migration alternatives evaluated for the Site that underwent detailed analysis in the FS and FS Addendum include:

- MM-1 No-Action.
- MM-2 Limited Action, natural attenuation with institutional controls, and long term groundwater monitoring.
- MM-3 Extraction and treatment of concentrated groundwater plume at 400 gpm, natural attenuation of extended plume with institutional controls.
- MM-7, 7A Extraction and treatment of concentrated groundwater plume at 400 gpm, extraction and treatment of a middle portion of extended plume at 825 gpm, natural attenuation with institutional controls.
- MM-9, 9A Extraction and treatment of concentrated groundwater plume at 400 gpm, extraction and treatment of a middle portion of extended plume at 750 gpm, natural attenuation with institutional controls.
- MM-10 Extraction and treatment of concentrated groundwater plume at 400 gpm, maximum extraction and treatment of the extended plume at 2,575 gpm, natural attenuation with institutional controls.
- MM-11, 11A Extraction and treatment of concentrated groundwater plume at 400 gpm, extraction and treatment of extended groundwater plume at middle portion at 600 gpm and at end of plume at 100 gpm, natural attenuation with institutional controls.

MM-1

NO-ACTION

Management of Migration Alternative MM-1, No Action, consists of a minimal comprehensive sampling and analysis program. Quarterly sampling events are proposed to address groundwater, surface water, and sediment. The sampling program would also include the periodic sampling (annually at a minimum) of bedrock household drinking water supplies north of the Souhegan River which are identified as possible receptors of contaminated groundwater. Site reviews would be performed at five-year intervals to decide whether the program should be expanded, reduced, or discontinued.

VOC concentrations throughout the extended plume would increase as more contaminants were released into the aquifer from the concentrated plume. Since the potential maximum size of the plume is

not known, EPA expects that the sampling and analysis program would continue for more than 100 years.

The No Action alternative provides for continued monitoring only. It has been retained and evaluated in detail to establish a baseline to which all other alternatives are to be compared as required by the NCP. This alternative will not meet ARARs in the foreseeable future. It is not protective of human health or the environment.

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	0
ESTIMATED TIME FOR OPERATION:	Greater than 100 years
ESTIMATED CAPITAL COST:	\$ 0
ESTIMATED ANNUAL O & M	\$ 81,000
ESTIMATED O & M (Present Worth):	\$ 763,579*
ESTIMATED TOTAL COST (Present worth):	\$ 763,579*

* Based on 30 year present worth analysis.

MM-2

LIMITED ACTION / NATURAL ATTENUATION / INSTITUTIONAL CONTROLS / LONG TERM MONITORING

The Limited Action Alternative MM-2 provides for the entire plume to naturally attenuate. No removal, containment, or treatment of the groundwater would be performed. The alternative includes institutional controls which provide for controlled and appropriate restrictions on the use of the groundwater. Restriction and management of the continued use of the contaminated portion of the aquifer would be achieved through institutional controls, such as deed restrictions, in the plume area in which the concentrations of the compounds of concern are greater than the clean-up goals. VOC concentrations throughout the extended plume would increase as more contaminants were released into the aquifer from the concentrated plume. As the contaminated plume would continue to migrate, additional areas would require institutional controls in the future. The controls would remain in place until the groundwater cleanup goals are met, which would be at least 100 years for this alternative. The alternative would be protective as long as the institutional controls are implemented and maintained. ARARs would not be met in the foreseeable future.

The long-term monitoring program would determine groundwater contaminant concentrations and the amount of contaminant migration. Additional monitoring wells may be needed if the contamination migrates beyond the current study area. The groundwater, surface water, and sediments would be sampled and analyzed on a quarterly basis for the presence of the following contaminants: VOCs, SVOCs, metals, and Hazardous Substance List compounds. Reports assessing the status of the Site would be done after every sampling event. Site conditions would be re-evaluated every five years.

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	0
ESTIMATED TIME FOR OPERATION:	Greater than 100 years
ESTIMATED CAPITAL COST:	\$ 0
ESTIMATED ANNUAL O & M	\$ 126,000
ESTIMATED O & M (Present Worth):	\$ 1,183,642*
ESTIMATED TOTAL COST (Present worth):	\$ 1,183,642*

* Based on 30 year present worth analysis.

MM-3

EXTRACTION AND TREATMENT OF CONCENTRATED PLUME AT 400 GPM / NATURAL ATTENUATION OF EXTENDED PLUME / INSTITUTIONAL CONTROLS / ENVIRONMENTAL MONITORING

Alternative MM-3 includes the following key components:

Concentrated Plume

Groundwater recovery from well(s) pumping at approximately 250 gallons per minute (gpm) at O.K. Tool.

Groundwater recovery from well(s) pumping at approximately 150 gpm at Hitchiner.

Groundwater treatment: metals removal/air stripping/vapor phase carbon.

Discharge to the Souhegan River and/or discharge to Hitchiner-Hendrix discharge stream.

Institutional controls to restrict groundwater use.

Extended Plume

Natural attenuation of extended plume.

Institutional controls to restrict groundwater use.

Environmental Monitoring

Periodic monitoring of air, surface water, groundwater, and sediments to ensure that public health and the environment are being protected.

Operational monitoring of treatment plant air emissions, water effluent, and residual wastes.

Alternative MM-3 consists of groundwater extraction and treatment at the most highly concentrated areas of the aquifer. Two treatment plants will be used to treat the concentrated. One plant will be

located at OK Tool and the other plant will be located at Hitchiner. Recovery wells, one to be sited at Hitchiner with an expected yield of 150 gpm and the other at O.K. Tool with an expected yield of 250 gpm, will be designed to capture, contain, and remediate contaminants migrating from areas of concentrated contamination at depth in the aquifer within each of those areas (see Figure 9).

The precise number, pumping rate, and placement of extraction wells so that the wells will most effectively capture and recover the contaminated groundwater will be determined during the remedial design phase.

The extracted groundwater will be treated in plants located at OK Tool and Hitchiner Manufacturing. Air stripping is the technology that would be used in those plants to treat the groundwater. Air stripping removes VOCs by pumping contaminated groundwater to the top of an air stripping tower and forcing air upward through the tower as the water cascades down. VOCs evaporate into the moving air and clean water exits at the bottom of the tower. The VOC-contaminated air is then passed through activated carbon to remove the VOCs before the air is released to the atmosphere. The contaminated carbon is taken off site for regeneration in which the contaminants are destroyed and the carbon recycled.

Alternative MM-3 includes no active remediation efforts in the extended plume. Instead, natural attenuation is employed.

Figure 10 illustrates the portions of the concentrated plume which are recovered and treated and the portion of the extended plume which is not recovered but is above the MCL for PCE and is allowed to undergo natural attenuation. The same institutional controls described in Alternative MM-2 will be implemented throughout the aquifer where clean-up levels and/or MCLs are exceeded. Those controls will remain in place until the groundwater cleanup goals are met.

Discharge options for Alternative MM-3 include discharge to the Souhegan River and/or discharge to the Hitchiner-Hendrix discharge stream. In addition, a provision for hydrodynamic controls in the aquifer will be examined during design studies for the purposes of decreasing the time of remediation and increasing protection for environmental and agricultural uses within the Site area.

Alternative MM-3 will include construction of a discharge pipe or structure either at the Souhegan River or at the existing Hitchiner-Hendrix discharge stream which will have a short-term impact on a minimum amount of wetland vegetation at the bank of the river or the stream. Erosion control techniques and restoration of the stream or river bank will minimize long-term impacts. No impacts to the floodplain should be caused by the treatment structures because the structures are not located within the floodplain.

The environmental monitoring program will determine contaminant concentrations and the amount of contaminant migration in several media. The monitoring plan will evaluate the effectiveness of the remediation measures in the aquifer. Additional monitoring wells may be needed. The groundwater will be sampled on a quarterly basis for VOCs. Surface water and sediments may be sampled for contamination on a less frequent basis. All media will be analyzed either annually or semi-annually for the presence of SVOCs, metals, and Hazardous Substance List compounds. The frequency of the sampling will be determined during the remedial design phase. Household wells located north of the Souhegan River which are used for drinking water purposes will be sampled for VOCs annually at a minimum.

The effluent from the treatment plant will be sampled and analyzed as necessary to ensure that ARARs are met. Air monitoring will be performed to ensure that any discharge to the atmosphere by the groundwater treatment plant meets ARARs. In addition, no treatment residuals will be disposed of until those residuals are analyzed for compliance with ARARs.

Reports assessing the status of the Site will be done after every sampling event. Site conditions and the monitoring plan will be re-evaluated every five years.

The estimated time for restoration of the aquifer in the concentrated plume based on current data is 30 years (this assumes DNAPLs are not present). For the extended plume which will undergo natural attenuation, the aquifer should meet cleanup goals in 25 to 90 years.

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	2 Years
ESTIMATED TIME FOR OPERATION:	25 to 90 Years
ESTIMATED CAPITAL COST:	\$ 1,100,000
ESTIMATED ANNUAL O & M	\$ 1,400,000
ESTIMATED O & M (Present Worth):	\$ 12,900,000*
ESTIMATED TOTAL COST (Present worth):	\$ 14,000,000*

* Based on 30 year present worth analysis.

MM-7 AND MM-7A

EXTRACTION AND TREATMENT OF CONCENTRATED PLUME AT 400 GPM /
EXTRACTION AND TREATMENT OF EXTENDED PLUME AT 825 GPM / NATURAL
ATTENUATION OF EXTENDED PLUME / INSTITUTIONAL CONTROLS /
ENVIRONMENTAL MONITORING

Alternative MM-7 and MM-7A include the following key components:

Concentrated Plume

Groundwater recovery from well(s) pumping at approximately 250 gpm at O.K. Tool.

Groundwater recovery from well(s) pumping at approximately 150 gpm at Hitchiner.

Groundwater treatment

For MM-7 - All treatment would be metals removal/air stripping/vapor phase carbon.

For MM-7A - Treatment at Hitchiner would be metals removal/air stripping/vapor phase carbon treatment. Treatment at OK Tool would be metals removal/ultraviolet oxidation.

Discharge to the Souhegan River and/or discharge to Hitchiner-Hendrix discharge stream.

Institutional controls to restrict groundwater use.

Extended Plume

Groundwater recovery from four wells pumping at approximately 825 gpm.

Groundwater treatment

For MM-7 - Treatment would be metals removal/air stripping/vapor phase carbon.

For MM-7A - Treatment would be metals removal/ultraviolet oxidation.

Discharge to the Souhegan River.

Natural attenuation of portions of the extended plume not extracted by the pumping scheme.

Institutional controls to restrict groundwater use.

Environmental Monitoring

Periodic monitoring of air, surface water, groundwater, and sediments to ensure that public health and the environment are being protected.

Operational monitoring of treatment plant air emissions, water effluent, and residual wastes.

Alternatives MM-7 and MM-7A provide for recovery of contaminated groundwater from the concentrated plume area, subsequent treatment of that groundwater, and discharge to the Souhegan River or to the Hitchiner-Hendrix discharge stream. Two treatment plants will be used to treat the concentrated. One plant will be located at OK Tool and the other plant will be located at Hitchiner. Two recovery wells, one to be sited at Hitchiner with an expected yield of 150 gpm

and the other sited at OK Tool with an expected yield of 250 gpm will be designed to capture, contain, and remediate contaminants migrating from areas of concentrated contamination at depth within the aquifer. Alternative MM-7 uses air stripping as a technology at both treatment plant locations while MM-7A uses ultraviolet oxidation in place of air stripping at the OK Tool location.

Air stripping removes VOCs by pumping contaminated groundwater to the top of an air stripping tower and forcing air upwards through the tower as the water cascades down. VOCs evaporate into the moving air and clean water exits the bottom of the tower. The VOC-contaminated air is then passed through activated carbon to remove the VOCs before the air is released to the atmosphere. The contaminated carbon is taken off site for regeneration in which the contaminants are destroyed and the carbon recycled.

Ultraviolet (UV) oxidation destroys the contamination in the extracted groundwater by breaking down the VOCs into carbon dioxide, water, and small amounts of chloride salts. There are no air emissions because the breakdown products remain dissolved in the water.

Alternatives MM-7 and MM-7A provide for groundwater recovery at four locations in the extended plume. Two wells would be located near the edge of the 1,000 ppb plume and would pump at rates of approximately 200 gpm and 160 gpm. Additionally, the Savage Well would be used to recover groundwater at 240 gpm and a fourth well would be located northwest of the Savage Well with a yield of 225 gpm (see Figure 11) for a combined pumpage of 825 gpm. When that combined pumpage is added to recovery of the concentrated plume, the resulting total pumpage is 1,225 gpm. The location of the treatment plant treating the contaminated groundwater from the extended plume is at the Savage Well. Alternative MM-7 would use air stripping as a technology to treat the contaminated groundwater from the extended plume while Alternative MM-7A would use UV oxidation.

The precise number, pumping rate, and placement of extraction wells that will most effectively capture and recover the contaminated groundwater will be determined during the remedial design phase.

Figure 12 illustrates the capture zones superimposed on a total VOC contour map and also illustrates the portions of the concentrated plume which are recovered and treated, the portion of the extended plume which is recovered and treated, and the portion of the extended plume which is not recovered but is above the MCL for PCE and is allowed to undergo natural attenuation. Institutional controls as described in Alternative MM-2 will be implemented throughout the aquifer where cleanup levels and/or MCLs are exceeded. The controls will remain in place until the groundwater cleanup goals are met.

Discharge options for Alternatives MM-7 and MM-7A include discharge to the Souhegan River and/or discharge to the Hitchiner-Hendrix

discharge stream. In addition a provision for hydrodynamic controls, as discussed earlier, in the aquifer will be examined during design studies for the purposes of decreasing the time of remediation and for providing increased protection for environmental and agricultural uses within the Site area.

The environmental monitoring program will determine contaminant concentrations and the amount of contaminant migration in several media. The monitoring plan will evaluate the effectiveness of the remediation measures in the aquifer. Additional monitoring wells may be needed. The groundwater will be sampled on a quarterly basis for VOCs. Surface water and sediments may be sampled for contamination on a less frequent basis. All media will be analyzed either annually or semi-annually for the presence of SVOCs, metals, and Hazardous Substance List compounds. The frequency of the sampling will be determined during the remedial design phase. Household wells located north of the Souhegan River which are used for drinking water purposes will be sampled for VOCs annually at a minimum.

The effluent from the treatment plant will be sampled and analyzed as necessary to ensure that ARARs are met. Air monitoring will be performed to ensure that any discharge to the atmosphere by the groundwater treatment plant meets ARARs. In addition, no treatment residuals will be disposed of until those residuals are analyzed for compliance with ARARs.

Reports assessing the status of the Site will be done after every sampling event. Site conditions and the monitoring plan will be re-evaluated every five years.

The estimated time for restoration of the aquifer in the concentrated plume based on current data is within 30 years (this assumes DNAPLs are not present). For the extended plume which will undergo groundwater extraction and treatment as well as natural attenuation, the aquifer would meet cleanup goals in 15 to 65 years.

These alternatives include construction of a discharge pipe or structure at the Souhegan River and/or at the Hitchiner-Hendrix discharge stream which will have a short-term impact on a minimum amount of wetland vegetation. Erosion control techniques and restoration of the river or stream bank will minimize long-term impacts. The construction of wells and pipelines may impact wetlands but that impact would be short term. The pumping of the extended plume may impact wetland areas due to a lowering of the groundwater table. Since final well locations and withdrawal rates will be determined during the design phase, a provision for the evaluation of that possibility with protective measures such as recharge is included. Although extraction wells and pipelines will be located within the 100-year floodplain, all construction within the floodplain will meet the requirements of the pertinent ARARs. No impacts to the floodplain should be caused by the treatment structures because the structures are not located within the

floodplain. Should the necessity for structure relocation within the floodplain occur during design, the structures will be constructed to meet the requirements of Executive Order 11988.

Alternative MM-7

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	2 Years
ESTIMATED TIME FOR OPERATION:	15 to 65 Years
ESTIMATED CAPITAL COST:	\$ 2,500,000
ESTIMATED ANNUAL O & M	\$ 2,000,000
ESTIMATED O & M (Present Worth):	\$ 18,900,000*
ESTIMATED TOTAL COST (Present worth):	\$ 21,400,000*

* Based on 30 year present worth analysis.

Alternative MM-7A

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	2 Years
ESTIMATED TIME FOR OPERATION:	15 to 65 Years
ESTIMATED CAPITAL COST:	\$ 2,500,000
ESTIMATED ANNUAL O & M	\$ 1,500,000
ESTIMATED O & M (Present Worth):	\$ 13,900,000*
ESTIMATED TOTAL COST (Present worth):	\$ 16,400,000*

* Based on 30 year present worth analysis.

MM-9 and MM-9A

TREATMENT OF CONCENTRATED PLUME AT 400 GPM / TREATMENT OF EXTENDED PLUME AT 750 GPM / NATURAL ATTENUATION OF EXTENDED PLUME / INSTITUTIONAL CONTROLS / ENVIRONMENTAL MONITORING

Alternative MM-9 and MM-9A include the following key components:

Concentrated Plume

Groundwater recovery from well(s) pumping at approximately 250 gpm to remove contaminants and contain migration from the concentrated plume area at O.K. Tool.

Groundwater recovery from well(s) pumping at approximately 150 gpm to remove contaminants and contain migration from the concentrated plume area at Hitchiner.

Groundwater treatment

For MM-9 All treatment would be metals removal/air stripping/vapor phase carbon.

For MM-9A Treatment at Hitchiner would be metals removal/air stripping/vapor phase carbon. Treatment at OK Tool would be metals removal and ultraviolet oxidation.

Discharge to the Souhegan River and/or discharge to Hitchiner-Hendrix discharge stream.

Institutional controls to restrict groundwater use.

Extended Plume

Groundwater recovery from six wells at the downgradient end of the extended plume with a total pumpage of approximately 750 gpm to capture the width of the contaminant plume.

Groundwater treatment

For MM-9 Treatment would be metals removal/air stripping/vapor phase carbon.

For MM-9A Treatment would be metals removal/ultraviolet oxidation.

Discharge to the Souhegan River.

Natural attenuation of portions of the extended plume not extracted by the pumping schemes.

Institutional controls to restrict groundwater use.

Environmental Monitoring

Periodic monitoring of air, surface water, groundwater, and sediments to ensure that public health and the environment are being protected.

Operational monitoring of treatment plant air emissions, water effluent, and residual wastes.

Alternatives MM-9 and MM-9A provide for recovery of contaminated groundwater from the concentrated plume area, subsequent treatment of that groundwater, and discharge to the Souhegan River or to the Hitchiner-Hendrix discharge stream. Two treatment plants will be used to treat the concentrated. One plant will be located at OK Tool and the other plant will be located at Hitchiner. Two recovery wells, one to be sited at Hitchiner with an expected yield of 150 gpm and the other sited at OK Tool with an expected yield of 250 gpm will be designed to capture, contain, and remediate contaminants migrating from areas of concentrated contamination at depth within the aquifer. Alternative MM-9 uses air stripping as a technology at both treatment plant locations while MM-9A uses ultraviolet oxidation in place of air stripping at the OK Tool location. The two technologies of air

stripping and UV oxidation are briefly described in Alternatives MM-7 and MM-7A.

Alternatives MM-9 and MM-9A provide for groundwater recovery at six locations in the extended plume (see Figure 13). The wells are intended to capture the entire width of the contaminant plume on the south side of the river and are located parallel to the river. There is no pumping of contaminated groundwater in the middle of the plume. The recovery well(s) in the extended plume pump at a total rate of approximately 750 gpm. This combined with the recovery of the concentrated plume, the total pumpage is 1,150 gpm. The location of the treatment plant treating the contaminated groundwater from the extended plume is at the Savage Well. Alternative MM-9 uses air stripping as a technology to treat the contaminated groundwater from the extended plume while MM-9A uses UV oxidation.

The precise number, pumping rate, and placement of extraction wells that will most effectively capture and recover the contaminated groundwater will be determined during the remedial design phase.

Figure 14 illustrates the capture zones superimposed on a map of the contaminant plume and also illustrates the portions of the concentrated plume which are recovered and treated, the portion of the extended plume which is recovered and treated, and the portion of the extended plume which is not recovered but is above the MCL for PCE and is allowed to undergo natural attenuation. Institutional controls as described in Alternative MM-2 will be implemented throughout the aquifer where cleanup levels and/or MCLs are exceeded. The controls will remain in place until the groundwater cleanup goals are met.

Discharge options for Alternatives MM-9 and MM-9A include discharge to the Souhegan River and/or discharge to the Hitchiner-Hendrix discharge stream. In addition a provision for hydrodynamic controls, as discussed earlier, in the aquifer will be examined during design studies for the purposes of decreasing the time of remediation and for providing increased protection for environmental and agricultural uses within the Site area.

Alternatives MM-9 and MM-9A include construction of a discharge pipe or structure at the Souhegan River and/or at the Hitchiner-Hendrix discharge stream which will have a short-term impact on a minimum amount of wetland vegetation. Erosion control techniques and restoration of the river or stream bank will minimize long-term impacts. The construction of wells and pipelines may impact wetlands; however, that impact would be short term. The pumping of the extended plume may impact wetland areas due to a lowering of the groundwater table. Since final well locations and withdrawal rates are to be determined in design, each alternative includes a provision for evaluation of that possibility with protective measures such as recharge included. Although extraction wells and pipelines will be located within the 100-year floodplain, all construction within the

floodplain will meet the requirements of the pertinent ARARs. No impacts to the floodplain should be caused by the treatment structures because the structures are not located within the floodplain. Should the necessity for structure relocation within the floodplain occur during design, the structures would be constructed to meet the requirements of Executive Order 11988.

The environmental monitoring program will determine contaminant concentrations and the amount of contaminant migration in several media. The monitoring plan will evaluate the effectiveness of the remediation measures in the aquifer. Additional monitoring wells may be needed. The groundwater will be sampled on a quarterly basis for VOCs. Surface water and sediments may be sampled for contamination on a less frequent basis. All media will be analyzed either annually or semi-annually for the presence of SVOCs, metals, and Hazardous Substance List compounds. The frequency of the sampling will be determined during the remedial design phase. Household wells located north of the Souhegan River which are used for drinking water purposes will be sampled for VOCs annually at a minimum.

The effluent from the treatment plant will be sampled and analyzed as necessary to ensure that ARARs are met. Air monitoring will be performed to ensure that any discharge to the atmosphere by the groundwater treatment plant meets ARARs. In addition, no treatment residuals will be disposed of until those residuals are analyzed for compliance with ARARs.

Reports assessing the status of the Site will be done after every sampling event. Site conditions and the monitoring plan will be re-evaluated every five years.

The estimated time for restoration of the aquifer in the concentrated plume based on current data is within 30 years (this assumes DNAPLs are not present). For the extended plume which will undergo groundwater extraction and treatment as well as natural attenuation, the aquifer would meet cleanup levels in 20 to 85 years.

Alternative MM-9

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	2 Years
ESTIMATED TIME FOR OPERATION:	20 to 85 Years
ESTIMATED CAPITAL COST:	\$ 2,500,000
ESTIMATED ANNUAL O & M	\$ 2,000,000
ESTIMATED O & M (Present Worth):	\$ 18,500,000*
ESTIMATED TOTAL COST (Present worth):	\$ 21,000,000*

* Based on 30 year present worth analysis.

Alternative MM-9A

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	2 Years
ESTIMATED TIME FOR OPERATION:	20 to 85 Years
ESTIMATED CAPITAL COST:	\$ 2,600,000
ESTIMATED ANNUAL O & M	\$ 1,500,000
ESTIMATED O & M (Present Worth):	\$ 13,700,000*
ESTIMATED TOTAL COST (Present worth):	\$ 16,300,000*

* Based on 30 year present worth analysis.

MM-10

EXTRACTION AND TREATMENT OF CONCENTRATED PLUME AT 400 GPM /
EXTRACTION AND TREATMENT OF EXTENDED PLUME AT 2575 GPM / NATURAL
ATTENUATION OF EXTENDED PLUME / INSTITUTIONAL CONTROLS /
ENVIRONMENTAL MONITORING

Alternative MM-10 includes the following key components:

Concentrated Plume

Groundwater recovery from well(s) pumping at approximately 250 gpm O.K. Tool.

Groundwater recovery from well(s) pumping at approximately 150 gpm at Hitchiner.

Groundwater treatment (metals removal/air stripping/vapor phase carbon).

Discharge to the Souhegan River and/or discharge to Hitchiner-Hendrix discharge stream.

Institutional controls to restrict groundwater use.

Extended Plume

Groundwater recovery from 13 wells throughout the extended plume pumping at approximately 2575 gpm.

Groundwater treatment: metals removal/air stripping/vapor phase carbon.

Discharge to the Souhegan River.

Natural attenuation of portions of the extended plume not extracted by the pumping scheme.

Institutional controls to restrict groundwater use.

Environmental Monitoring

Periodic monitoring of air, surface water, groundwater, and sediments to ensure that public health and the environment are being protected.

Operational monitoring of treatment plant air emissions, water effluent, and residual wastes.

See Alternative MM-3 for a full description and evaluation of the components of Alternative MM-10 which capture the concentrated plume at the OK Tool and Hitchiner locations. Two treatment plants will be used to treat the concentrated. One plant will be located at OK Tool and the other plant will be located at Hitchiner.

Alternative MM-10 also provides for highly aggressive treatment of the extended plume (see Figure 15). The addition of thirteen wells located throughout the extended plume captures the majority of the extended plume and results in a reduction of contaminant concentrations to cleanup levels in the rapid time frame of less than 30 years for the entire plume (this assumes DNAPLs are not present). The thirteen wells in the extended plume have a combined pumping rate of 2,575 gpm. That rate in combination with the MM-3 wells results in a total pumpage of 2,975 gpm. The greater number of wells and the larger pumping volume are intended to decrease the time required to reduce contaminants to cleanup levels.

The precise number, pumping rate, and placement of extraction wells that will most effectively capture and recover the contaminated groundwater will be determined during the remedial design phase.

Figure 16 illustrates the capture zones superimposed on a map of the contaminant plume. The figure also illustrates the portions of the concentrated plume which are recovered and treated, the portion of the extended plume which is recovered and treated, and the portion of the extended plume which is not recovered but is above the MCL for PCE and is allowed to undergo natural attenuation. No extraction and treatment of contaminated groundwater will be done north of the Souhegan River. This alternative results in the capture of the plume of contaminants greater than cleanup levels on the south side of the river. Institutional controls as described in MM-2 will be implemented throughout the aquifer where cleanup levels and/or MCLs are exceeded. The controls will remain in place until the groundwater cleanup goals are met.

Discharge options for Alternative MM-10 include discharge to the Souhegan River and/or discharge to the Hitchiner-Hendrix discharge stream. In addition a provision for hydrodynamic controls, as discussed earlier, in the aquifer will be examined during design studies for the purposes of decreasing the time of remediation and for providing increased protection for environmental and agricultural uses within the Site area.

Alternative MM-10 increases the treatment system at O.K. Tool to an 1,800 gpm system to handle additional flow from a portion of the wells in the extended plume. The Hitchiner treatment system is the same treatment system described in Alternative MM-3. The remaining portion of groundwater flow from the extended plume, 1,175 gpm, is treated at a treatment plant located at the Savage Well. The O.K. Tool system is increased in size in order to accommodate the additional flows (2,575 GPM) generated by this alternative. The O.K. Tool system consists of two moderately sized systems rather than a single larger system. The proximity of the wells to the O.K. Tool facility makes that a more feasible alternative. All treatment plants for Alternative MM-10 use air stripping as a technology to remove contamination from the groundwater. The air stripping technology is briefly described in Alternative MM-3.

This alternative includes construction of a discharge pipe or structure at the Souhegan River and/or at the Hitchiner-Hendrix discharge stream which will have a short-term impact on a minimum amount of wetland vegetation. Erosion control techniques and restoration of the river or stream bank will minimize long-term impacts. The construction of wells and pipelines may impact wetlands but that impact will be short-term. The pumping of the extended plume may impact wetland areas due to a lowering of the groundwater table. Since final well and pipeline locations and withdrawal rates are to be determined in design, a provision for an evaluation of the possible impacts with protective measures such as recharge is included. Although extraction wells and pipelines will be located within the 100-year floodplain, all construction within the floodplain will meet the requirements of the pertinent ARARs. No impacts to the floodplain should be caused by the treatment structures because the structures are not located within the floodplain. Should the necessity for structure relocation within the floodplain occur during design, the structures would be constructed to meet the requirements of Executive Order 11988.

The environmental monitoring program will determine contaminant concentrations and the amount of contaminant migration in several media. The monitoring plan will evaluate the effectiveness of the remediation measures in the aquifer. Additional monitoring wells may be needed. The groundwater will be sampled on a quarterly basis for VOCs. Surface water and sediments may be sampled for contamination on a less frequent basis. All media will be analyzed either annually or semi-annually for the presence of SVOCs, metals, and Hazardous Substance List compounds. The frequency of the sampling will be determined during the remedial design phase. Household wells located north of the Souhegan River which are used for drinking water purposes will be sampled for VOCs annually at a minimum.

The effluent from the treatment plant will be sampled and analyzed as necessary to ensure that ARARs are met. Air monitoring will be performed to ensure that any discharge to the atmosphere by the groundwater treatment plant meets ARARs. In addition, no treatment

residuals will be disposed of until those residuals are analyzed for compliance with ARARs.

Reports assessing the status of the Site will be done after every sampling event. Site conditions and the monitoring plan will be re-evaluated every five years.

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	2 Years
ESTIMATED TIME FOR OPERATION:	Less Than 30 Years
ESTIMATED CAPITAL COST:	
ESTIMATED ANNUAL O & M	\$ 5,100,000
ESTIMATED O & M (Present Worth):	\$ 4,200,000
ESTIMATED TOTAL COST (Present worth):	\$ 39,200,000*
	\$ 44,300,000*

* Based on 30 year present worth analysis.

MM-11 AND MM-11A

EXTRACTION AND TREATMENT OF CONCENTRATED PLUME AT 400 GPM /
EXTRACTION AND TREATMENT OF EXTENDED PLUME AT 700 GPM / NATURAL
ATTENUATION OF EXTENDED PLUME / INSTITUTIONAL CONTROLS /
ENVIRONMENTAL MONITORING

Alternatives MM-11 and MM-11A include the following key components:

Concentrated Plume

Groundwater recovery from well(s) pumping at approximately 250 gpm to contain migration from the source area at O.K. Tool.

Groundwater recovery from well(s) pumping at approximately 150 gpm to contain migration from the source area at Hitchiner.

Groundwater treatment

For MM-11 All treatment would be metals removal/air stripping/vapor phase carbon.

For MM-11A Treatment at Hitchiner would be metals removal/air stripping/vapor phase carbon. Treatment at OK Tool would be metals removal and ultraviolet oxidation.

Discharge to the Souhegan River and/or discharge to Hitchiner-Hendrix discharge stream.

Institutional controls to restrict groundwater use.

Extended Plume

Groundwater recovery from two wells pumping at approximately 300 gpm each in the central portion of the extended plume.

Groundwater recovery from two wells pumping at approximately 50 gpm at the end of the extended plume to the north of the Souhegan River.

Groundwater treatment

For MM-11 All treatment would be metals removal/air stripping/vapor phase carbon.

For MM-11A All treatment would be metals removal/ultraviolet oxidation.

Discharge to the Souhegan River.

Natural attenuation of portions of the extended plume not extracted by the pumping scheme.

Institutional controls to restrict groundwater use.

Environmental Monitoring

Periodic monitoring of air, surface water, groundwater, and sediments to ensure that public health and the environment are being protected.

Operational monitoring of treatment plant air emissions, water effluent, and residual wastes.

Alternatives MM-11 and MM-11A provide for recovery of contaminated groundwater from the concentrated plume, subsequent treatment of that groundwater, and discharge to the Souhegan River and/or to the Hitchiner-Hendrix discharge stream. Two treatment plants will be used to treat the concentrated. One plant will be located at OK Tool and the other plant will be located at Hitchiner. Recovery wells, one to be sited at Hitchiner with an expected yield of 150 gpm and the other sited at OK Tool with an expected yield of 250 gpm will be designed to capture, contain, and remediate contaminants migrating from areas of concentrated contamination at depth within the aquifer. Alternative MM-11 uses air stripping as a technology at both plant locations while MM-11A uses ultraviolet oxidation in place of air stripping at the OK Tool location. The two technologies of air stripping and UV oxidation are briefly described in Alternatives MM-7 and MM-7A.

Alternatives MM-11 and MM-11A provide for recovery and treatment of the extended plume through: 1) two recovery wells pumping at 300 gpm each in the central portion of the extended plume to recover the entire width of the plume at that point (one of those wells is located at the location of the Savage Well); and 2) two recovery wells located on the north side of the Souhegan River pumping at approximately 50 gpm each to recover and prevent further migration of the end of the plume (see Figure 17). The location of the treatment

plant treating contaminated groundwater from the extended plume is at the Savage Well. Alternative MM-11 uses air stripping as a technology to treat the contaminated groundwater from the extended plume while Alternative MM-11A uses ultraviolet oxidation.

The recovery well(s) in the extended plume pump at a total of approximately 700 gpm which in combination with the wells in the concentrated plume results in a total pumpage of 1,100 gpm.

The precise number, pumping rate, and placement of extraction wells that will most effectively capture and recover the contaminated groundwater will be determined during the remedial design phase.

Figure 18 illustrates the capture zones superimposed on a map of the contaminant plume. The figure also illustrates the portion of the concentrated plume which is recovered and treated, the portion of the extended plume which is recovered and treated, and the portion of the extended plume which is not recovered but is above the MCL for PCE and is allowed to undergo natural attenuation. Institutional controls as described in Alternative MM-2 will be implemented throughout the aquifer where cleanup levels and/or MCLs are exceeded. The controls will remain in place until the groundwater cleanup goals are met.

Discharge options for Alternatives MM-11 and MM-11A include discharge to the Souhegan River and/or discharge to the Hitchiner-Hendrix discharge stream. In addition a provision for hydrodynamic controls, as discussed earlier, in the aquifer will be examined during design studies for the purposes of decreasing the time of remediation and for providing increased protection for environmental and agricultural uses within the Site area.

These alternatives also retain the possibility of adding a vertical barrier, which could consist of sheet piling, a slurry wall, or recovery/injection wells. The barrier would be located along Elm Street to the east of the Hendrix facility (see Figure 18). The intent of the barrier would be to minimize the capture of cleaner water to the south of Elm Street by the recovery well located at the Savage Well. The vertical barrier is not included in the cost estimate but is retained as a potential future option.

These alternatives include construction of a discharge pipe or structure at the Souhegan River and/or at the Hitchiner-Hendrix discharge stream which will have a short-term impact on a minimum amount of wetland vegetation. Erosion control techniques and restoration of the river or stream bank will minimize long-term impacts. The construction of wells and pipelines may impact wetlands but that impact will be short-term. The pumping of the extended plume may impact wetland areas due to a lowering of the groundwater table. Since final well locations and withdrawal rates are to be determined in design, a provision for an evaluation of that possibility with protective measures such as recharge is included.

Although extraction wells and pipelines will be located within the 100-year floodplain, all construction within the floodplain will meet the requirements of the pertinent ARARs. No impacts to the floodplain should be caused by the treatment structures because the structures are not located within the floodplain. Should the necessity for structure relocation within the floodplain occur during design, the structures would be constructed to meet the requirements of Executive Order 11988.

The environmental monitoring program will determine contaminant concentrations and the amount of contaminant migration in several media. The monitoring plan will evaluate the effectiveness of the remediation measures in the aquifer. Additional monitoring wells may be needed. The groundwater will be sampled on a quarterly basis for VOCs. Surface water and sediments may be sampled for contamination on a less frequent basis. All media will be analyzed either annually or semi-annually for the presence of SVOCs, metals, and Hazardous Substance List compounds. The frequency of the sampling will be determined during the remedial design phase. Household wells located north of the Souhegan River which are used for drinking water purposes will be sampled for VOCs annually at a minimum.

The effluent from the treatment plant will be sampled and analyzed as necessary to ensure that ARARs are met. Air monitoring will be performed to ensure that any discharge to the atmosphere by the groundwater treatment plant meets ARARs. In addition, no treatment residuals will be disposed of until those residuals are analyzed for compliance with ARARs.

Reports assessing the status of the Site will be done after every sampling event. Site conditions and the monitoring plan will be re-evaluated every five years.

The estimated time for restoration of the aquifer in the concentrated plume based on current data is within 30 years (this assumes DNAPLs are not present). For the extended plume which will undergo groundwater extraction and treatment as well as natural attenuation, the aquifer would meet cleanup goals in 15 to 60 years.

Alternative MM-11

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	2 Years
ESTIMATED TIME FOR OPERATION:	15 to 60 Years
ESTIMATED CAPITAL COST:	\$ 2,200,000
ESTIMATED ANNUAL O & M	\$ 1,900,000
ESTIMATED O & M (Present Worth):	\$ 18,000,000*
ESTIMATED TOTAL COST (Present worth):	\$ 20,200,000*

* Based on 30 year present worth analysis.

Alternative MM-11A

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	2 Years
ESTIMATED TIME FOR OPERATION:	15 to 60 Years
ESTIMATED CAPITAL COST:	\$ 2,400,000
ESTIMATED ANNUAL O & M	\$ 1,400,000
ESTIMATED O & M (Present Worth):	\$ 13,100,000*
ESTIMATED TOTAL COST (Present worth):	\$ 15,500,000*

* Based on 30 year present worth analysis.

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 those specific statutory mandates, the National Contingency Plan 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 to the nine evaluation criteria. These criteria and their definitions are 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 of 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 in the final evaluation of remedial alternatives generally 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.

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.

1. Overall protection of human health and the environment

As discussed in the Summary of Site Risks above, the potential future risks posed to human health from future exposure to contaminated groundwater are outside of EPA's acceptable risk range. With the exception of Alternative MM-1, the site-wide alternatives evaluated in Section 4.0 of the FS Report are considered protective of human health and the environment. Alternative MM-1, No Action, does not utilize adequate controls to prevent exposure to the contaminated groundwater during the restoration time period, which is estimated to be greater than 100 years.

Alternative MM-2, Limited Action, attains a threshold level of protection because institutional controls prevent future use of the contaminated groundwater. The use of institutional controls prevents use of the groundwater until cleanup levels are met, which is estimated to be greater than 100 years. Because the plume will continue to migrate and contaminate new portions of the aquifer, it will be necessary to place institutional controls on additional pieces of property.

The remaining alternatives provide protectiveness through capture and treatment of the contaminated groundwater and institutional controls restricting the use of the contaminated groundwater.

2. Compliance with ARARs

Each alternative was evaluated for compliance with ARARs, including chemical-specific, action-specific, and location-specific ARARs. The ARARs are presented in Table XX in Appendix X. All alternatives, with the exception of Alternative MM-1, No-Action, and Alternative MM-2, Limited Action, comply with ARARs. With the exception of Alternatives MM-1 and MM-2, all of the alternatives attain cleanup levels in groundwater based upon protective chemical-specific ARARs and to-be-considered standards (TBCs).

Alternative 10 meets ARARs in the least amount of time, less than 30 years. Alternative MM-3 takes the longest of the active remediation alternatives with a range of 25 to 90 years. Alternatives MM-7, MM-7A, MM-9, MM-9A, MM-11, and MM-11A meet ARARs in a time frame ranging from 15 to 85 years.

Alternatives MM-1 and MM-2 do not comply in the short term with MCLs and MCLGs established in the Safe Drinking Water Act, MCLs established in RCRA, and the NH MCLs established in the NH Administrative Code Part WS 315-319. Both alternatives eventually would meet ARARs but it would take more than 100 years.

Mitigation and restoration measures will be required to limit potential impacts in disturbed wetland areas and to meet wetlands ARARs for Alternatives MM-3 through MM-11A. Alternative MM-3 has

the least impact on the wetlands during construction and subsequent operation because that alternative requires the least amount of construction activity and the lowest volume of groundwater withdrawal.

Construction activities and pumping volumes associated with Alternatives MM-9, MM-9A and MM-10 have the greatest potential impact on the wetlands because they require the greatest number of wells, pipes, and volumes of groundwater withdrawal.

3. Long Term Effectiveness and Permanence

All of the alternatives are effective in achieving long term protection of the groundwater after the groundwater is restored to interim cleanup levels by either natural attenuation and/or treatment. No residual risk will remain at the Site.

All of the active treatment alternatives provide for capture and treatment of the concentrated plume. Thus, the reduction in mobility of contamination in the concentrated plume depends on the reliability of the extraction system being implemented. Those systems (extraction and hydrodynamic controls) are generally reliable and effective for the required operations. Alternatives MM-7 through MM-11A provide various levels of long term effectiveness greater than Alternatives MM-1, MM-2, or MM-3 based on the rapidity of the cleanup time. Alternative MM-10 provides the most rapid cleanup, less than thirty years. Alternatives MM-7, MM-7A, MM-9, and MM-9A take longer than Alternatives MM-10, MM-11, and MM-11A.

All of the alternatives have a component of restoration which relies on natural attenuation. Alternatives MM-1 and MM-2 rely exclusively on natural attenuation processes such as volatilization, dispersion, and biodegradation. Those processes require the greatest amount of time, over 100 years, to attain cleanup levels and to reduce potential future risks to within an acceptable range. In addition, the degree of certainty associated with the estimate of the time needed to attain those levels is lowest. Neither alternative provides a means for limiting continued migration of the contaminants from the concentrated plume to the extended plume, or continued expansion of the extended plume. Those two alternatives rank lowest among the alternatives in terms of long-term effectiveness.

The treatment technologies used in the alternatives utilizing treatment achieve a high degree of permanence in remediating the groundwater. Both air stripping with carbon filtration and UV oxidation permanently destroy the contaminants removed from the groundwater. The alternatives designated using "A" use UV oxidation to treat a portion of the groundwater; that technology destroys the contaminants on site. The alternatives using air

stripping destroy the contaminant when the activated carbon is regenerated.

4. Reduction of toxicity, mobility, or volume through treatment

The alternatives other than MM-1 and MM-2 actively restore the aquifer through groundwater capture and treatment. The degree of reduction of the toxicity, mobility, or volume are directly related to the amount of the plume that is captured by the extraction wells.

Alternative MM-10 captures the greatest areal extent of the plume and allows the least amount of natural attenuation treating an estimated 13,000 lbs of VOCs in the first year of operation. Alternatives MM-7 and MM-7A capture contaminated groundwater in the middle of the extended plume and reduce the toxicity, mobility, and volume of contaminants greater than 1,000 ppb. The estimated amount of contamination treated is 2,290 lbs in the first year of operation. There is no reduction of toxicity, mobility, or volume through treatment in the portion of the plume that is not captured.

Alternatives MM-9 and MM-9A capture and treat almost the entire width of the extended plume south of the river. There is no capture of contaminated groundwater in the middle of the plume. The estimated amount of contamination treated during the first year is 2,000 lbs per year.

Alternatives MM-11 and MM-11A capture contaminated groundwater in the middle of the plume and at the end of the plume north of the river with concentrations above 500 ppb. The estimated amount of VOCs to be treated during the first year of operation is 2,220 lbs. The areal extent of contamination captured is more than is captured in Alternatives MM-7 and MM-7A but less than that captured in Alternatives MM-9, MM-9A, and MM-10. The estimated amount of contamination treated is greater than that treated in Alternatives MM-3, MM-9 and MM-9A, less than that treated in Alternative MM-10, and about the same as that treated in Alternatives MM-7 and MM-7A.

Of all of the treatment alternatives, Alternative MM-3 captures the least amount of the areal extent of the plume, captures the most concentrated portion of the plume, and allows the greatest amount of the plume to undergo natural attenuation. The estimated amount of VOCs treated during the first year of operation is 1,920 lbs. Alternative MM-3 does not provide treatment for the extended plume.

Alternatives MM-1 and MM-2 provide no reduction through treatment in VOC toxicity, mobility, or volume. However, the level of toxicity will decrease over time through the natural attenuation mechanisms operating at the Site.

5. Short Term Effectiveness

For all alternatives, the short term risks to the community include the risks posed from residential use of the groundwater during restoration. Since Alternative MM-1 does not achieve protection of human health or the environment, it is also not effective in the short term. Alternative MM-2 provides no controls on the spread of contamination into portions of the aquifer that are used currently for drinking water. Therefore, Alternative MM-2 poses short-term risks to the community. However, since Alternative MM-2 requires no construction, it poses no short-term risks to human health or to the environment from construction.

None of the alternatives are expected to significantly affect human health during construction. The treatment methods are not expected to have any adverse impact on the local community, nor on properly trained workers.

Although wetlands and floodplains will be disturbed by the construction of pipes and wells, the impact will be minimized. Alternative MM-3 has the least impact during construction. Construction activities for Alternatives MM-9, MM-9A, and MM-10 have the greatest impact on the wetlands because they require the largest number of wells. Any adverse impacts on groundwater flow to the wetlands or local agriculture will be minimized by altering the method of discharge from the treatment plants.

All of the treatment alternatives meet cleanup objectives in the extended plume but in different time frames. Alternative MM-10 requires the shortest period of time to meet the cleanup objectives. Alternatives MM-3, MM-9, and MM-9A take longer than Alternatives MM-7 and MM-7A which take longer than Alternatives MM-10, MM-11, and MM-11A. All of the treatment alternatives achieve the cleanup objectives in the concentrated plume in less than 30 years if DNAPLs are not present.

6. Implementability

Alternative MM-1 raises no issues regarding implementability because no action is taken. Alternative MM-2 raises no issues regarding technical feasibility since institutional controls are the only action taken. However, the administrative feasibility of the institutional controls must be considered. Alternative MM-2 requires the most wide-spread and lengthy program of institutional controls. If contaminants were to spread to wells currently in use, additional institutional controls would be needed. In addition, the reliability of institutional controls may decrease over long periods of time because enforcement is difficult. The use of institutional controls is less extensive and of shorter duration for the treatment alternatives.

Significant limitations in implementability were generally not identified for the treatment alternatives. The technologies are proven, reliable, and readily implementable. Although there is increasing engineering and operational complexity as the number of wells and total pumping rates increase, the degree of change is well within normal engineering management practice.

7. Cost

A comparison of the present worth value of each alternative is presented below:

<u>Alternative</u>	<u>Capital Costs</u>	<u>O & M Costs Present Worth*</u>	<u>Total Present Worth*</u>
Alternative 1	\$ 0	\$ 764,000	\$ 764,000
Alternative 2	0	1,200,000	1,200,000
Alternative 3	1,100,000	12,900,000	14,000,000
Alternative 7	2,500,000	18,900,000	21,400,000
Alternative 7A	2,500,000	13,900,000	16,400,000
Alternative 9	2,500,000	18,500,000	21,000,000
Alternative 9A	2,600,000	13,700,000	16,300,000
Alternative 10	5,100,000	39,200,000	44,300,000
Alternative 11	2,200,000	18,000,000	20,200,000
Alternative 11A	2,400,000	13,100,000	15,500,000

* Based on 30 year present worth analysis.

8. State Acceptance

The New Hampshire Department of Environmental Services (NHDES) has been involved with the Site from the time of the discovery of contamination. Through a Cooperative Agreement, the NHDES performed oversight of field activities and provided laboratory services for split samples. The State has also reviewed and provided comments on the interim reports during the RI/FS as well as the final Remedial Investigation, the Risk Assessment, and the Feasibility Study. NHDES also provided a listing of state ARARs for use in the development of the alternatives for the Feasibility Study. NHDES has not commented on nor concurred with this Record of Decision.

During the public comment period, the New Hampshire Department of Agriculture identified concerns that the remedy may adversely affect

farm land within the Site. The State has bought the development rights to insure through a protective easement that about 69 acres of land within the Site remains in agricultural use. The State's concern is that the selected remedy include provisions to address the goal that the land remain suitable for agricultural use.

9. Community Acceptance

The comments received during the public comment period are summarized and included with EPA's responses in the Responsiveness Summary, which is included as Appendix B. The informational meeting for the Proposed Plan was attended by over 200 people. Thirty-six persons provided oral comments at the public hearing which was attended by more than 200 persons. Forty-one sets of written comments were received during the comment period.

There have been opinions expressed both in favor of and against the remedy. The Town of Milford has stated that there is no future risk associated with the contaminated groundwater because nobody will be using the water in the future. The Town believes that they have an adequate water supply for the foreseeable future so that there is no need for a rapid and expensive cleanup. The Town also believes that the best use of the aquifer is for industrial and commercial uses and not for drinking water.

In general, the community is concerned that any solution be balanced and have no unfavorable economic impact on the Town. In particular, the community prefers a remedy that causes no harm to the Town, its taxpayers, or its tax base.

X. THE SELECTED REMEDY

EPA has selected Alternative 11-A as the remedy for the Savage Municipal Water Supply Site. That alternative encompasses extraction and treatment with natural attenuation for the contaminated groundwater as well as institutional controls for groundwater use. It is a comprehensive remedy since no source control component is necessary.

A. Interim Groundwater Cleanup Levels

Interim cleanup levels have been established in groundwater for contaminants of concern identified in the baseline risk assessment and found to pose an unacceptable risk to either public health or the environment. Interim cleanup levels have been set based on either the pertinent ARARs (e.g. drinking water MCLGs and MCLs) or other suitable criteria described below. EPA will make periodic assessments of the protection afforded by the remedial action as the remedy is being implemented and at the completion of the remedial action. At the time that all groundwater ARARs identified in the ROD and newly promulgated ARARs and modified ARARs which

call into question the protectiveness of the remedy have been achieved, a risk assessment shall be performed on all residual groundwater contamination. This risk assessment of the residual groundwater contamination shall follow EPA procedures and will assess the cumulative risks for carcinogens and non-carcinogens posed by consumption of site groundwater. If the risks are not within EPA's risk management goal for carcinogens and non-carcinogens, then the remedial action will continue until protective levels are attained, or the remedy is otherwise deemed protective. These final protective cleanup levels shall be performance standards for the ROD.

1. Groundwater

Because the aquifer under the Site is a Class IIB aquifer which is a potential source of drinking water, MCLs and non-zero MCLGs established under the Safe Drinking Water Act are ARARs.

Interim cleanup levels for known and probable carcinogenic compounds (Class A & B) have been set at the appropriate MCL because the MCLGs for those compounds are zero. Interim cleanup levels for the Class C compounds (possible carcinogens) have been set at the non-zero MCLG. In the absence of an MCLG, or an MCL, or a proposed drinking water standard, or other suitable criteria to be considered (i.e. health advisory, state standard), a cleanup level has been derived for carcinogenic effects based on a 10^{-6} excess cancer risk level considering the ingestion of ground water.

Interim cleanup levels for compounds in groundwater exhibiting non-carcinogenic effects have been set at the non-zero MCLG. In the absence of an MCLG, cleanup levels for non-carcinogenic effects have been set at a level thought to be without appreciable risk of an adverse effect when exposure occurs over a lifetime (hazard quotient = 1).

Table I below summarizes the cleanup levels for carcinogenic and non-carcinogenic contaminants of concern identified in the groundwater.

TABLE I: INTERIM GROUNDWATER CLEANUP LEVELS

Carcinogenic Contaminants of Concern (Class)	Cleanup Level (ppb)	Basis	Level of Risk
Arsenic (A)	50 ^a	MCL ^b	2.0×10^{-4} ^c
Beryllium (B2)	1 ^a	pMCL ^d	1.2×10^{-4}
Benzene (A)	5	MCL	4.1×10^{-6}
1,1 dichloro- ethylene (C)	7	MCL	1.2×10^{-4}
Methylene Chloride (B2)	5	pMCL	1.1×10^{-7}
Tetrachloro- ethylene (B2)	5	MCL	7.3×10^{-6}
Trichloro- ethylene (B2)	5	MCL	1.6×10^{-6}
TOTAL			5.0×10^{-4}

Non-carcinogenic Contaminants Concern	Cleanup Level (ppb)	Basis	Target Endpoint of Toxicity	Hazard Index
Chromium	100 ^a	MCL		0.2
Lead	15 ^a	Action Level	Central Nervous System	N/A
Nickel	100 ^a	pMCL	body weight	0.2
1,1 Dichloro- ethane (C)	3500	RfD ^e	skin	1.0
t-1,2 Dichloro- ethylene	100	MCL	blood	0.2
1,1,1 Trichloro- ethane	200	MCL	liver	0.6
Antimony	3	pMCLG ^a	blood	0.2

a - Arsenic, beryllium, chromium, lead, antimony, and nickel may be naturally occurring elements in the Savage Well aquifer. The target clean-up levels are those listed in the above table or background, whichever is higher. Background concentrations will be determined during the pre-design studies.

b - Maximum Contaminant Level, Safe Drinking Water Act

c - The cleanup level for arsenic has been set at the MCL of 50 ppb. The carcinogenic risk posed by arsenic at 50 ppb in groundwater will approximate 2 in 1,000. However, in light of recent studies indicating that many skin tumors arising from

oral exposure to arsenic are non-lethal and in light of the possibility that the dose-response curve for the skin cancers may be sublinear (in which case the cancer potency factor used to generate risk estimates will be overstated), it is Agency policy to manage those risks downward by as much as a factor of ten. As a result, the carcinogenic risk for arsenic at this Site has been managed as if it were 2 in 10,000. (See EPA memorandum, "Recommended Agency Policy on the Carcinogenic Risk Associated with the Ingestion of Inorganic Arsenic" dated June 21, 1988.)

d - Proposed Maximum Contaminant Level

e - Reference Dose

All groundwater ARARs identified in the ROD and newly promulgated ARARs and modified ARARs which call into question the protectiveness of the remedy and the cleanup levels prescribed by the above described risk assessment must be met throughout the plume at the completion of the remedial action. EPA has estimated that those levels will be obtained within a range of 15 to 60 years. The finding of DNAPLs may alter the cleanup time of less than 30 years for the concentrated portion of the plume to an unknown length of time.

While the Interim cleanup levels are consistent with ARARs (and suitable TBC criteria) for groundwater, a cumulative risk that could be posed by those levels may exceed EPA's goals for remedial action. Consequently, those levels are considered to be interim cleanup levels for groundwater. When all groundwater ARARs identified in the ROD and newly promulgated ARARs and modified ARARs which question the protectiveness of the remedy have been attained, a risk assessment will be performed on residual groundwater contamination to determine whether the remedial action is protective. Remedial action shall continue until protective concentrations of residual contamination have been achieved or until the remedy is otherwise deemed protective. Those protective residual levels shall constitute the final cleanup levels for this Record of Decision and shall be considered performance standards for any remedial action.

B. Description of Remedial Components

The selected remedy, Alternative MM-11A, restores the groundwater in the aquifer and has the following five components: extraction and treatment of the concentrated plume; extraction and treatment of a portion of the extended plume; natural attenuation; environmental monitoring; and institutional controls. Each component is described below.

1. Extraction and treatment of the concentrated plume

A groundwater extraction and treatment system will be installed near the OK Tool and Hitchiner plants to capture and treat the groundwater from the concentrated plume. The wells will be located to extract an estimated 400 gallons per minute of the heavily contaminated groundwater to prevent movement of those contaminants into remaining portions of the aquifer. The groundwater will be treated by two separate treatment processes. Ultraviolet oxidation will be used to treat water from the OK Tool well. Air stripping will be used to treat water from the Hitchiner well.

The removal of metals from the groundwater is dependent upon both the determination of discharge limitations and the treatment process design requirements. If the discharged treated water is used for groundwater recharge (which may include recharge to the Hitchiner-Hendrix discharge stream because the stream recharges the aquifer), MCLs will be the proper ARAR to be met and discharge limitations will be set appropriately.

If the water is discharged to a surface water body which does not recharge the groundwater, the discharge must meet the NPDES discharge requirements (which may be based on Ambient Water Quality Criteria if aquatic life is affected) and the appropriately set discharge limitations. If the treatment processes require metals to be removed for treatment efficiency, the discharge limitations described above still apply. The two treatment trains are necessary due to the relative locations of the wells and the nature of the contaminants identified at each location.

The well locations and pumping rates for all extraction points are subject to change during design studies. Additional changes may also be needed in the remediation phase based on field data obtained during system operation.

Ultraviolet (UV) oxidation is a technology that has proven to be effective in destroying chlorinated solvent contaminants of the kind found to be predominant within the plume, e.g. PCE. Volatile organic contaminants dissolved in groundwater are brought into contact with a proportional amount of hydrogen peroxide solution in the presence of ultraviolet radiation. The ultraviolet radiation breaks the hydrogen peroxide solution into hydroxyl radicals while simultaneously exciting the bond structure of the organics so that they become susceptible to oxidation. The end products of the reaction are carbon dioxide, water and a chloride ion.

Air stripping with metals pretreatment coupled with vapor phase carbon treatment is the treatment process for the contamination at Hitchiner due to the presence of 1,1,1-TCA. Air stripping is more efficient and thus more cost effective than ultraviolet oxidation in treating saturated organics such as 1,1,1-TCA which is located at the Hitchiner facility. In this process, contaminated

groundwater is passed through a packed column countercurrent to an air flow which volatilizes the compounds from the liquid stream. The contaminant laden air stream is then treated using carbon to remove the contaminants. The carbon is regenerated off site and the contaminant is destroyed during that process.

The investigation of the concentrated plume suggests the presence of DNAPLs. Even if DNAPLs are determined to be present, this remedy will initially contain that portion of the plume where DNAPLs are found so that the remainder of the contaminated aquifer can be restored to beneficial use. EPA will periodically review advances in groundwater cleanup technology to determine if new techniques have been developed to effectively remediate DNAPL conditions. Consistent with CERCLA and the NCP, EPA will determine whether any modifications to the remedy are appropriate.

2. Extraction and treatment of extended plume

A groundwater extraction system will be installed at two locations in the extended plume. This component of the alternative will pump and treat approximately 700 gallons per minute using UV oxidation. Two wells will withdraw groundwater at a rate of approximately 300 gpm each from the middle of the plume. One well would be located between the Souhegan River and the Savage Well. The other well is the Savage Well. Lower volume wells located north of the Souhegan River and will pump approximately 50 gpm each to capture the portion of the plume with high concentrations of contaminants that has migrated under the river. The treatment plant is located at or near the Savage Well.

3. Natural attenuation

The portions of the plume not in the capture zones will undergo natural attenuation. Natural attenuation is the reduction of contamination levels in the groundwater through dispersion, dilution, transformation (natural chemical breakdown), sorption (bonding of the contaminants to particles in the soil), and biodegradation (the action of naturally occurring microorganisms that break down the contaminant). After initiation of the active remedial measures at each of the extraction locations, no further contamination will be added to the extended plume. The contaminants not captured will continue to flow north and east. Those contaminants will either be diluted in the clean portions of the aquifer or discharged into the river where much of the contamination is expected to evaporate. Natural attenuation is expected to meet cleanup levels in those areas in 10 to 35 years.

4. Environmental monitoring

EPA will develop a Site monitoring program to monitor the operation of the treatment system and to address all media which may be impacted by the contamination and the remediation efforts. The

media expected to be impacted are air, groundwater (overburden and bedrock), surface water, and sediments.

Groundwater quality will be monitored until cleanup levels are met. The monitoring program will include periodic sampling, annually at a minimum, of household wells used for drinking water north of the Souhegan River. Surface water and sediment sampling will be included in the monitoring program to ensure that as contaminants continue to discharge to surface waters there will be no adverse environmental impact.

The groundwater monitoring program will be developed for the following purposes:

- to evaluate the effectiveness of the pump and treat active remediation measures in the concentrated and the extended plume areas; and

- to monitor the reduction of contaminant concentrations over time in order to ensure that the groundwater cleanup levels are achieved in the predicted time frames; and

- to monitor the natural attenuation of contamination in areas where active restoration of the aquifer will not be implemented. Additional monitoring wells may be needed to accomplish this objective.

The groundwater will be monitored quarterly for the first five years. At that time, the sampling frequency will be reviewed and evaluated. Surface water and sediments will be sampled at a frequency established during the remedial design phase, but no less frequently than annually. The media will be analyzed for the presence of the following contaminants: VOCs, SVOCs, metals, and Hazardous Substance List Compounds. VOC sampling will be done on a quarterly basis (VOCs are the most prevalent contaminant at the Site). The frequency of sampling for the remaining compounds will be decided during the remedial design phase but it is probable that the sampling will be done less frequently than that for VOCs. The frequency of sampling and analysis may be changed by EPA based upon evaluation of the annual and/or five year reviews.

The effluent from treatment plants will be monitored as necessary to ensure compliance with ARARs.

Air monitoring will be done at the treatment plants as necessary to ensure that air emissions are in compliance with ARARs.

The details of the monitoring program will be developed during remedial design and will be tailored to the specifics of the design. Additional monitoring wells may be needed to evaluate the migration of the leading edge of the extended plume over time.

Selected bedrock and overburden wells will be monitored upon initiation of remedial design until completion of remedial action.

Reports assessing the results of the sampling and analysis event will be done after every sampling event.

All monitoring data will be reviewed and evaluated during the implementation of the remedial action to ensure that response objectives are achieved. Modifications to the remedial action, including the evaluation and possible implementation of advances in groundwater cleanup technology may also require changes in monitoring locations or techniques.

5. Institutional controls

Institutional controls will be implemented to restrict the use of contaminated groundwater and to prevent disturbance of on-going remedial actions. The objectives of the institutional controls shall be to ensure that no activities take place at the Site or in proximity to the Site which either affect implementation of the selected remedy or cause exposures to hazardous substances. Examples of acceptable institutional controls include use of restrictions imposed through deeds and zoning ordinances.

6. Remedial Design Issues

Both the location of the extraction wells and the pumping rates for those wells are approximate. Design studies will be performed to determine the precise number, location, and pumping rates of the extraction wells that contain, recover, and treat contaminants in the most effective and efficient manner. Studies will also determine any changes in the location and concentration of the plume (especially at the leading edge of the plume) that may have occurred.

In addition, studies will be conducted to determine whether the remedy will result in a lowering of the water table at the Site. A lowered water table could have a negative effect on agricultural land use or on environmentally-sensitive areas within the Site. Similarly, both the specific location for the discharge of treated water and the method of discharge for the treated water will be examined during the design phase for other possible negative impacts on either wetlands or areas currently being used for agriculture. If the design studies indicate that negative impacts may occur in those areas or if negative impacts do occur in those areas after the cleanup has begun, appropriate mitigation efforts will be made. The use of groundwater recharge or structural or hydrogeologic barriers may also be considered to speed or to redirect the contaminant movement and thus to speed the clean-up.

Chemical data from the concentrated plume area suggest that DNAPLs may be present in the overburden aquifer. Studies to further

investigate that possibility will be undertaken in the remedial design stage. If DNAPLs are determined to be present, the remedy initially would be to contain that portion of the plume so that the remainder of the contaminated aquifer can be restored to beneficial use.

Design studies will also include monitoring the leading edge of the plume through the examination of chemical concentrations along the zones of preferential contaminant movement and discharges to the river system. The monitoring system at the leading edge of the plume will be observed to ensure that adequate information is available to monitor the natural attenuation processes that are part of the remedy. As a result of both the design studies and information gathered after initiation of extraction and treatment operations, it may be necessary to adjust the monitoring system.

The design studies will include treatability studies which will evaluate the proposed groundwater treatment technologies for the entire plume.

Periodic review of the operation and effectiveness of the groundwater extraction and treatment system will be necessary. Performance of the system will be evaluated annually, or more frequently, to determine if EPA's acceptable risk range and standards for the design criteria are being met. If not, adjustment or modification may be necessary. These adjustments or modifications may include relocating or adding extraction wells or alternating pumping rates. Switching from continuous pumping to pulsed pumping may improve the efficiency of contaminant recovery and should be evaluated. Necessary modifications should be undertaken. If new information exists regarding the extraction and treatment technology, it will be evaluated and applied as appropriate.

After the interim cleanup levels have been met, a risk assessment will be performed. If the remedy is determined to be protective, the groundwater extraction and treatment system will be shut down. A groundwater monitoring system will then be utilized to collect information each quarter for three consecutive years to ensure that those cleanup levels have been met and that the remedy is protective. If those levels are maintained for three consecutive years and the remedy is determined to be protective, a long term monitoring program for the Site will be implemented in accordance with RCRA and the New Hampshire Hazardous Waste Rules. If the risk assessment indicates that the remedy has not been effective, the performance standards and/or the remedy will be re-evaluated.

To the extent required by law, if any hazardous substances, pollutants, or contaminants remain at the Site after the initiation of the remedial action, EPA will review the Site at least once every five years to assure that the remedial action continues to protect human health and the environment

XI. STATUTORY DETERMINATIONS

The remedial action selected for implementation at the Savage Municipal Water Supply 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 removal, treatment, engineering controls, and institutional controls. More specifically, the risks at this Site will be eliminated or reduced through the collection and treatment of the contaminated groundwater. Contaminated groundwater will be extracted, treated at several locations, and either discharged to the Souhegan River or recharged back to the wetlands. A long term monitoring program will ensure that the remedy remains protective of human health and the environment.

Assuming the contaminants within the concentrated plume are dissolved (not DNAPLs), it is estimated that contaminant levels within those areas will be reduced to MCL's and/or cleanup levels in approximately 30 years of pumping and treating. Even if DNAPLs are found to exist, at a minimum, the contaminated groundwater in the concentrated plume will be contained so that continued migration of the contaminants to the downgradient extended plume will be eliminated or reduced to the extent technically practicable. This will be accomplished by locating several wells within and/or at the extremities of the concentrated plume. New information relative to the presence of DNAPLs in the concentrated plume will be evaluated to determine whether any modifications to the response actions are needed. The operation of a pump and treat system which captures and contains contaminated groundwater in the concentrated plume will provide protectiveness for the remaining portion of the aquifer which encompasses the extended plume.

The contaminated groundwater in the extended plume will be either extracted and treated or allowed to naturally attenuate until MCL's and/or cleanup levels are met throughout the plume. The operation of a pump and treat system in the extended plume will capture and contain contaminated groundwater and will provide protectiveness for downstream receptors. It is estimated that cleanup levels will be attained in 15 to 60 years.

Institutional controls such as deed restrictions regarding water use will be implemented and maintained until the groundwater cleanup levels are met and the remedy is deemed protective of human health and the environment. A long term monitoring program will be instituted to ensure that the remedy remains protective of human health and the environment. The pump and treat systems to be implemented within the contaminated groundwater plume will provide protectiveness to public health and the environment by capturing contamination and eliminating the threat of continued contaminant migration. The institutional controls will provide protectiveness throughout the contaminant plume (including the areas of the plume that will naturally attenuate) through use restrictions.

After all interim cleanup levels have been met, a risk assessment will be performed on residual groundwater contamination to determine the final groundwater cleanup levels. If the resulting cumulative risk is not within the 10^{-4} to 10^{-6} incremental risk range and the cumulative hazard index for similar target endpoints is not below the specified level of concern, remedial actions must continue until the protective levels are attained.

And finally, implementation of the selected remedy will not pose unacceptable short-term risks or cross-media impacts. The technologies are proven and will be field tested to reduce operational risks. In addition, special engineering precautions will be used to minimize the potential for air releases of contaminants.

B. The Selected Remedy Attains ARARs

This remedy will meet or attain all applicable or relevant and appropriate federal and state requirements that apply to the Site. Substantive portions of environmental laws identified as ARARs and those to be considered for the selected remedial action include, among others:

Chemical Specific

Safe Drinking Water Act - Maximum Contaminant Levels (MCLs)
Resource Conservation and Recovery Act, Groundwater Protection MCLs
National Ambient Air Quality Standards (NAAQS)
Clean Water Act Ambient Water Quality Criteria (AWQC's)

New Hampshire Surface Water Quality Standards
New Hampshire Drinking Water Standards
New Hampshire Ambient Air Quality Standards
New Hampshire Toxic Air Pollutant Regulations

Location Specific

Clean Water Act (CWA) (Protection of Waters & Wetlands)
Executive Order 11990 (Protection of Wetlands)
Executive Order 11988 (Floodplains Restrictions)

Fish and Wildlife Coordination Act

New Hampshire Wetlands Regulations

New Hampshire Hazardous Waste Regulations (Facility siting standards)

Action Specific

Clean Air Act (NAAQS and NESHAP)

CWA (NPDES and Pretreatment Standards)

New Hampshire Air Regulations for VOCs

New Hampshire Rules for Transportation of Hazardous Materials

New Hampshire Regulations for Fugitive Dust Control

To Be Considered

EPA Risk Reference Doses

EPA Carcinogen Assessment Group Potency Factors

NOAA Technical Memorandum NOSDMA52

Federal Groundwater Protection Strategy & Classification Guidelines

New Hampshire Protection of Groundwater - New Hampshire Groundwater Quality Criteria

New Hampshire Wellhead Protection Program

Appendix C of this ROD lists all of the ARARs identified for the Site and whether they are applicable, relevant and appropriate, or to be considered. A brief synopsis of the requirements and the action to be taken to meet those requirements is presented in the table.

Appendix VII of the FS, Volume 2, lists all of the ARARs identified for each of the alternatives presented for remediation of the Site.

1. Chemical Specific

a. Federal and State Drinking Water Standards

In the past, the groundwater at various locations throughout the Site has been used as a public and private drinking water source. For example, the Savage Municipal Water Supply Well once provided about 45% of the Town of Milford's water supply (180,000 to 200,000 gallons per day) and a separate well currently provides for the seasonal use at the Milford Drive-In Theater. The Savage Well was taken out of service in 1983 when contamination was discovered. The Town has since developed a replacement well and has a contract for the supply of drinking water with the Pennichuck Water District. As previously stated, the aquifer is large and has a large potential yield. If the aquifer were of drinking water quality, it would likely be an important public and private water supply source for the area. While Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs) promulgated under the Safe Drinking Water Act are not applicable to groundwater, they are relevant and appropriate to

groundwater cleanup whenever groundwater may be used as a drinking water source. In addition, the NCP requires that usable groundwater be restored to its beneficial uses whenever practicable. See 40 CFR 300.430(a) (iii)(F).

New Hampshire's Protection of Groundwater regulations (Ws 410) do not establish groundwater quality standards, but do establish groundwater criteria. One of those criteria is the requirement that no person shall cause the groundwater to contain a substance at a level that the state determines may be potentially harmful to human health or to the environment. Because New Hampshire's regulations do not contain a standard level of control as required by CERCLA § 121(d)(2)(A)(ii), they will not be an ARAR. However, the regulations are to be considered (TBCs) at the Site and the requirement will be met.

This remedy will attain the above mentioned ARARs as well as the ARARs identified in the table in Appendix C. In addition, the remedy will comply with those regulations which have been identified as TBCs by meeting the groundwater cleanup levels at the Site through the operation of the groundwater treatment systems and through natural attenuation. Treating the contaminated groundwater will reduce levels of contamination at the Site to the interim cleanup levels identified in this ROD. Where natural attenuation is employed, Federal and State standards will be met within the time frame specified.

b. Federal Clean Air Act and New Hampshire Air Pollution Regulations

Federal Primary and Secondary National Ambient Air Quality Standards (NAAQS) exist for emissions of sulfur oxides, carbon monoxide, ozone, nitrogen oxides, lead, and particulate matter whereas the National Emission Standards for Hazardous Air Pollutants (NESHAPs) address VOC emissions from specific sources. Threshold Limit Values (TLVs) provide an extensive list of control levels for workplace environments. While those values are based on the exposure of a select population and are not generally transferable to the general public, they are used to assess site inhalation risks for soil removal operations.

New Hampshire's air quality regulations parallel the federal regulations. The sections set forth in the table in Appendix c establish specific standards for particulate matter and ambient air limits for a large number of toxic air pollutants. In addition, New Hampshire has established limits on VOC emissions from certain industries. Also, the state has promulgated fugitive dust control regulations which require that measures be taken to limit dust from construction and other activities.

In addition, the federal and state regulations which set standards for VOC emissions from certain industries will be relevant and appropriate to set limits on the emissions from any treatment system

used at the Site. For example, the specific portion of the treatment system at the Site to which air standards and regulations would be most appropriate is the emissions from the air stripping unit at the Hitchiner plant. The implementation of the pertinent standards and regulations will provide protectiveness to human health and the environment. The best demonstrated technology which will be determined in the design phase will be employed to meet the federal and state requirements.

2. Location Specific

a. Federal and State Wetland and Floodplain Protection

The Clean Water Act, Executive Order 11990 (Protection of Wetlands), and state wetland protection standards are all applicable to that portion of the remedy constructed in or affecting the wetlands on or near the Site. Those rules prohibit activity adversely affecting a wetland if there exists a practicable alternative which is less detrimental. It is necessary to construct the management of migration groundwater extraction system in the wetland because active management and cleanup of the plume is required to meet the remediation objectives of the Site and the contaminant plume lies under the wetland. Efforts will be made to locate any treatment facilities outside the wetlands.

In the short term, construction will be conducted to avoid or minimize the damage to flora and fauna within the wetlands. Additionally, after construction is completed, restoration of the wetlands will occur in two phases. The first phase which is implemented at the time that construction is completed consists of restoring the original topography and establishing shallow rooting vegetation. The second phase which is initiated when the remedy is completed consists of encouraging the original wetland species to reestablish themselves naturally.

The majority of the Site is within the 100 year floodplain of the Souhegan River. Therefore, Executive Order 11988 (Floodplain Management) is an ARAR. Those regulations govern construction activities which have a negative impact on a floodplain. The construction of the groundwater extraction system should have a minimal negative impact on the floodplain. Efforts will be made to locate the groundwater treatment plant(s) outside of the floodplain. However, if that is not possible, the impact of such construction should also have only a minor impact on the floodplain.

EPA's policy on implementing Executive Orders 11990 (wetlands) and 11988 (floodplains) is contained at 40 CFR Part 6, Appendix A. That Appendix sets forth principles and procedures governing work in wetlands and floodplains so as to minimize the adverse impacts on those valuable natural resources. Those orders as well as EPA's policy will be implemented in the construction and maintenance of the remedy.

In accordance with 40 CFR Part 6, Appendix A, EPA has provided an opportunity for public comment on the work to be undertaken in the wetlands and floodplain. EPA has issued a Proposed Plan for remedial action at this Site, has held a public hearing, and has received public comments during a thirty day comment period prior to this decision. In addition, a Statement of Findings which determines that there are no practicable alternatives to these remedial actions in the wetlands and floodplain is included in Appendix F.

3. Action Specific

a. State and Federal Hazardous Waste Regulations

The current State of New Hampshire hazardous waste regulations are applicable to the groundwater remediation activities to be conducted at the Site. In the limited instances where those regulations conflict, the more stringent regulation will be followed.

Prior to January, 1991, the State had promulgated hazardous waste regulations which were as stringent as, or more stringent than, RCRA regulations. Accordingly, the State had been authorized by EPA to administer and to enforce the hazardous waste program in New Hampshire. However, New Hampshire has promulgated an entirely new set of regulations in 1991. Some of those regulations are less stringent than RCRA regulations. This new state program is still undergoing revision and has yet to be approved by EPA. As a result, both federal and state hazardous waste regulations existing at the signing of this ROD must be consulted to ensure that the more stringent requirements are followed.

The groundwater treatment plant(s) will be designed, constructed, and operated in accordance with those regulations. Any sludge or other residuals generated during the operation of the groundwater treatment plant(s) and determined to be RCRA type waste will also be stored, transported, and disposed of in accordance with RCRA and/or the State hazardous waste restriction regulations.

c. The Selected Remedial Action is Cost-Effective

In the Agency's judgment, the selected remedy is cost effective in that the overall effectiveness of the remedy is proportional to the cost of the remedy. EPA came to that conclusion after first identifying alternatives that are protective of human health and the environment and that either attain or, as appropriate, waive ARARs. EPA then 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. The relationship of the overall effectiveness of those remedial alternatives was determined to be proportional to their costs.

A summary of the costs associated with each of the management of migration alternatives is presented below. Alternatives MM-3 through MM-11A are all groundwater extraction wells and treatment systems. The number of wells and pumping rate are provided in the table below.

COST COMPARISON OF MANAGEMENT OF MIGRATION ALTERNATIVES

<u>Alternative</u>		<u>Capital Costs</u>	<u>O&M Costs \$/Yr</u>	<u>Present Worth *</u>
MM-1	No Action	\$ 0	\$ 81,000	\$ 764,000
MM-2	Limited Action	\$ 0	126,000	1,200,000
MM-3	Two Wells, 400 gpm	1,100,000	1,400,000	14,000,000
MM-7	Six Wells, 1225 gpm	2,500,000	2,000,000	21,400,000
MM-7A	Six Wells, 1225 gpm	2,500,000	1,500,000	16,400,000
MM-9	Eight Wells, 1150 gpm	2,500,000	2,000,000	21,000,000
MM-9A	Eight Wells, 1150 gpm	2,600,000	1,500,000	16,300,000
MM-10	Fifteen Wells, 2975 gpm	5,100,000	4,200,000	44,300,000
MM-11	Six Wells, 1100 gpm	2,200,000	1,900,000	20,200,000
MM-11A	Six Wells, 1100 gpm	2,400,000	1,400,000	15,500,000

* Based on 30 year present worth analysis.

With the exception of Alternative MM-1, all of the management of migration alternatives are protective of human health and the environment and will attain ARARs. Alternative MM-1, the least expensive one, is not protective of human health and the environment since it does nothing to restrict usage of the contaminated groundwater during the estimated 100 years or more required to attain drinking water standards. Alternative MM-2, Limited Action, is similar to Alternative MM-1 in that it relies on natural attenuation to attain groundwater cleanup levels. However, Alternative MM-2 also includes institutional controls such as deed restrictions to prevent the use of the contaminated groundwater for drinking water and other inappropriate purposes. Alternative MM-2 is the lowest cost alternative which is protective and which meets ARARs.

Each of the remaining alternatives takes active measures; only the number and location of wells, the rate of groundwater extraction, and the overall treatment times differ. The cost of each alternative is proportional to the extraction rate; the greater the amount of groundwater pumped and treated, the greater the cost. Alternative

MM-10 is the most costly but it also provides the shortest remediation time. Alternatives MM-7, MM-7A, MM-9, MM-9A, MM-11, and MM-11A balance the amount of water extracted in the extended plume with the amount of contamination left to undergo natural attenuation. Alternatives MM-11 and MM-11A are the only alternatives which address the high levels of contamination which are present north of the river.

Each of the treatment alternatives provides varying reductions in toxicity, mobility, or volume through treatment since each relies on the extraction and treatment of differing volumes of groundwater as well as on natural attenuation. For example, Alternative MM-3 provides significantly less reduction of toxicity and mobility and volume through treatment than Alternative MM-10 since a significantly smaller amount of contaminated groundwater is extracted and treated.

The use of ultraviolet oxidation in place of air stripping to treat certain portions of the plume results in a lower present worth cost for those alternatives where that technology was evaluated. This is due to a lower cost of operation. Thus, the use of ultraviolet oxidation in the selected alternative is cost effective.

The short term effectiveness of each of the treatment alternatives varies based on the number and location of the wells and the overall rates at which groundwater is extracted relative to the amount of groundwater allowed to naturally attenuate. With more wells and higher extraction rates, cleanup goals are attained more quickly.

However, the shortening of the cleanup time to less than thirty years as in Alternative MM-10 results in the highest cost. Alternative MM-3 which is the least costly of the active remediation alternatives requires the longest cleanup time. Of the remaining alternatives, Alternative MM-11A is the most cost effective in balancing the amount of contamination captured and treated with the area of the plume left to naturally attenuate.

The table below provides a comparison of the groundwater extraction rates and times to attain cleanup levels for the alternatives under consideration.

<u>Alternative</u>	<u>Extraction rate (GPM)</u>	<u>Time to cleanup (yrs)*</u>
MM-2	0	Greater than 100
MM-3	400	25 - 90
MM-7/7A	1225	15 - 65
MM-9/9A	1150	20 - 85
MM-10	2975	10 - 30
MM-11/11A	1100	15 - 60

* Clean up times for extended plume. Cleanup of concentrated plume is less than 30 years based on current available knowledge.

A summary of the costs for each of the elements of the selected management of migration remedy are presented below. All costs are net present worth.

TOTAL COSTS OF SELECTED MANAGEMENT OF MIGRATION REMEDY

<u>PORTION OF REMEDY</u>	<u>PRESENT WORTH COST (\$)*</u>
I. Capital Costs	2,400,000
II. Annual Operation and Maintenance (@ \$1,400,000 per year)	13,100,000
TOTAL	15,500,000

* Based on 30 year present worth analysis.

A complete accounting of costs for the management of migration alternative is contained in Section 4 of the FS Addendum.

TOTAL ESTIMATED COST: \$15,500,000

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. That 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; the balancing test also 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.

All of the alternatives with the exception of Alternatives MM-1 and MM-2 utilize the same permanent solution, extraction and treatment of groundwater, to reduce the contamination in the aquifer. The difference between the alternatives is how much contaminated groundwater is extracted and treated versus how much is allowed to naturally attenuate.

From the standpoint of long term effectiveness, the remaining alternatives are essentially equivalent. Each of the alternatives provides varying amounts of reduction in toxicity, mobility, or volume through treatment depending upon how much groundwater is extracted and treated (See the table on page 66). For the same reason, each of the remaining alternatives will achieve cleanup levels in different times (See the table on page 66).

The degree of negative impact to the environment (wetlands/flood-plains) is dependent on the amount of groundwater extracted. As long as recharge of the treated groundwater can be accomplished, it is expected that the impact from any of the alternatives will be minimal.

Each of the remaining alternatives is equally implementable since they all employ similar technology. The costs for each alternative are included in the table on page 64.

The selected remedy represents the best balance among the above factors since

- a) it will result in attainment of cleanup levels in the aquifer within a reasonable timeframe (15 to 60 years);
- b) it uses a middle to long range extraction rate (1100 gpm), thereby minimizing impacts to the environment;
- c) it is one of the lower cost alternatives (15.5 million dollars) with the exception of the no-action and limited action alternatives and
- d) one of the technologies to be used, ultraviolet oxidation, is considered innovative.

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 groundwater extraction and treatment. Groundwater extraction and treatment addresses the primary threat at the site which is the contamination of groundwater with volatile organic compounds (VOCs). The selected remedy therefore satisfies the statutory preference for treatment as a principal element.

XII. DOCUMENTATION OF NO SIGNIFICANT CHANGES

EPA presented a proposed plan (preferred alternative) for remediation of the Site on July 3, 1991. The management of migration portion of the preferred alternative includes extraction and treatment of contaminated groundwater in the concentrated plume, extraction and treatment of contaminated groundwater in the extended plume, natural attenuation of that portion of the contaminated groundwater not extracted for treatment in the extended plume, and institutional controls.

No significant changes from the Proposed Plan have been made to the selected remedy as detailed in this Record of Decision.

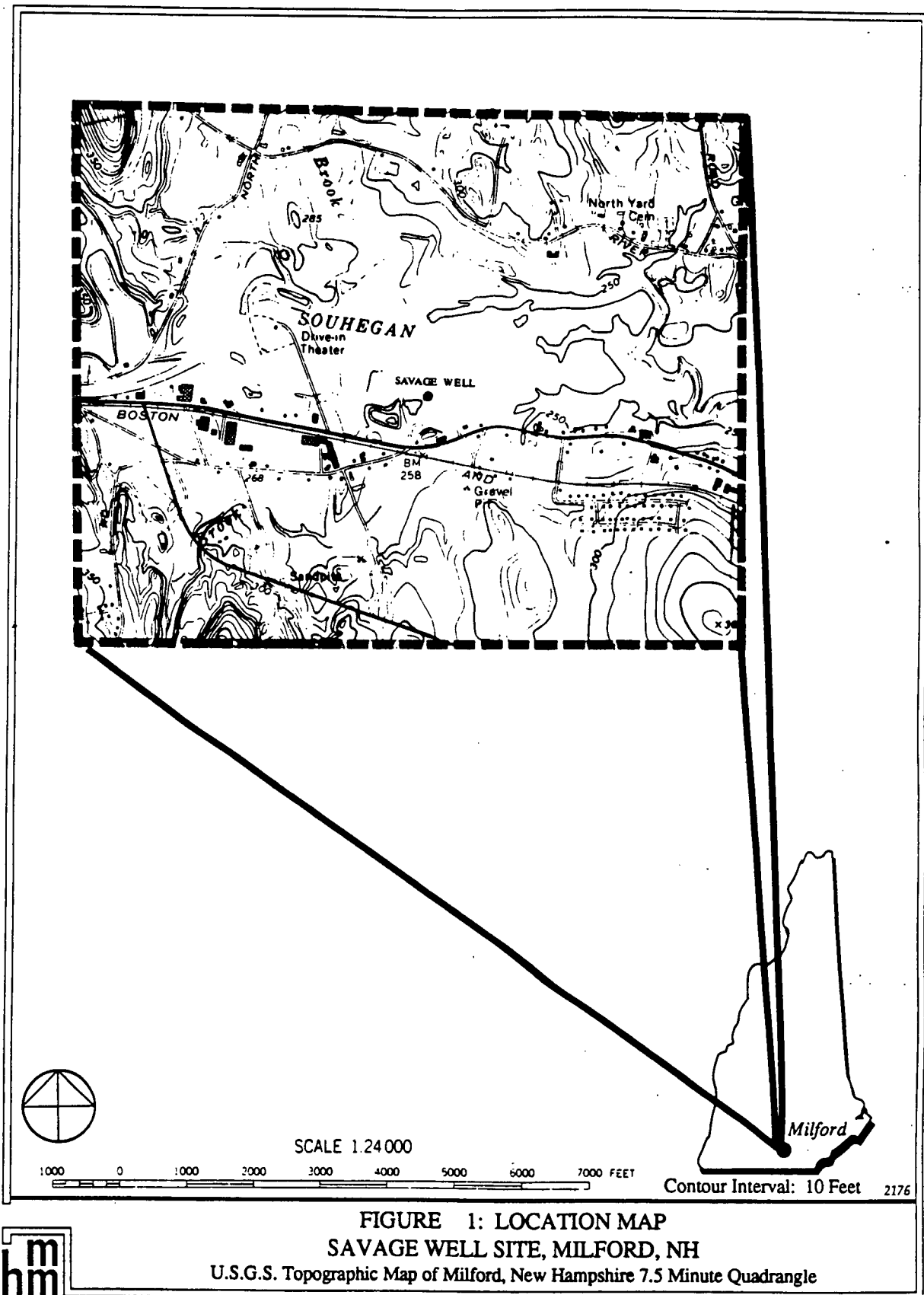
XIII. STATE ROLE

The New Hampshire Department of Environmental Services (NHDES) has been involved with the Site from the time of the discovery of contamination. Through a Cooperative Agreement, the NHDES performed oversight of field activities and provided laboratory services for split samples. The State has also reviewed and provided comments on the interim reports during the RI/FS as well as the final Remedial Investigation, the Risk Assessment, and the Feasibility Study. NHDES also provided a listing of state ARARs for use in the development of the alternatives for the Feasibility Study. NHDES has not commented on nor concurred with this Record of Decision.

SAVAGE MUNICIPAL WATER SUPPLY SUPERFUND SITE

APPENDIX A

FIGURES



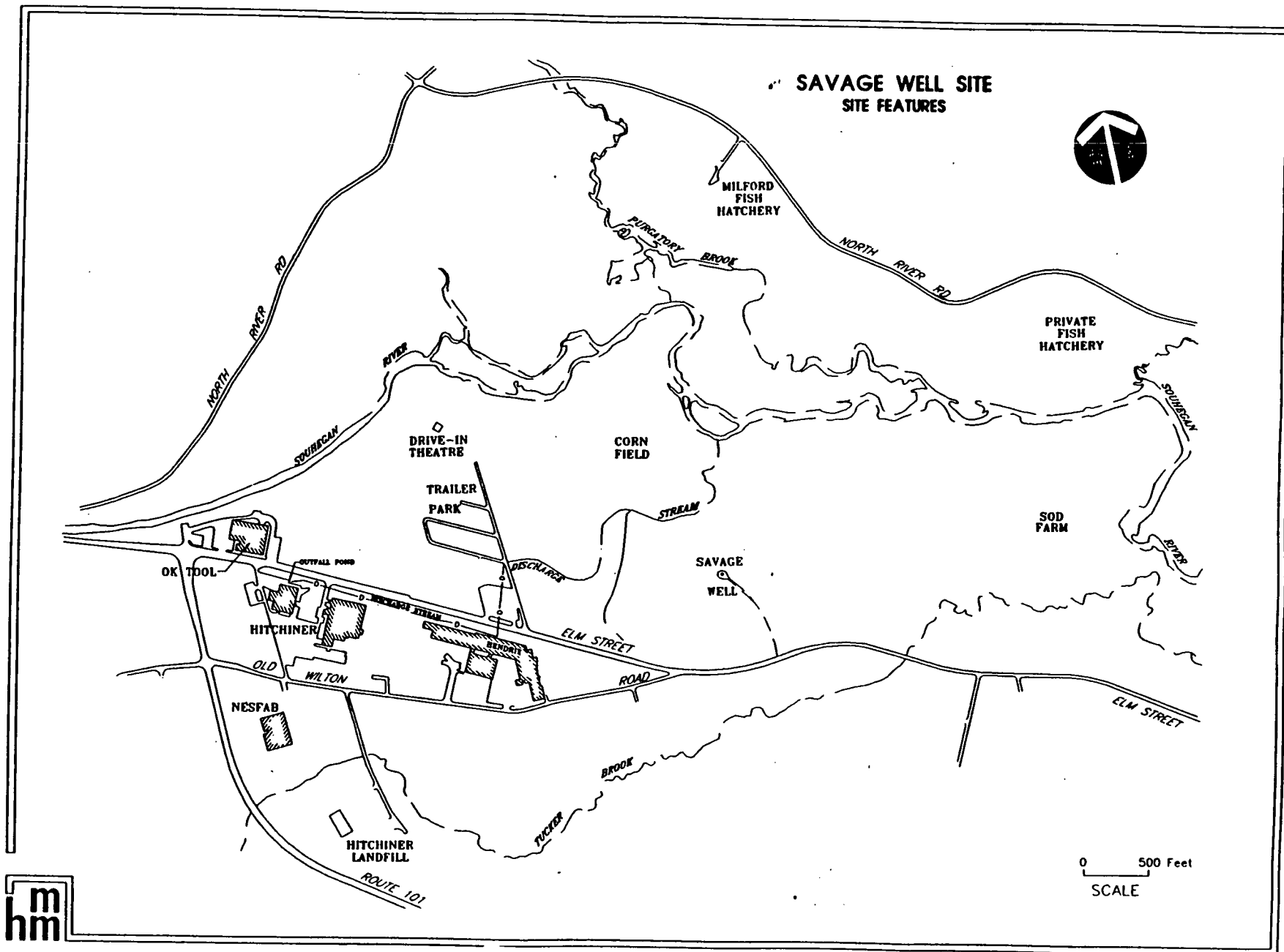
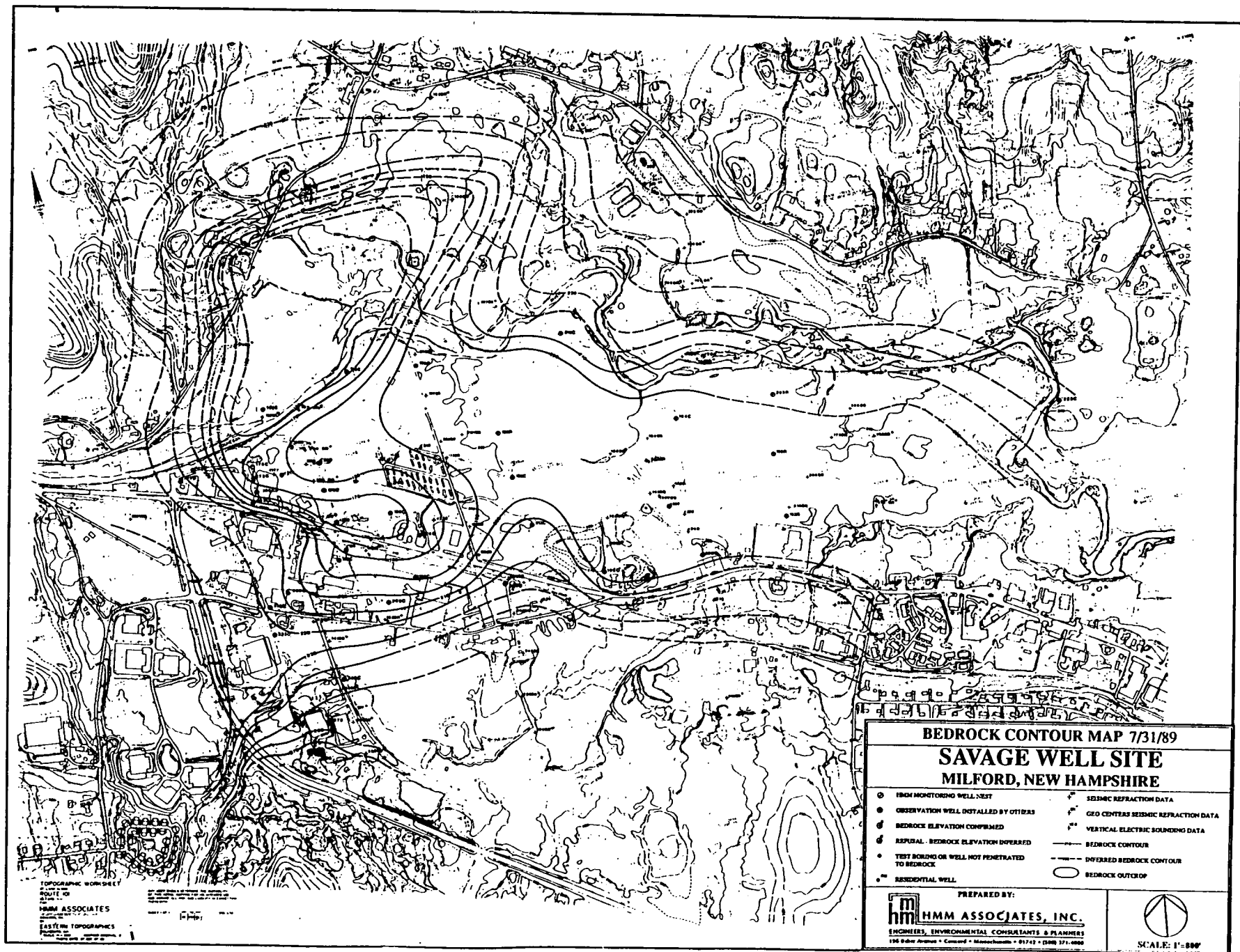


FIGURE 2



SAVAGE WELL SITE TOTAL VOC's IN GROUNDWATER

January, 1989 to January, 1990

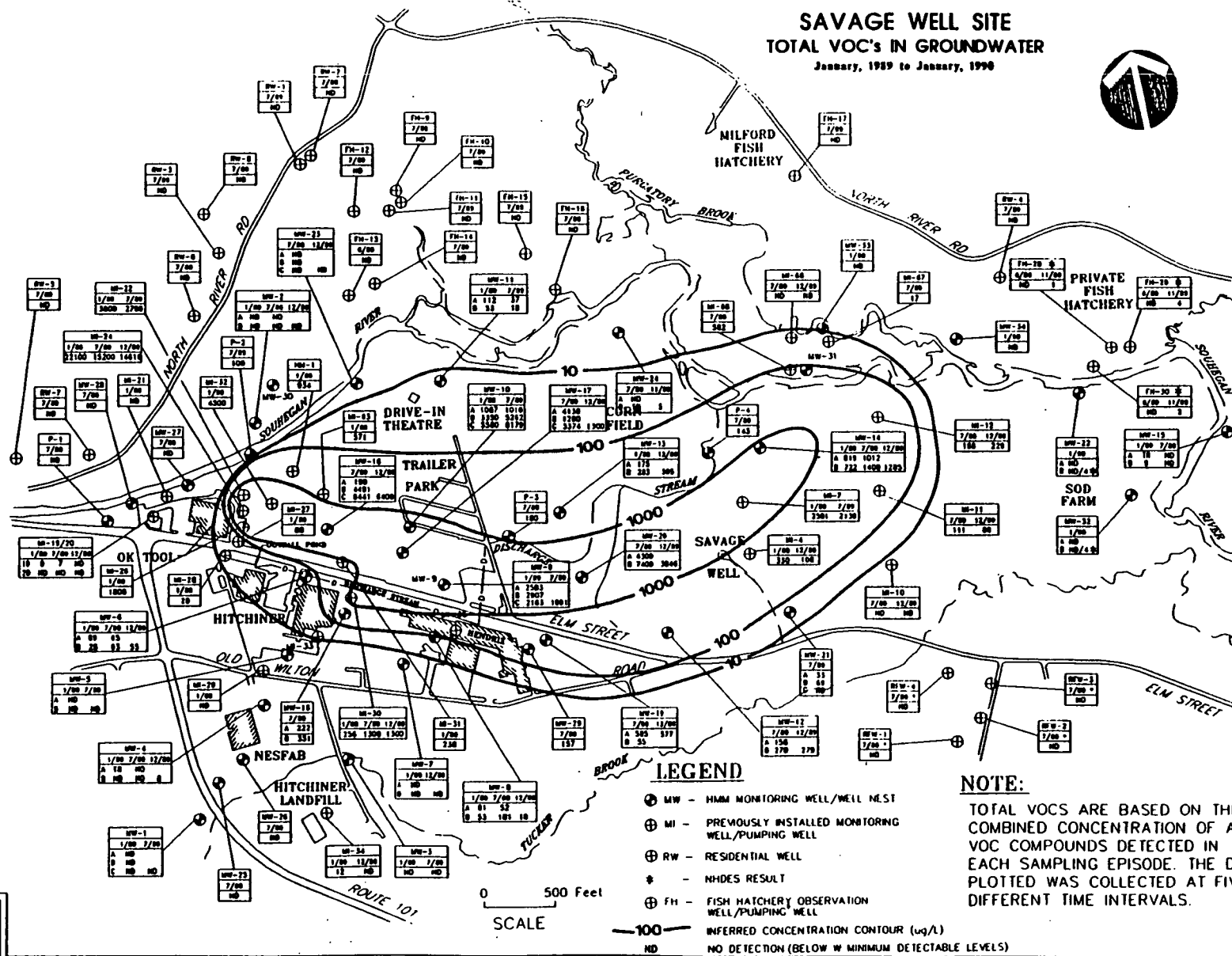


FIGURE 4

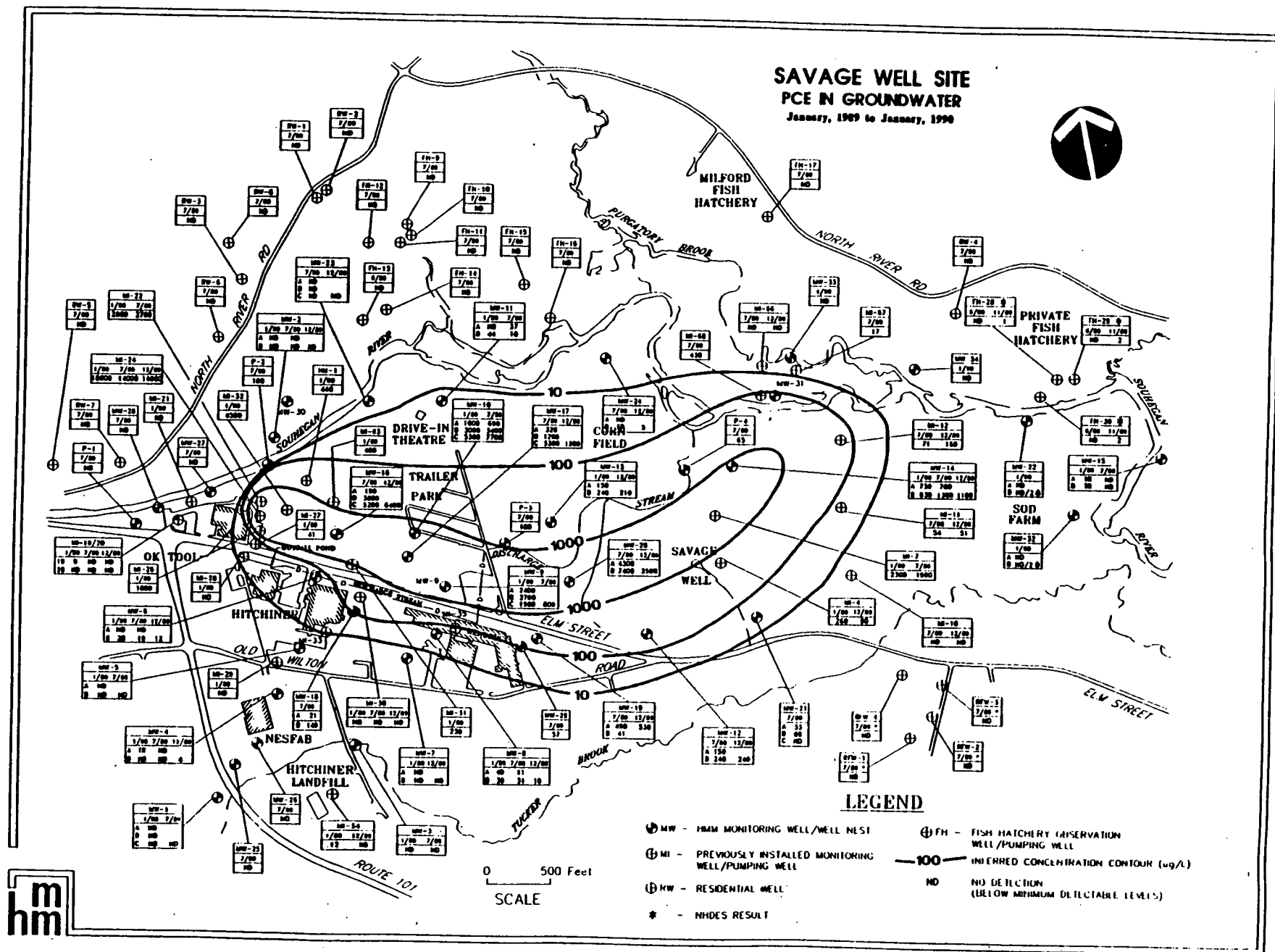


FIGURE 5

SAVAGE WELL SITE **TCA IN GROUNDWATER** January, 1989 to January, 1990

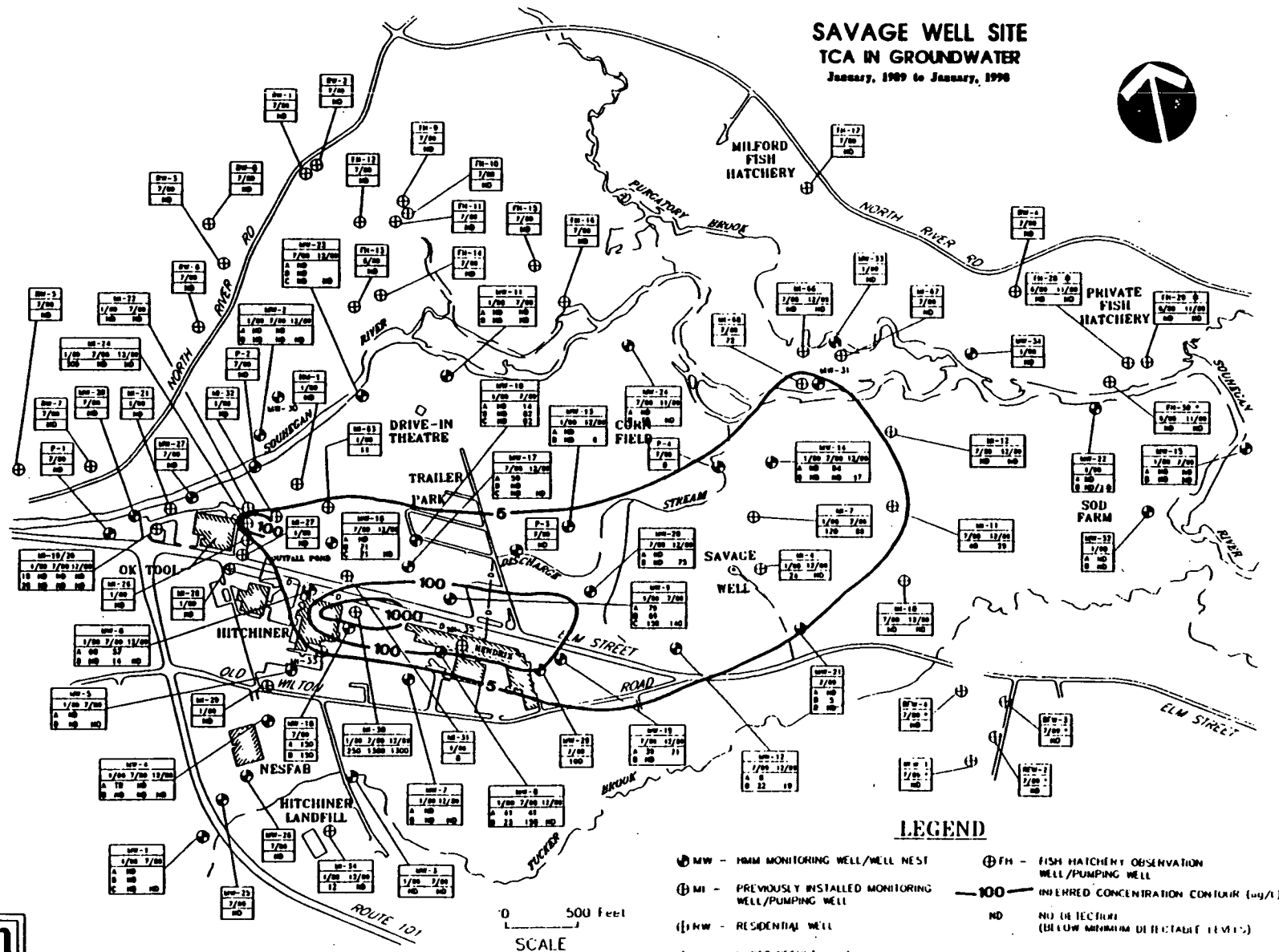
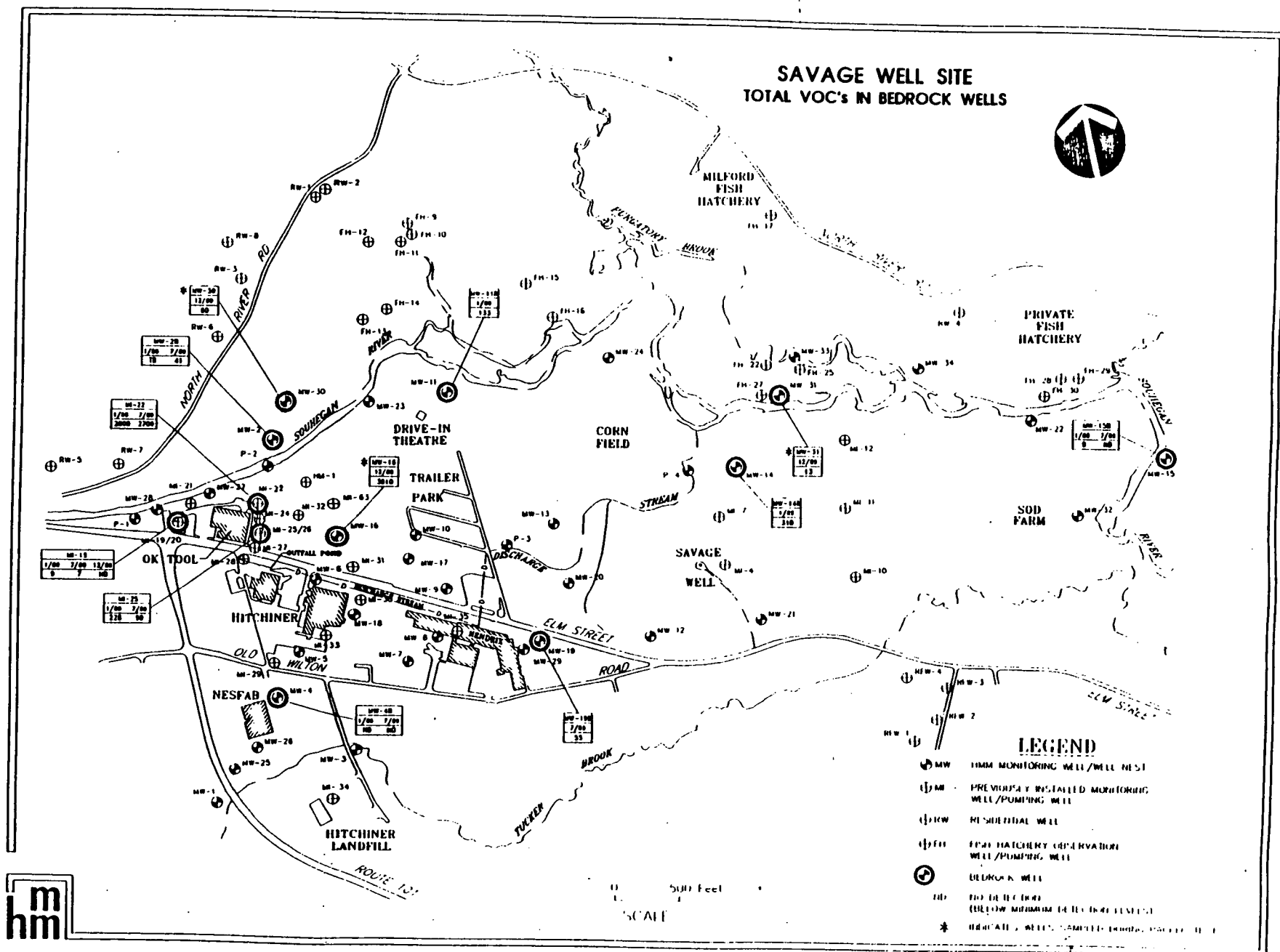


FIGURE 6



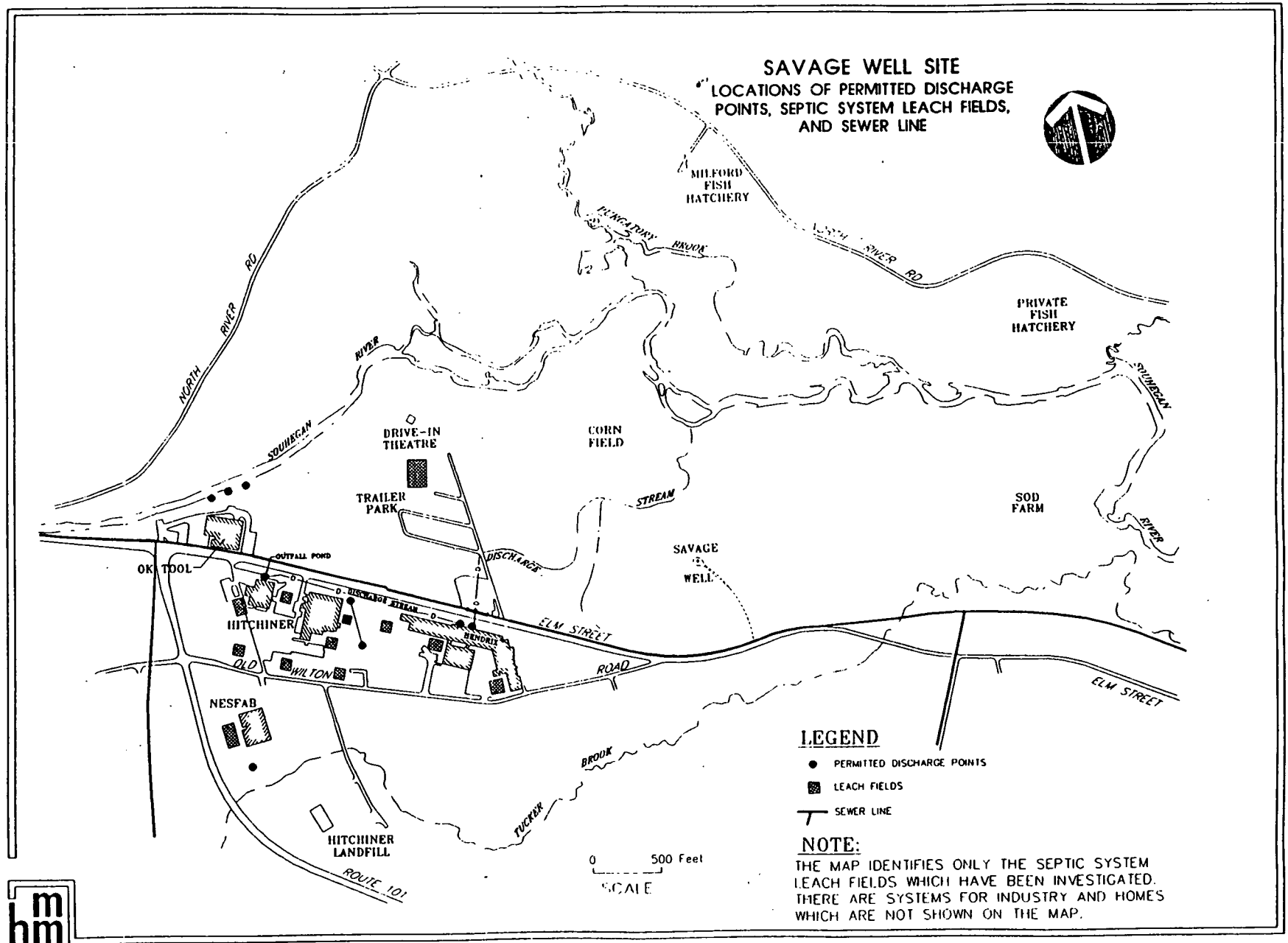


FIGURE 8

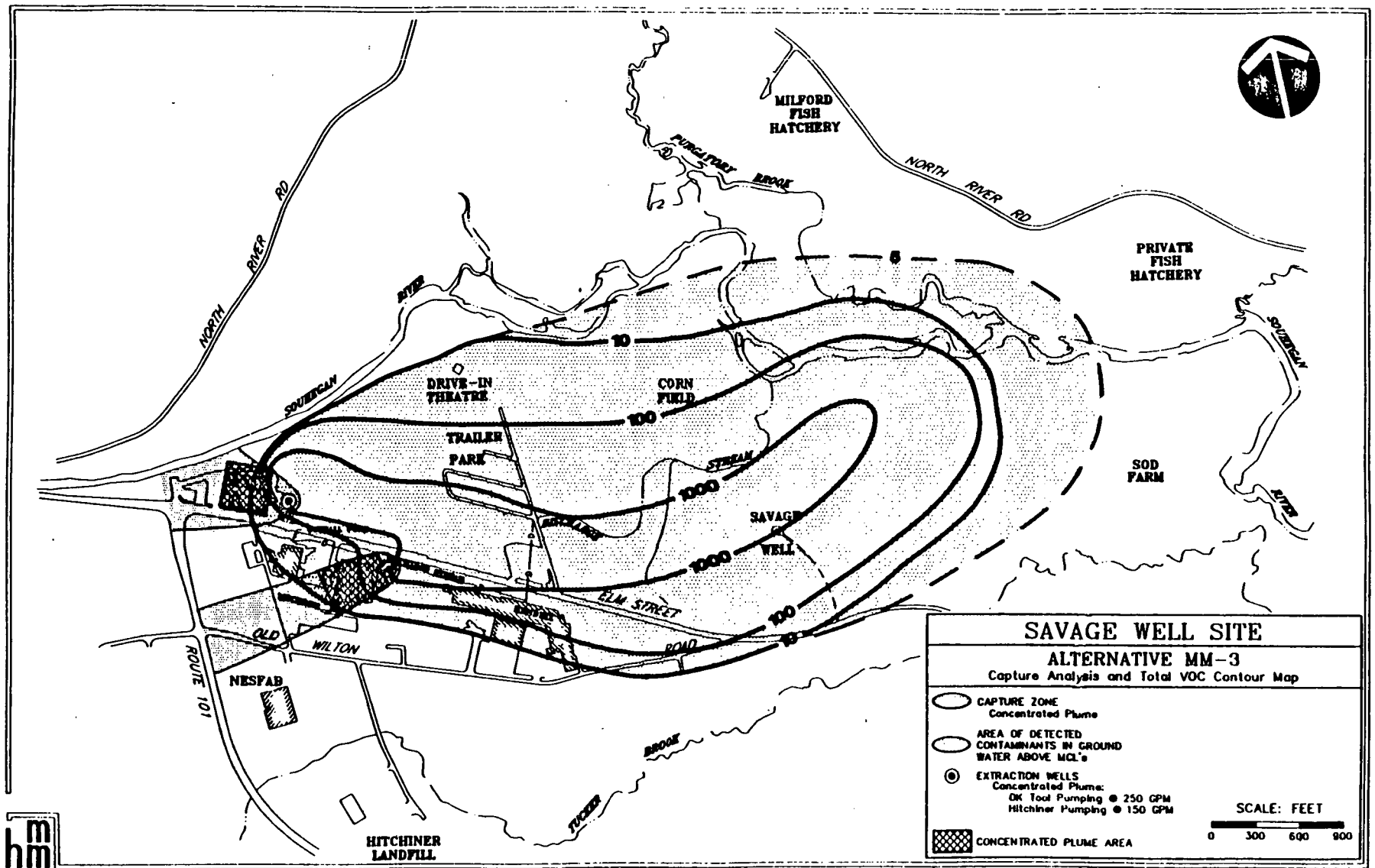
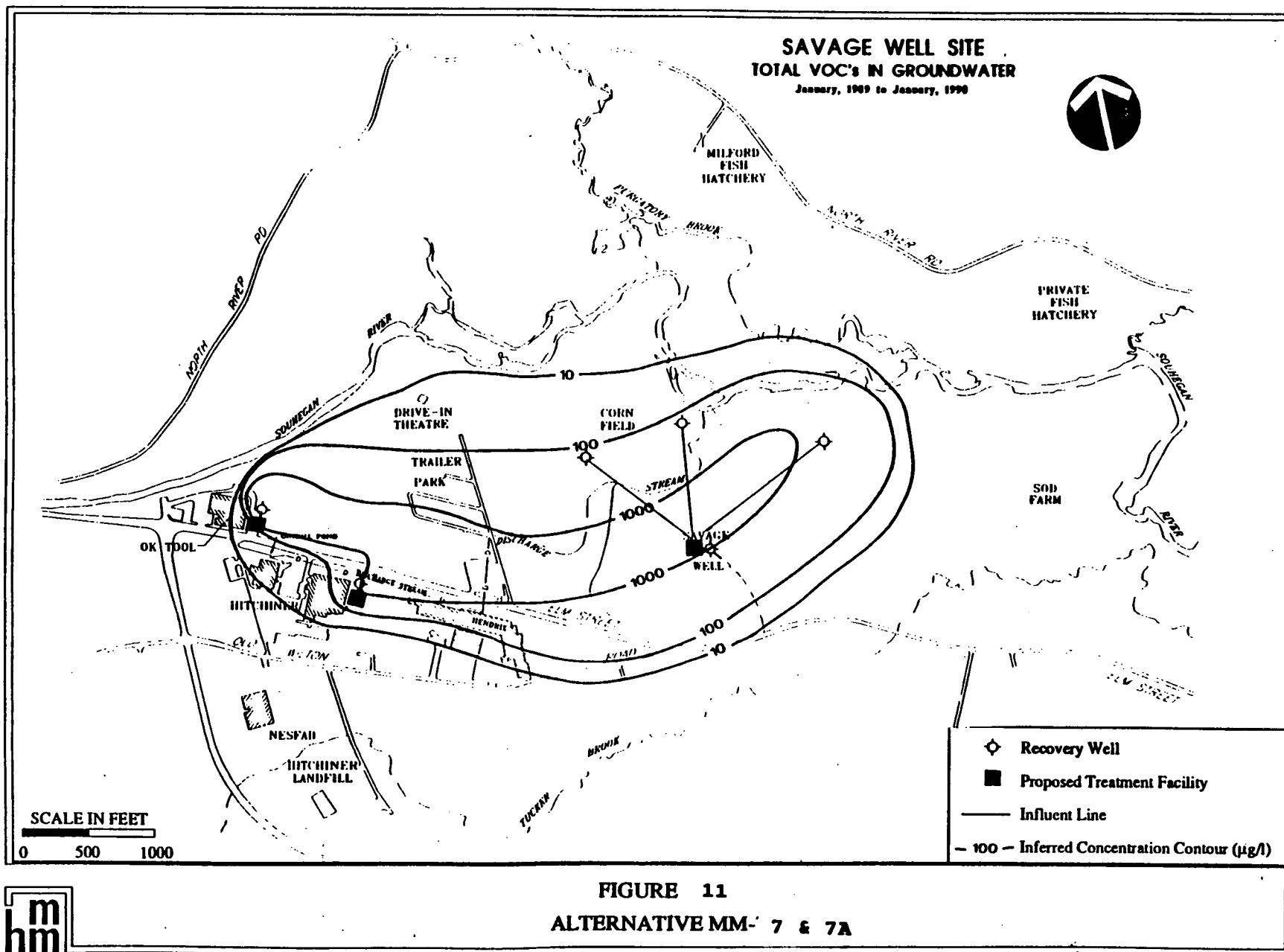


FIGURE 10



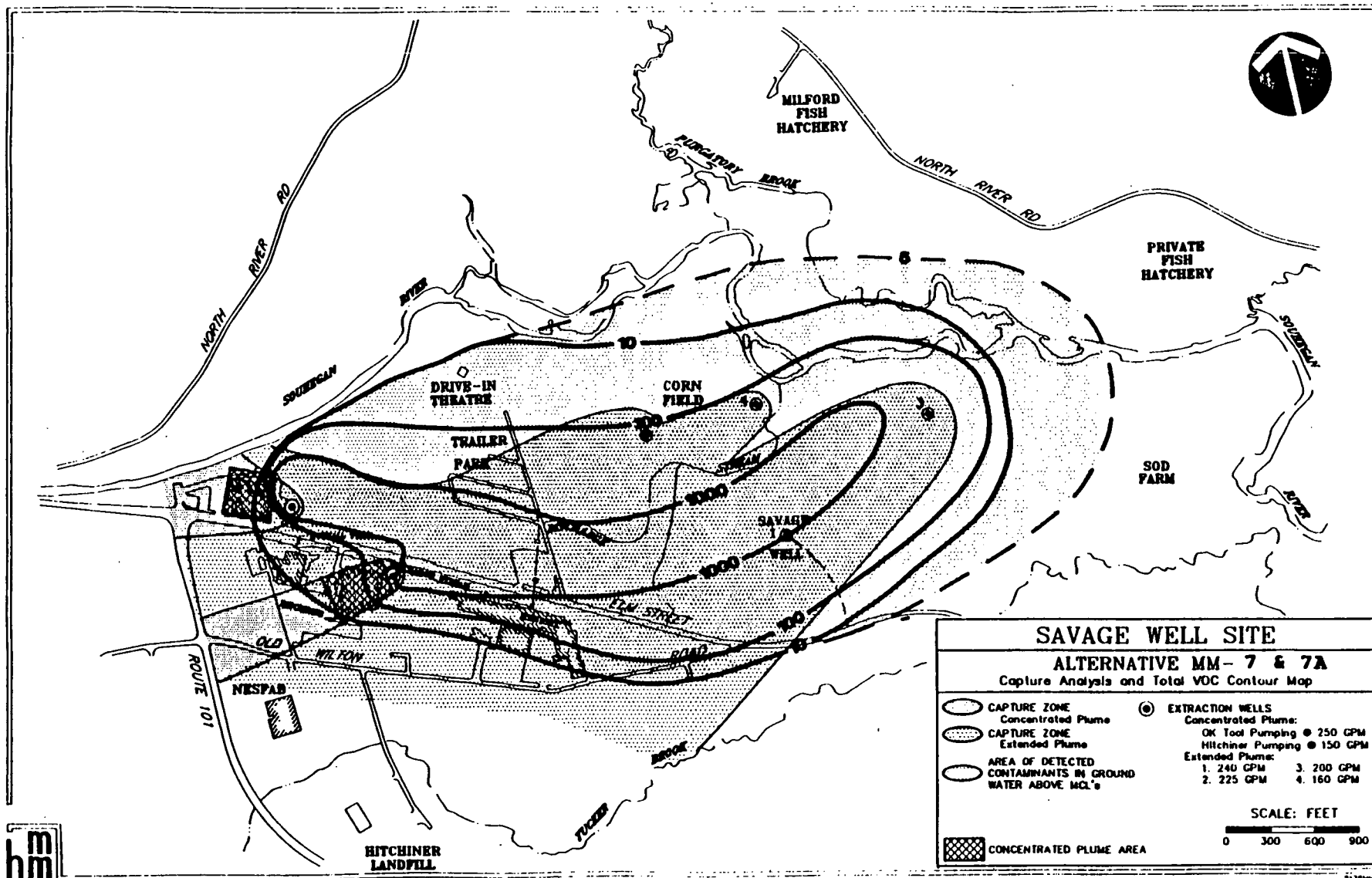


FIGURE 12

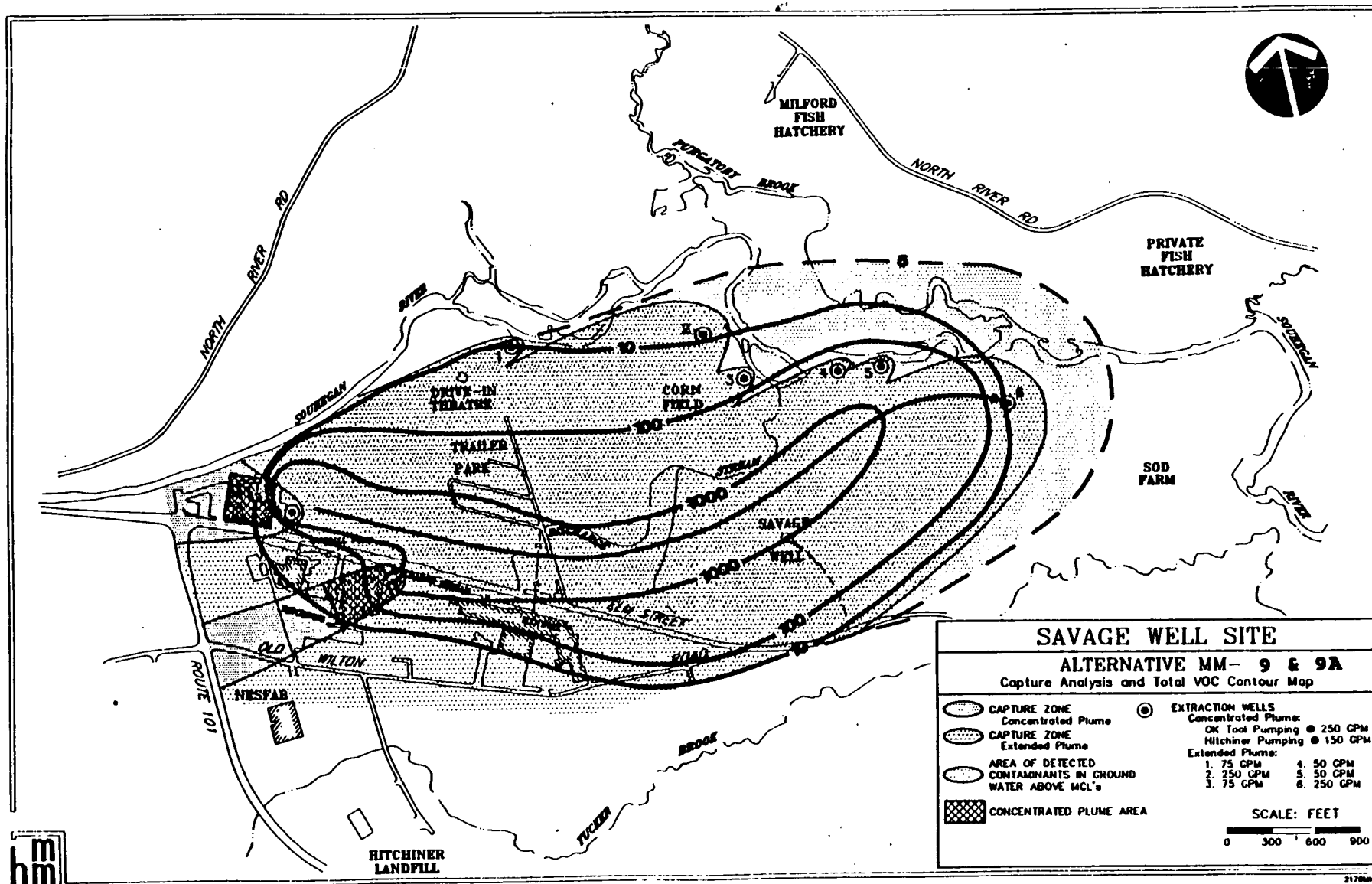


FIGURE 14

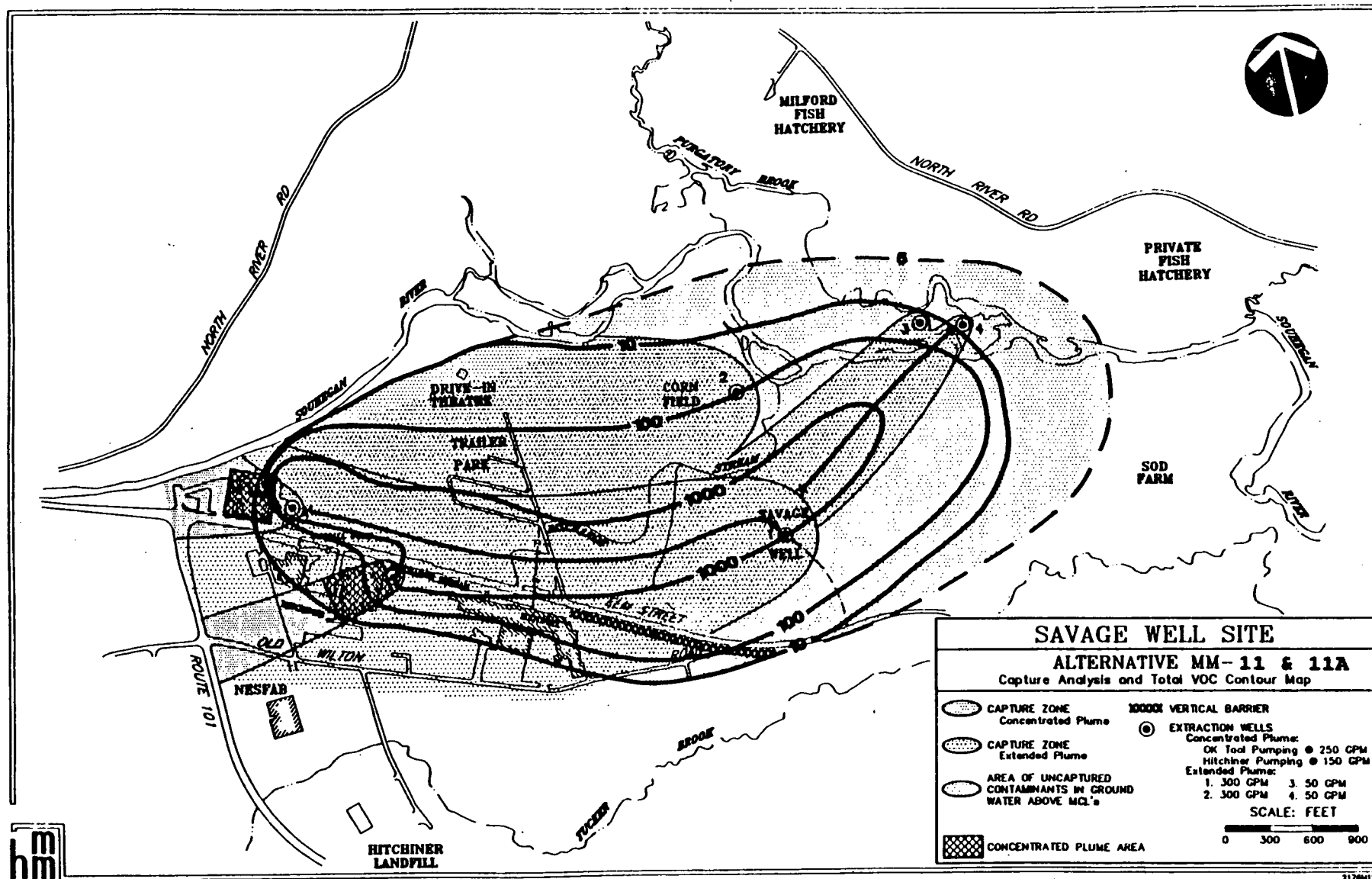


FIGURE 18

SAVAGE MUNICIPAL WATER SUPPLY SUPERFUND SITE

APPENDIX B

TABLES

TABLE 1-B.
DESCRIPTIVE STATISTICS FOR VOLATILE ORGANIC COMPOUNDS
MEASURED IN GROUNDWATER SAMPLES
SAVAGE WELL SUPERFUND SITE
Milford, NH

CHEMICAL NAME ²	METHOD DETECTION LIMIT (ppb) ³	NUMBER OF DETECTIONS PER CHEMICAL	DETECTION FREQUENCY (%) ⁴	MINIMUM DETECTED VALUE (ppb) ⁴	MAXIMUM VALUE (ppb)	LOCATION OF MAXIMUM VALUE	SAMPLE MEAN (N = 201) (ppb) ³	MAXIMUM CONTAMINANT LEVEL (ppb) ⁴
Tetrachloroethene	5	126	63	0.62	19000	MI-24	34.5	5
Trichloroethene	5	80	40	1.18	2300	MI-24	6.9	5
1,1,1-Trichloroethane	5	75	38	0.66	1300	MI-30	6.3	200
trans-1,2-Dichloroethene	5	45	23	0.62	1500	MI-24	4.9	100
1,1-Dichloroethane	5	33	17	0.75	110	MI-30	3.2	800
1,1-Dichloroethene	5	17	9	trace	46	MI-24	2.8	7
Methyl-t-Butylether	10	14	7	1.14	60	MW-68	5.5	200 (d)
Toluene	5	4	2	2.22	125	MI-24	2.6	1000
Benzene	5	4	2	0.75	67	MW-10C	2.6	5
Methylene Chloride	5	3	2	7.00	10	MI-25	2.5	5
Acetone	20	2	1	80.69	890	MI-30	10.3	none
Total Xylenes	5	2	1	35.00	62	MW-14A	2.6	10,000
Chlorobenzene	5	2	1	0.50	43	MI-24	2.5	100
4-Methyl-2-Pentanone	5	2	1	trace	trace	MW-23C	2.5	none
Ethylbenzene	5	1	1	trace	trace	MW-14A	2.5	700
2-Hexanone	5	1	1	9.00	9	MW-23C	2.5	none
Vinyl Chloride	10	1	1	trace	trace	MI-24	5.0	2
Carbon Tetrachloride	5	1	1	5.00	5	MW-18B	2.5	5
1,1,2-Trichloroethane	5	1	1	trace	trace	MI-24	2.5	5 (p)

¹ Data available from four separate sampling rounds. Duplicate or split samples were averaged into the existing data set.

² Chemicals present above the detection limits in at least one sample. Other compounds analyzed for, but not detected, were not listed.

³ The detection limit used for the majority of analyses. The detection limit may vary for individual samples. For samples that were split and analyzed by the NH DES, the detection limit was lower.

⁴ Volatile organic compounds were detected in 140 of 201 samples. Detection frequency is the number of detections divided by 201. The sample mean is the geometric mean of all samples, when trace detections and non-detects are entered into the data set as 1/2 of the detection limit.

⁵ Proposed (p) maximum contaminant concentration under the Safe Drinking Water Act or health-based criteria (d) used by the NH DPHS.

POOR QUALITY
ORIGINAL

TABLE 2

SCREENING OF
MANAGEMENT OF MIGRATION ALTERNATIVES

<u>Alternative Group</u>	<u>Representative Alternative Retained Unless Noted</u>
MM-1	MM-1
MM-2	MM-2
MM-3A, 3B	MM-3
MM-3C	Not Retained for Detailed Analysis
MM-4	Not Retained for Detailed Analysis
MM-5, 6, 7, 7A	MM-7, 7A
MM-9, 9A	MM-9, 9A
MM-8, 10	MM-10
MM-11, 11A	MM-11, 11A
MM-12	Not Retained for Detailed Analysis

NOTE: Alternatives that have management strategies sufficiently similar to other alternatives were grouped together and a representative alternative brought forward for detailed analysis. The alternatives designated with an "A" are the same functional alternative as those with out an "A" but were analyzed in the FS Addendum with a change in treatment technology only.

TABLE 3

**Carcinogenic and Noncarcinogenic Risks from
Future Household Use of Groundwater**

Chemical	Concentration ($\mu\text{g/L}$)		Cancer Slope Factor (mg/kg/day) ⁻¹	Reference Dose (mg/kg/day)	Toxic Effect	Exposure Factor ^a (L/kg/day)	Cancer Risk ^b		Hazard Index ^c	
	AVG.	MAX.					AVG.	MAX.	AVG.	MAX.
Tetrachloroethylene	345	19000	0.051	0.01	liver	0.2	3.5E-04	1.9E-01	2.4	1300
Trichloroethylene	69	2300	0.011	---	---	0.2	1.5E-05	5.1E-03	00	00
1,1-dichloroethylene	28	46	0.60	0.009	liver	0.2	3.4E-04	5.5E-03	0.22	3.6
trans-1,2-dichloroethylene	49	1500	---	0.02	serum alk. phos.	0.2	00	00	0.17	53
1,1,1-trichloroethane	69	1300	---	0.09	liver	0.2	00	00	0.049	10
Benzene	26	67	0.029	---	---	0.2	1.5E-05	3.9E-04	00	00
Chromium (III)	8	141	---	1	body wgt.	0.2	00	00	0.0008	0.014
Chromium (VI)	8	141	---	0.005	lung	0.2	00	00	0.16	2.8
1,1-dichloroethane	3	110	---	0.1	skin	0.2	00	00	0.022	0.77
Methylene Chloride	3	10	0.0075	0.06	liver	0.2	3.8E-06	1.5E-05	0.029	0.12
Lead	31	160	---	0.001	CNS	2.9E-02	00	00	d	d
Arsenic	11	200	1.75	0.001	keratosis	2.9E-02	5.5E-04	1.0E-02	1.1	20
Beryllium	5	82	4.30	0.005	lung	2.9E-02	6.1E-04	1.0E-02	0.1	1.6
Nickel	14	165	---	0.02	body wgt.	2.9E-02	00	00	0.07	0.83
TOTALS							1.9E-03	2.2E-01	7.4	1400

^a Exposure Factor = 2 Liters/day/70 kg body weight = 0.029 Liters/day for metals. An additional factor of 6 (i.e. 6×0.029) assumed for volatilization during household use.

^b Cancer Risk = Slope Factor x Exposure Factor x Concentration

^c Hazard Index = (Concentration x Exposure Factor)/Reference Dose

^d No cancer slope factor or Reference Dose available. Lead levels exceed EPA's 6 Action Level.

TABLE 4

**Carcinogenic and Noncarcinogenic Risks from the
Potential Future Use of Groundwater for Irrigation**

Chemical	Concentration (mg/m ³) MAX.	Cancer Slope Factor (mg/kg/day) ⁻¹	Reference Dose (mg/kg/day)	Toxic Effect	Exposure Factor ^{a,b} (L/kg/day)	Cancer Risk ^c MAX.	Hazard Index ^d MAX.
1,1-dichloroethane	7.3E-04	---	0.10	skin	(0.018)	00	1.4E-04
1,1-dichloroethylene	3.6E-04	0.175	0.009	liver	0.008 (0.018)	5.11E-07	7.6E-04
trans-1,2- dichloroethylene	7.3E-04	---	0.02	serum alk. phos.	(0.018)	00	6.8E-04
Tetrachloroethylene	2.0E-02	0.00182	0.01	liver	0.008 (0.018)	2.87E-07	3.7E-02
1,1,1-trichloroethane	9.7E-04	---	0.3	liver	(0.018)	00	6.1E-05
Trichloroethylene	1.4E-03	0.00595	---	---	0.008	6.57E-08	---
TOTALS						8.64E-07	3.8E-02

- ^a Exposure Factor = (IR x EF x ED)/(BW x AT x 365 days/year) = 0.008 for carcinogens, 0.018 for noncarcinogens
where

IR = inhalation rate = 1 m³/hr

EF = exposure frequency = 120 days/year x 4 hours/day

ED = exposure duration = 30 years

BW = body weight = 70 kg

AT = average time = 70 years for carcinogens; 30 years for noncarcinogens

- ^b Exposure factors are given for carcinogens (noncarcinogens)

- ^c Cancer Risk = Slope Factor x Exposure Factor x Concentration

- ^d Hazard Index = (Concentration x Exposure Factor)/Reference Dose

TABLE 5

SAVAGE WELL SITE
Milford, New Hampshire

EXPOSURE TO VOLATILES IN AMBIENT AIR - SPRAY IRRIGATION

HYPOTHETICAL EXPOSURE PATHWAY: Inhalation of airborne chemicals from spray irrigation

Chemical	SF Inhal. CPF (mg/kg/day)* -	Weight of Evidence	Inhalation RID mg/kg/day	CA Air Conc. (mg/m ³)	IR Inhalation Rate (m ³ /hr)	ET Exposure Time (hr/day)	EF Exposure Frequency (days/year)	ED Exposure Duration (years)	RAF Relative Absorption	BW Body Weight (kg)	AT Averaging Period (years)	CDI Avg. Daily xp. - cance for Absorp. (mg/kg/day)	CDI adj. CDI adj.	Chemical Specific Risk	CDI Avg. Daily xp. - non cance for Absorp. (mg/kg/day)	CDI adj. CDI adj.	HQ Hazard Quotient
1,1-dichloroethane		C	0.1	7.3E-04	1	4	120	30	1	70	70	5.84E-06	no	0.00E+00	1.36E-05	no	1.4E-04
1,1-dichloroethane	0.175	C	0.009	3.6E-04	1	4	120	30	1	70	70	2.92E-06	no	5.11E-07	6.81E-06	no	7.6E-04
Tr-1,2-dichloroethane			0.02	7.3E-04	1	4	120	30	1	70	70	5.84E-06	no	0.00E+00	1.36E-05	no	6.6E-04
Tetrachloroethane	0.00182	B-2	0.01	2.0E-02	1	4	120	30	1	70	70	1.58E-04	no	2.87E-07	3.68E-04	no	3.7E-02
1,1,1-Trichloroethane			0.3	9.7E-04	1	4	120	30	1	70	70	7.81E-06	no	0.00E+00	1.82E-05	no	6.1E-05
Trichloroethane	0.00595	B-2		1.4E-03	1	4	120	30	1	70	70	1.10E-05	no	6.57E-06	2.58E-05	no	
Total														8.84E-07			3.8E-02

(file:1A61.wrt)

POOR QUALITY
ORIGINAL

TABLE 6
Carcinogenic and Noncarcinogenic Risks for
Current and Future Exposure to Trailer Park Brook
Surface Water and Sediment

Chemical	Surface Water Concentration (mg/L)		Sediment Concentration (mg/kg)		Cancer Slope Factor (mg/kg/day) ⁻¹	Reference Dose (mg/kg/day)	Toxic Effect	Cancer Risk		Hazard Index	
	AVG.	MAX.	AVG.	MAX.				AVG.	MAX.	AVG.	MAX.
Acetone	0.0172	0.0043	0.013	0.051	---	0.1	liver	00	00	4.1E-06	1.11E-05
1,1-dichloroethane	0.0025	0.0030	---	---	---	0.1	skin	00	00	6.5E-06	7.85E-06
Tetrachloroethylene	0.0075	0.0160	---	---	0.051	0.01	liver	8.5E-08	1.8E-07	00	1.66E-03
1,1,1-trichloroethane	0.0049	0.0200	---	---	---	0.09	liver	00	00	00	1.95E-04
Benzene	0.0027	0.0038	---	---	0.029	---	---	7.4E-09	1.0E-08	00	0.00
Styrene	0.0026	0.0028	---	---	0.03	0.02	blood/liver	7.4E-09	8.0E-09	00	1.66E-03
Trichloroethylene	0.0031	0.00865	0.0036	0.0109	0.011	---	---	5.6E-09	1.6E-08	00	00
Arsenic	---	---	1.4	4	1.75	0.001	keratosis	6.5E-07	1.9E-06	3.5E-03	1.01E-02
Beryllium	---	---	0.2	3	4.3	0.005	lung	2.3E-07	3.4E-06	1.0E-04	00
Cadmium	---	---	0.7	1	---	0.0005	kidney	00	00	3.5E-03	5.03E-03
Chromium	---	---	29.600	33.000	---	1	body wgt.	00	00	7.4E-05	8.3E-05
Chromium (VI)	---	---	29.600	33.000	---	0.005	lung	00	00	1.5E-02	1.7E-02
Lead	---	---	13.7	17	---	---	CNS	00	00	---	---
Nickel	---	---	15.900	18.000	---	0.02	body wgt.	00	00	2.0E-03	2.3E-03
Methylene Chloride	---	---	0.0079	0.026	0.0075	0.06	liver	---	---	7.4E-07	2.5E-06
Chloroform	---	---	0.0030	0.0053	0.0061	0.01	liver	1.3E-11	2.3E-11	1.7E-06	3.0E-06
TOTALS								9.8E-07	5.5E-06	3.7E-02	5.30E-02

Note: Risks combine exposure from two groups — young children (2-6 yrs) and older children (7-16 yrs). Exposure routes are dermal absorption from contact with surface water, ingestion of sediment and dermal absorption from contact with sediment. Exposure frequency assumed is 78 days per year. Details of absorption factors and contact rates for exposure to surface water and sediment can be found in Appendix D of the Risk Assessment.

* No cancer slope factor or Reference Dose available. Levels are below EPA's cleanup level policy values.

TABLE 7

**Carcinogenic and Noncarcinogenic Risks for
Potential Future Exposure to Surface Water and Sediment
at the Hitchiner/Hendrix Property**

Chemical	Surface Water Concentration (mg/L)		Sediment Concentration (mg/kg)		Cancer Slope Factor (mg/kg/day) ⁻¹	Reference Dose (mg/kg/day)	Toxic Effect	Cancer Risk		Hazard Index	
	AVG.	MAX.	AVG.	MAX.				AVG.	MAX.	AVG.	MAX.
Acetone	0.0574	0.300	0.037	0.213	---	0.1	liver	00	00	9.2E-06	4.9E-05
Arsenic	0.0030	0.005	6.4	11.2	1.75	0.001	keratosis	3.0E-06	5.2E-06	1.6E-02	2.8E-02
Benzene	0.0035	0.019	---	---	0.029	---	---	1.0E-08	5.4E-08	---	---
Chloroform	0.0027	0.007	0.0009	0.0232	0.0061	0.01	liver	1.3E-09	3.4E-09	9.7E-05	2.6E-04
Chromium	0.0040	0.018	301.2	621.0	---	1	body wgt.	00	00	7.6E-04	1.6E-03
Chromium (VI)	0.0040	0.018	301.2	621.0	---	0.005	lung	00	00	1.5E-01	3.1E-01
1,1-dichloroethane	0.0023	0.009	0.019	0.076	---	0.1	skin	00	00	7.7E-06	2.8E-05
Lead	0.0020	0.008	---	---	---	0.001	CNS	00	00	2.0E-05	7.9E-05
Methylene Chloride	---	---	0.012	0.232	0.0075	0.06	liver	6.1E-11	1.2E-09	---	2.2E-05
Nickel	0.0080	0.052	331.0	1830.0	---	0.02	body wgt.	00	00	4.2E-02	2.3E-01
PCB	---	---	1.010	8.800	7.7	---	---	9.6E-07	8.3E-06	---	---
Styrene	0.0032	0.02	---	---	0.03	0.2	blood/liver	5.5E-08	3.4E-07	4.2E-05	2.7E-04
Tetrachloroethylene	0.0046	0.029	0.006	0.007	0.051	0.01	liver	5.3E-08	3.3E-07	4.9E-04	3.0E-03
Toluene	---	---	0.036	3.000	---	0.3	liver/kidney	00	00	---	5.7E-05
1,1,1-trichloroethane	0.0144	0.26	0.012	0.320	---	0.09	liver	00	00	1.4E-04	2.6E-03
TOTALS								4.0E-06	1.4E-05	2.1E-01	5.8E-01

Note: Risks combine exposure from two groups — young children (2-6 yrs) and older children (7-16 yrs). Exposure routes are dermal absorption from contact with surface water, ingestion of sediment and dermal absorption from contact with sediment. Exposure frequency assumed is 78 days per year. Details of absorption factors and contact rates for exposure to surface water and sediment can be found in Appendix D of the Risk Assessment.

* No cancer slope factor or Reference Dose available. Levels are below EPA's cleanup level policy values.

TABLE 8
Carcinogenic and Noncarcinogenic Risks for
Potential Worker Exposure to
Sediment at the Hitchiner/Hendrix Property

Chemical	Sediment Concentration (mg/kg)		Cancer Slope Factor (mg/kg/day) ⁻¹	Reference Dose (mg/kg/day)	Toxic Effect	Exposure Factor ^{a,b} (mg/kg/day)	Cancer Risk ^c		Hazard Index ^d	
	AVG.	MAX.					AVG.	MAX.	AVG.	MAX.
Acetone	0.037	0.213	---	0.1	liver/kidney	(0.41)	---	---	1.5E-07	8.8E-07
Arsenic	6.4	11.2	1.75	0.001	keratosis	0.067 (0.12)	7.5E-07	1.3E-06	7.5E-04	1.3E-03
Chloroform	0.00088	---	0.0061	0.01	liver	0.235 (0.41)	1.3E-12	3.3E-11	3.6E-08	9.5E-07
Chromium	301.2	621.0	---	1	---	(0.12)	---	---	3.5E-05	7.3E-05
Chromium (VI)	301.2	621.0	---	0.005	---	(0.12)	---	---	7.1E-03	1.5E-02
1,1-dichloroethane	0.019	0.076	---	0.1	skin	(0.41)	---	---	7.8E-08	3.7E-07
Methylene Chloride	0.012	0.232	0.0075	0.06	liver	0.235 (0.41)	2.0E-11	4.1E-10	7.9E-08	1.6E-06
Nickel	331.0	1830	---	0.02	body wgt.	(0.12)	---	---	1.9E-03	1.1E-02
PCB	1.010	8.800	7.7	---	--	0.036	2.9E-07	2.5E-06	---	---
Tetrachloroethylene	0.006	0.007	0.051	0.01	liver	0.235 (0.41)	7.7E-11	8.7E-11	2.6E-07	3.0E-07
Toluene	0.036	3.000	---	0.3	liver/kidney	(0.41)	---	---	4.9E-08	4.1E-06
1,1,1-trichloroethane	0.012	0.320	---	0.09	liver	(0.41)	---	---	5.6E-08	1.5E-06
TOTALS							1.0E-06	3.8E-06	9.8E-03	2.7E-02

Note: See Appendix D for chemical specific absorption factors.

^a Carcinogens (noncarcinogens)

^b Exposure Factor (worker) = ((SIR + DIR) * F * D) / (BW * AT * 365 days/year)

SIR = soil ingestion rate (100 mg/day) * chemical specific absorption factor

DIR = dermal contact rate (500 mg/day) * chemical specific absorption factor

F = frequency = 30 days/year

D = duration = 40 years

BW = body weight = 70 kg

AT = average time = 70 years for carcinogens; 30 years for noncarcinogens

^c Cancer Risk = Slope Factor x Exposure Factor x Concentration

^d Hazard Index = (Concentration x Exposure Factor) / Reference Dose

TABLE 9

**Carcinogenic and Noncarcinogenic Risks from
Potential Exposure to Soils under Current Use
at Hitchiner/Hendrix**

Chemical	Soil Concentration (mg/kg)		Cancer Slope Factor (mg/kg/day) ^c	Reference Dose (mg/kg/day)	Toxic Effect	Exposure Factor ^{a,b} (mg/kg/day)	Cancer Risk ^c		Hazard Index ^d	
	AVG.	MAX.					AVG.	MAX.	AVG.	MAX.
Arsenic	8.7	15	1.75	0.001	keratosis	6.7E-02 (0.12)	1.0E-06	1.8E-06	1.0E-03	1.8E-03
Chromium (VI)	19.7	80.5	---	0.005	---	(0.12)	00	00	4.6E-04	1.9E-03
Lead	7.5	48	---e	---e	CNS	(0.12)	---	---	---	---
Mercury	0.1	0.275	---	0.0003	kidney	(0.12)	00	00	3.9E-05	1.1E-04
Nickel	16.2	50.9	---	0.02	body wgt.	(0.12)	00	00	9.5E-05	3.0E-04
PCB	0.500	24.00	7.7	---	---	8.3E-02	2.7E-07	1.5E-05	---	---
TOTALS							1.3E-06	1.7E-05	2.5E-03	9.7E-03

^a Exposure Factors for Carcinogens (Noncarcinogens)

^b Exposure Factor (worker) = ((SIR + DIR) * F * D) / (BW * AT * 365 days/year)
 SIR = soil ingestion rate (100 mg/day) * absorption factor
 DIR = dermal contact rate (500 mg/day) * absorption factor
 F = frequency = 40 days/year
 D = duration = 30 years
 BW = body weight = 70 kg
 AT = average time = 70 years for carcinogens, 30 years for noncarcinogens

^c Cancer Risk = (Exposure Factor x Concentration x Slope Factor) / 10⁶ mg/kg (correction factor)

^d Hazard Index = ((Exposure Factor x Concentration) / Reference Dose) / 10⁶ mg/kg

^e No cancer slope factor or Reference Dose available. Levels are below EPA's Cleanup Level Policy Values.

TABLE 10

**Carcinogenic and Noncarcinogenic Risks from
Future Potential Residential Exposure to Soils
at Hitchiner/Hendrix**

Chemical	Soil Concentration (mg/kg)		Cancer Slope Factor (mg/kg/day) ⁻¹	Reference Dose (mg/kg/day)	Toxic Effect	Exposure Factor ^{a,b} (mg/kg/day)	Cancer Risk ^c		Hazard Index ^d	
	AVG.	MAX.					AVG.	MAX.	AVG.	MAX.
Arsenic	8.7	15	1.75	0.001	keratosis	3.7E-01 (5.2)	8.3E-06	1.4E-05	4.5E-02	7.7E-02
Chromium (VI)	19.7	80.5	---	0.005	---	(5.2)	00	00	2.0E-02	8.3E-02
Lead	7.5	48	---e	---e	CNS	---	00	00	---	---
Mercury	0.1	0.275	---	0.0003	kidney	(5.2)	00	00	1.7E-03	4.7E-03
Nickel	16.2	50.9	---	0.02	body wgt.	(5.2)	00	00	4.2E-03	1.3E-02
PCB	0.5	24.0	7.7	---	---	4.1E-01	2.4E-06	1.2E-04	---	---
TOTALS							1.1E-05	1.3E-04	1.1E-01	4.3E-01

^a Exposure Factors for Carcinogens (Noncarcinogens)

^b Exposure Factor = ((SIR + DIR) * F * D) / (BW * AT * 365 days/year)

SIR = soil ingestion rate (200 mg for young child, 100 mg/day all others) * absorption factor

DIR = dermal contact rate * absorption factor

F = frequency = 160 days/year

D = duration = 5 years

BW = body weight = 17 kg for young child, 36 kg for older child

AT = average time = 70 years for carcinogens, 30 years for noncarcinogens

^c Cancer Risk = (Exposure Factor x Concentration x Slope Factor) / 10⁶ mg/kg (correction factor)

^d Hazard Index = ((Exposure Factor x Concentration) / Reference Dose) / 10⁶ mg/kg

^e No cancer slope factor or Reference Dose available. Soil concentrations are below EPA's Cleanup Level Policy.

TABLE 11

**Carcinogenic and Noncarcinogenic Risks from
Potential Exposure to Chemicals in Soils under Current Use
at OK Tool Area**

Chemical	Soil Concentration (mg/kg)		Cancer Slope Factor (mg/kg/day) ^c	Reference Dose (mg/kg/day)	Toxic Effect	Exposure Factor ^a (mg/kg/day)	Cancer Risk ^b		Hazard Index ^a	
	AVG.	MAX.					AVG.	MAX.	AVG.	MAX.
Arsenic	19	204	1.75	0.001	keratosis	1.0E-01 (1.18)	3.4E-06	2.1E-05	1.8E-02	2.0E-01
Cadmium	4.6	81	---	0.0005	kidney	(1.18)	00	00	8.9E-03	1.6E-01
Chromium (VI) †	---	10	---	0.005	---	(1.18)	00	00	---	2.0E-03
Lead	23	610	---	---	CNS	---	00	00	---	---
Mercury	0.02	0.21	---	0.0003	kidney	(1.18)	00	00	6.5E-05	6.8E-04
Nickel	117	1380	---	0.02	body wgt.	(1.18)	00	00	5.7E-03	6.7E-02
Acetone	0.31	0.31	---	0.1	liver/kidney	(2.97)	00	00	6.7E-06	6.7E-06
Carbon Tetrachloride	0.099	0.099	0.13	0.0007	liver	0.24 (2.97)	3.5E-09	2.6E-09	3.1E-04	3.1E-04
Methylene Chloride	0.0025	0.0025	0.0075	0.06	liver	0.24 (2.97)	5.1E-12	5.2E-09	9.1E-08	9.1E-08
PCB	4.70	10	7.7	---	---	8.7E-02	4.3E-06	3.8E-06	---	---
Tetrachloroethylene	0.006	0.44	0.051	0.01	liver	0.24 (2.97)	6.0E-09	1.3E-10	9.6E-05	1.3E-06
Toluene	0.02	0.02	---	0.3	liver/kidney	(2.97)	00	00	1.5E-07	1.5E-07
Trichloroethylene	0.006	0.006	0.011	---	---	0.24 (2.97)	1.8E-11	1.3E-11	---	---
TOTALS							7.7E-06	2.5E-05	3.2E-02	4.2E-01

^a Exposure Factor = ((SIR + DIR) * F * D) / (BW * AT * 365 days/year)

SIR = soil ingestion rate * absorption factor (200 mg/day for young children, 100 mg/day for older; for absorption factors see Appendix D of Risk Assessment)

DIR = dermal contact rate * absorption factor (500 mg/day)

F = frequency = 30 days/year

D = duration = 5 years

BW = body weight = 17 kg for young children, 36 kg for older children

AT = average time = 70 years for carcinogens, 5 years for noncarcinogens

^b Cancer Risk = Slope Factor x Exposure Factor x Concentration

^c Hazard Index = (Concentration x Exposure Factor) / Reference Dose

^d No cancer slope or Reference Dose available. Levels within EPA Cleanup Level Policy Values.

TABLE 12

**Carcinogenic and Noncarcinogenic Risks from
Potential Exposure to Chemicals in Soils under Future Residential Use
at OK Tool Area**

Chemical	Soil Concentration (mg/kg)		Cancer Slope Factor (mg/kg/day) ⁻¹	Reference Dose (mg/kg/day)	Toxic Effect	Exposure Factor ^a (mg/kg/day)	Cancer Risk		Hazard Index	
	AVG.	MAX.					AVG.	MAX.	AVG.	MAX.
Arsenic	19	204	1.75	0.001	keratosis	5.3 (5.4)	1.4E-05	1.3E-04	1.1E-01	1.1E+00
Cadmium	4.6	81	---	0.0005	kidney	(5.4)	00	00	5.4E-02	8.4E-01
Chromium (VI) †	---	10	---	0.005	---	(5.4)	00	00	---	1.1E-02
Lead	23	610	---c	---c	CNS	c	00	00	---	---
Mercury	0.02	0.21	---	0.0003	kidney	(5.4)	00	00	3.9E-04	3.6E-03
Nickel	117	1380	---	0.02	body wgt.	(5.4)	00	00	3.4E-02	3.6E-01
Acetone	0.0131	0.31	---	0.1	liver/kidney	(5.4)	00	00	1.7E-06	1.8E-05
Carbon Tetrachloride	0.0042	0.099	0.13	0.0007	liver	5.3(5.4)	5.1E-10	1.1E-08	8.0E-05	1.6E-03
Methylene Chloride	0.0025	0.0025	0.0075	0.06	liver	5.3(5.4)	1.8E-11	1.6E-11	5.5E-07	4.8E-07
PCB	4.70	10	7.7	---	---	6.2	1.7E-05	3.5E-06	---	---
Tetrachloroethylene	0.0067	0.006	0.051	0.01	liver	5.3(5.4)	3.2E-10	2.5E-10	8.8E-06	7.0E-06
Toluene	0.0035	0.02	---	0.3	---	(5.4)	00	00	1.5E-07	7.7E-07
Trichloroethylene	0.0026	0.006	0.011	---	---	5.3	2.7E-11	5.4E-11	---	---
TOTALS							3.1E-05	1.3E-04	2.0E-01	2.3E+00

^a Exposure Factors for Carcinogens (Noncarcinogens)

^b Exposure Factor = ((SIR + DIR) * F * D) / (BW * AT * 365 days/year)

SIR = soil ingestion rate * absorption factor (ingest. rate = 200 mg/day for young child, 100 mg/day for all others)

DIR = dermal contact rate * absorption factor

F = frequency = 160 days/year

D = duration = 5 years

BW = body weight = 17 kg for young child, 36 kg for older child

AT = average time = 70 years for carcinogens, 30 years for noncarcinogens

^c No cancer slope or Reference Dose available. Contaminant levels are within EPA's Cleanup Policy Values.

TABLE 13

**Carcinogenic and Noncarcinogenic Risks from
Exposure to Ambient Air - Present Use**

Chemical	Concentration (mg/m ³)		Cancer Slope Factor (mg/kg/day) ¹	Reference Dose (mg/kg/day)	Toxic Effect	Exposure Factor ^{a,b} (mg/kg/day)	Cancer Risk ^c		Hazard Index ^d	
	AVG.	MAX.					AVG.	MAX.	AVG.	MAX.
Acetone	8.7E-05	3.1E-03	---	0.1	liver	(1)	00	00	8.7E-04	3.1E-02
Methylene Chloride	2.5E-06	2.2E-03	---e	0.06	---	(1)	1.2E-09	1.0E-06	4.2E-05	3.7E-02
Tetrachloroethylene	1.1E-05	1.2E-02	0.0018	---	liver	0.28	5.5E-09	6.0E-06	---	---
1,1,1-trichloroethane	2.7E-03	2.1E-02	---	0.3	liver	(1)	00	00	8.9E-03	6.9E-02
TOTALS							6.6E-09	7.0E-06	9.8E-03	1.4E-01

^a Exposure Factors for Carcinogens (Noncarcinogens)

^b Exposure Factor = (IR x EF x ED)/(BW x AT x 365 days/year) = 0.28

where

For Carcinogens:

IR = inhalation rate = 0.83 m³/hr

EF = exposure frequency = 365 days/year x 24 hours/day

ED = exposure duration = 70 years

BW = body weight = 70 kg

AT = average time = 70 years

For Noncarcinogens:

IR = 0.42 m³/hr

EF = same as carcinogens

ED = 1 year

BW = 10 kg

AT = 1 year

^c Cancer Risk = Slope Factor x Exposure Factor x Concentration

^d Hazard Index = (Concentration x Exposure Factor)/Reference Dose

^e Unit risk is 4.7E-07 per µg/m³

† Endnote for Tables 9 and 10 for OK Tool Soils re: chromium

Hexavalent chromium concentrations are the results from special analytical techniques used on the additional soil samples collected at the OK Tool Property during the Feasibility Study to determine how much, if any, of the total chromium was present in the hexavalent state. Because of its toxicity, hexavalent chromium is the form of chromium of importance in evaluating health risks. The additional samples were collected only in the areas where maximum total chromium was found during the Remedial Investigation; therefore, only a maximum concentration is presented.

SAVAGE MUNICIPAL WATER SUPPLY SUPERFUND SITE

APPENDIX C

ARARS CHART

LOCATION-SPECIFIC ARARS

Federal - Executive Order 11988 - 40 CFR Part 6, Appendix A
Floodplain Management

Applicable

Requires federal agencies to take action to reduce the risk of flood loss, to minimize impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.

Measures will be developed to ensure that the construction and operation of the facility does not adversely affect the floodplain and that the facility is designed to withstand any adverse impact from a 100-year flood.

Federal - Executive Order 11990 - 40 CFR Part 6, Appendix A
Protection of Wetlands

Applicable

Requires federal agencies, to the extent possible, to conduct activities to avoid the long- and short-term adverse impacts associated with the destruction or modification of wetlands.

Actions will be taken to minimize the potential harm to the wetlands, to avoid adverse effects to the wetlands, and to mitigate any impact on the wetlands.

Federal - 40 CFR 230
Clean Water Act - Guidelines for Specification of Disposal
Sites for Dredged or Fill Material

Applicable

No discharge of dredged or fill material is allowed if there is a practicable alternative having less adverse impact on the aquatic ecosystem so long as the alternative does not have other significant adverse environmental consequences.

Remedial activities will comply with these regulations.

Federal - 16 U.S.C. 661
Fish and Wildlife Coordination Act

applicable

Requires federal agencies to consider the effect that water-related projects will have upon fish and wildlife and to take action to prevent loss or damage to those resources.

Contact with appropriate federal agencies will be maintained during construction and operation of the on-site treatment system(s).

State - RSA 485-A:17
Dredging and Control of Run-off

Env-Ws Part 415
Dredging Rules

Applicable

Establish criteria for conducting any activity in or near state surface waters which significantly alters terrain or may otherwise adversely affect water quality, impede natural runoff or create unnatural runoff. Activities within the scope of these provisions include excavation, dredging, filling, mining, and grading of topsoil in or near wetland areas.

Any significant excavation in or around the Souhegan River or other large surface water bodies on-site will be coordinated through NHDES and in accordance with all requirements of this regulation.

State - RSA 482-A; Env-Wt Parts 300-400, 600
Criteria and Conditions for Fill and Dredge in Wetlands

Applicable

Regulate filling and other activities in or adjacent to wetlands, and establish criteria for the protection of wetlands from adverse impacts on fish, wildlife, commerce, and public recreation.

All activities within the on-site wetland and floodplain areas will comply with the wetlands protection requirements.

State - He-P 1905.09

Hazardous Waste Facility Siting Criteria

Relevant and appropriate

Owners and operators required to identify whether the facility is or will be located within a 100-year floodplain. Flood control measures must be identified. Similarly, new facilities located within 3,000 feet of faults displaced in Holocene times must show that no faults pass within 200 feet of the facility.

Siting of the treatment facility will be done in accordance with these regulations.

CHEMICAL-SPECIFIC ARARS

Federal - 40 CFR 141.11 - 141.16

Safe Drinking Water Act - Maximum Contaminant Levels

Relevant and Appropriate

MCLs have been promulgated for a number of common organic and inorganic contaminants. These levels regulate the concentration of contaminant in public drinking water supplies, but may also be considered relevant and appropriate for groundwater aquifers potentially used for drinking water.

MCLs will be attained in the groundwater.

Federal - 40 CFR 141.50 - 141.51

Safe Drinking Water Act - Maximum Contaminant Level Goals

Relevant and Appropriate

Non-enforceable health-based limits set at a level at which no adverse effects on a person's health exist. For non-carcinogens where the MCLG is set at a threshold level above zero, the MCL is nearly always set at the same level as the MCLG. For carcinogens, many MCLGs are set at zero.

Since MCLs exist for the contaminants of concern in the groundwater and those MCLs will be attained by the implementation of the remedy within 25 to 90 years, the MCLGs set at 0 will not be attained.

Federal - 33 USC 304(a)(1)

Clean Water Act - Ambient Water Quality Criteria -
Protection of Freshwater Aquatic Life, Human Health - Fish
Consumption

Relevant and Appropriate

AWQC are health-based criteria developed for chemical constituents in surface water. They have been developed to protect aquatic life and human health from harmful effects due to exposure to chemically impacted surface water. AWQC can be more stringent than MCLs if it is necessary to protect aquatic organisms. The more stringent AWQC for aquatic life will be relevant and appropriate under certain circumstances.

Federal - 40 CFR Part 50
Clean Air Act - National Ambient Air Quality Standards

Relevant and Appropriate

Define levels of air quality necessary to protect public health with an adequate margin of safety. Secondary standards define levels of air quality necessary to protect public welfare from any known or anticipated adverse effects of a pollutant.

The on-site air stripper will have its off-gas treated to ensure that any discharge to the ambient air meets pertinent regulations.

Federal - U.S. EPA Reference Doses (RfDs)

To be considered

Dose levels developed by EPA to protect sensitive individuals over the course of a life-time. RfDs reflect a daily exposure level likely to be without appreciable risk of adverse health effects.

These standards have been considered in the determination of cleanup levels.

Federal - U.S. EPA Carcinogen Assessment Group Potency Factors

To be considered

Cancer potency factors are developed by EPA from the Health Effects Assessment (HEA) (U.S. EPA, 1985) or from evaluations by the Carcinogen Assessment Group (CAG) (U.S. EPA, 1985)

These standards have been considered in the determination of cleanup levels.

State - Env-Ws 410.05(e)
Health-based Groundwater Protection Standards

To be considered

Provide that groundwater shall not contain any substance which the Water Supply and Pollution Control Division determines may be harmful to human health or the environment. In determining applicable standards, WSPCD may refer to health advisory limits established

by the New Hampshire Division of Public Health Services.

Require remedial action to eliminate discharge of substances which may be harmful to health or the environment, and which may include substances exceeding the 10^{-6} cancer risk health advisory limits established by DPHS.

State - Env-Ws 410.09
Criteria for Groundwater Discharges

Applicable

Establishes groundwater discharge criteria which include MCLs and MCLGs adopted by the Water Supply and Pollution Control Division.

Require remedial action to eliminate discharge of contaminants including VOCs and inorganic contaminants resulting in groundwater contamination above State MCL and MCLG levels.

State - Env-Ws Parts 315-317
Drinking Water Quality Standards - Maximum Contaminant Levels and Maximum Contaminant Level Goals

Relevant and Appropriate

New Hampshire MCLs establish levels of contaminants allowable in public water supplies. They are generally equivalent to the MCLs established by the Safe Drinking Water Act.

Allowable levels will be attained in the effluent discharge from the groundwater treatment system. Allowable levels will be attained in the aquifer within 25 to 90 years.

State - Env-Ws 432
Surface Water Quality Standards

Applicable

Establish water quality criteria for toxic substances. The criteria are essentially the same as the federal ambient water quality criteria. Criteria are established for fresh and marine waters.

Discharge to surface waters in or adjacent to the site must meet these standards.

State - Env-A 300, Parts 303 and 304
Ambient Air Quality Standards

Relevant and Appropriate

Set primary and secondary ambient air quality standards equivalent to federal standards. The standards do not allow significant deterioration of existing air quality in any portion of the state for particulate matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, hydrocarbons, lead, and fluoride.

The on-site air stripper will have its off-gas treated to ensure that any discharge to the ambient air meets pertinent regulations.

State - Env-A 1300
Toxic Air Pollutants

Applicable

Establishes ambient air limits for 74 chemicals. Ambient air limits (AALs) are levels at or below which ambient air concentrations of a respective air contaminant will not adversely affect human health.

Any discharge to the ambient air from the on-site air stripper will meet the pertinent regulations.

ACTION-SPECIFIC ARARS

Federal - 40 CFR Part 262, Subparts A-D

RCRA - Standards Applicable to Generators of Hazardous Waste

Applicable

Establishes manifesting, pre-transport, and recordkeeping and reporting requirements for generators of hazardous waste.

Any hazardous waste shipped off-site will comply with these requirements.

Federal - 40 CFR Part 122

EPA Administered Permit Programs: The National Pollutant Discharge Elimination System

Applicable

Basic permitting requirements for the discharge of pollutants from any point source into waters of the United States.

Effluent from the treatment system will meet the substantive requirements of the NPDES program.

Federal - 33 CFR Parts 320-329

Regulation of Activities Affecting Waters of the United States

Applicable

U.S. Army Corps of Engineers permit program identifying federal statutes, policies, and procedures applicable to:

- dams or dikes;
- other structures or work including excavation, dredging and/or disposal activities;
- activities that alter or modify course, condition, location, or capacity;
- construction of artificial diversions or other devices;
- discharges of dredged or fill material;
- transport of dredged material for disposal in ocean waters;
- nationwide general permits.

Any remedial activities such as the installation of discharge or collection pipes conducted along the Souhegan River will comply with these regulations.

Federal - 40 CFR Part 61

National Emission Standards for Hazardous Air Pollutants

Applicable

Establishes standards for emissions of designated hazardous air pollutants.

Emissions from the on-site air stripper will comply with all pertinent standards.

State - RSA 485-A:13; Env-Ws 410

Protection of Groundwater

Applicable

Regulates discharge to groundwater and provides for groundwater protection. Prohibits discharge of hazardous waste to groundwater or any discharge to groundwater that results in a degradation of surface water quality in adjacent surface waters. Prohibits alteration of groundwater so as to make it unsuitable for drinking water.

Discharges to the groundwater will meet pertinent standards.

State - RSA 485-A:12

Water Pollution and Waste Disposal

Applicable

Prohibits the disposal of wastes in a manner lowering the quality of any surface water below the minimum requirements of the surface water classification. Specific standards for classification of surface waters are found at RSA 485-A:8.

Discharges from the treatment system will meet all federal and state discharge standards and will not have any adverse impact on receiving surface water bodies.

State - New Hampshire Administrative Code Env-Wm, c. 500
Manifesting Requirements

Applicable

Requirements for manifesting and recordkeeping.

Shipments of treatment residuals from the site will be properly manifested and handled in accordance with these regulations.

State - New Hampshire Administrative Code Env-Wm, c. 500
Packaging and Labeling Requirements

Applicable

Requirements for labeling and packaging shipments of hazardous waste.

Shipments of treatment residuals from the site will be properly labeled and packaged in accordance with these regulations.

State- New Hampshire Administrative Code Env-Wm, c. 500
Standards for Generators

Applicable

Establishes requirements for generators of hazardous waste including persons transporting treatment residuals.

Generators of hazardous waste will obtain a generator ID number and will perform recordkeeping in accordance with these regulations.

State - New Hampshire Administrative Code Env-A, Part 1002
Fugitive Dust Emission Control

Applicable

Requires precautions to prevent, abate, and control fugitive dust during specified activities including excavation, construction, and bulk hauling.

Necessary precautions to control fugitive dust emissions will be implemented during and after site remediation.

State - New Hampshire Administrative Code Env-A, Part 1204
Control of VOC Emissions

Applicable

Specifies VOC emission control methods and establishes limitations on VOC emissions for various process categories.

Precautions will be taken during excavation and grading to minimize VOC emissions. Controls will be placed on all air emissions from the treatment equipment to minimize VOC emissions to the ambient air.

State - Env-Ws 346, 347, and 700
Sewage and Wastewater Treatment Systems - Best Available Technology

Applicable

Requires use of best available technology when treating organic and inorganic contaminants in wastewaters.

Remedial activities aimed at achieving MCLs for organic and inorganic contaminants will use the best available technology.

State - Env-A, Part 800
Testing and Monitoring Procedures

Applicable

Require emission testing and ambient air quality monitoring. Establish procedures for VOC testing and Continuous Emission Monitoring.

Remedial measures generating air emissions will be tested to ensure the attainment of pertinent standards.

State - Env-A, Part 900
Owner and Operator Obligations

Applicable

Require owners and operators of sources discharging air pollutants to keep records of quantities of pollutants emitted. Identify general and VOC record keeping requirements.

Operational records for the treatment facility will be maintained.

State - Env-We 604
Abandonment of Wells

Applicable

Abandoned wells must be sealed to prevent the entry of contaminants into the groundwater.

Once monitoring wells are no longer needed, the wells will be sealed.

State - RSA 125-C; Env-A 604-606
Air Pollution Control

Relevant and Appropriate

Establishes standards for the release of air emissions including VOC's and hazardous air pollutants. Applicable standards include the most stringent of the following requirements:

- 1) New source performance standards (40 CFR Part 60);
- 2) National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61);
- 3) New Hampshire State Implementation Plan limits.

Discharges of contaminants to the air from treatment operations shall be restricted and treated to ensure that no regulatory air discharge limits are exceeded.

SAVAGE MUNICIPAL WATER SUPPLY SUPERFUND SITE

APPENDIX D

RESPONSIVENESS SUMMARY

S U P E R F U N D

**Responsiveness Summary
Savage Municipal Water Supply Site
Milford, New Hampshire**

September 1991

Table of Contents

Preface	1
I. Overview of Remedial Alternatives Considered in the Feasibility Study	2
II. Site History and Background on Community Involvement and Concerns	3
III. Summary of Comments Received During the Public Comment Period and EPA Responses	4
Part A — Citizen Comments	4
Part B — State Comments	29
Part C — Potentially Responsible Party Comments	30
IV. Remaining Concerns	39
Attachment A	
Formal Community Relations Activities Conducted To Date at the Savage Municipal Water Supply Superfund Site	
Attachment B	
Transcript of the July 29, 1991 Informal Public Hearing	
Attachment C	
Paul Harvey Article and EPA Region X Response	
Attachment D	
Figure 1 from the July 1991 Proposed Plan	

Preface

The U. S. Environmental Protection Agency (EPA) held a public comment period from July 12, 1991 to August 10, 1991 to provide an opportunity for interested parties to comment on the Remedial Investigation (RI), Feasibility Study (FS), and the Proposed Plan prepared for the Savage Municipal Water Supply Superfund site in Milford, New Hampshire. The FS examines and evaluates various options, called remedial alternatives, to address groundwater contamination at the site. EPA identified its preferred alternative for addressing groundwater contamination in the Proposed Plan issued in July 1991, before the start of the public comment period. All documents for the site were placed in an Administrative Record for public review. The Administrative Record is a collection of all documents considered by EPA in choosing the remedy for the site. The Administrative Record was made available at the EPA Records Center at 90 Canal Street in Boston, Massachusetts, and at the Wadleigh Memorial Library at 21 Nashua Street in Milford.

The purpose of this Responsiveness Summary is to document EPA responses to the questions and comments raised during the public comment period. EPA considered all of these questions and comments before selecting the final remedial alternative to address contamination at the Savage Municipal Water Supply Superfund site. Details of EPA's decision on the cleanup remedy itself are contained in the Record of Decision of which this Responsiveness Summary is a part.

I. Overview of Remedial Alternatives Considered in the Feasibility Study

Based on the results of the RI and Risk Assessment, EPA developed the following cleanup objectives for groundwater at the site:

- Prevent ingestion of contaminated groundwater that would pose an unacceptable risk to human health; and
- Restore groundwater quality to meet federal and state Applicable or Relevant and Appropriate Requirements (ARARs).

EPA screened and evaluated a total of 17 potential cleanup alternatives for the site in the FS. The FS describes the remedial alternatives considered as well as the screening criteria used to narrow the list to 11 potential remedial alternatives. The Proposed Plan and the FS should be consulted for a detailed explanation of these remedial alternatives.

Preferred Alternative. EPA's preferred alternative, MM-11A, has three components: 1) extraction of 1100 gallons per minute (gpm) of contaminated groundwater from five new wells and from the Savage Well itself; 2) treatment of the extracted water to federal and state drinking water standards by air stripping and carbon adsorption or by ultraviolet-oxidation; and 3) discharge of the treated water into the Souhegan River, to the Hitchiner-Hendrix discharge stream, or to the aquifer. The preferred alternative would treat the most concentrated portions of the plume near OK Tool and Hitchiner, much of the extended plume south of the river, and the most contaminated portions of the plume north of the river. Some portions of the extended plume will be allowed to naturally attenuate. Institutional controls will be implemented to restrict access to the groundwater. Long-term monitoring will be conducted. Remediation will take 15-60 years to complete.

Other Alternatives. The ten other remedial alternatives considered in detail by EPA are described briefly below.

Alternative 1: No Action No removal, containment, or treatment of contaminated groundwater would take place. Long-term monitoring would be conducted. Remediation would take at least 100 years to complete.

Alternative 2: Limited Action Institutional controls would be implemented to restrict access to the groundwater. The entire plume would be allowed to naturally attenuate, and no groundwater removal, containment, or treatment would be performed. Long-term monitoring would be conducted. Remediation would take at least 100 years to complete.

Alternative 3/3A: The concentrated portions of the plume near OK Tool and Hitchiner would be treated at a rate of 400 gpm, but the remainder of the plume would naturally attenuate. Institutional controls and long-term monitoring would be included. Groundwater would be treated by either air stripping alone (3), or air stripping and ultraviolet oxidation (3A). Remediation would take 25-90 years to complete.

Alternative 7/7A: The concentrated portions of the plume near OK Tool and Hitchiner and the middle section of the extended plume would be treated at a rate of 1225 gpm. The remainder of the plume would naturally attenuate. Institutional controls and long-term monitoring would be included. Groundwater would be treated by either air stripping alone (7), or air stripping and ultraviolet oxidation (7A). Remediation would take 15-65 years to complete.

Alternative 9/9A: The concentrated portions of the plume near OK Tool and Hitchiner and almost all of the extended plume south of the river would be treated at

a rate of 1150 gpm. The remainder of the plume would naturally attenuate. Institutional controls and long-term monitoring would be included. Groundwater would be treated by either air stripping alone (9), or air stripping and ultraviolet oxidation (9A). Remediation would take 20-85 years to complete.

Alternative 10: The concentrated portions of the plume near OK Tool and Hitchiner and almost all of the extended plume south of the river would be treated at a rate of 2975 gpm. The remainder of the plume would naturally attenuate. Institutional controls and long-term monitoring would be included. Groundwater would be treated by air stripping alone. Remediation would take 10-30 years to complete.

Alternative 11 This alternative is the same as the preferred alternative except that air stripping alone would be used for groundwater treatment. No ultraviolet oxidation would be used for groundwater treatment.

II. Site History and Background on Community Involvement and Concerns

Site History

The Savage Municipal Water Supply site is located in the town of Milford, New Hampshire, about two miles west of the town center. The area around the site includes residences, farms, and light and heavy industry.

Four major industrial plants are situated to the west of the Savage Well: Hendrix Wire and Cable Corporation; Hitchiner Manufacturing Company, Inc.; OK Tool Company; and New England Steel Fabricators, Inc (NESFAB). From the 1940s until the 1980s, process waters and wastes from these plants were released untreated onto the ground or into the Hitchiner/Hendrix discharge stream which flows into the Souhegan River.

In 1983, a New Hampshire Department of Environmental Services (NHDES) inspection of the OK Tool plant found that a degreasing tank had been directly connected to a drain in the plant floor, and that the area located north of the plant showed signs that oily wastes and other materials had been disposed of onto the ground. NHDES ordered OK Tool to cease the discharge of any waste and to begin an investigation to determine the extent of the contamination.

In 1983, as part of a routine sampling of water supplies, NHDES analyzed water from the Savage Well and found several volatile organic compounds (VOCs) above drinking water standards. These VOCs, which are commonly used as solvents, were also found in the water from the well supplying the nearby mobile home park. The Savage Well and the trailer park well were shut down because the water was unsafe to drink. The 75 residents of the mobile home park were connected to the town's water supply using EPA Superfund emergency funding.

In 1984 the Savage Municipal Water Supply site was placed on EPA's National Priorities List (NPL) of hazardous waste sites under the Superfund program.

In 1985, EPA notified OK Tool, Hitchiner, Hendrix, and NESFAB that they may have contributed to the site contamination and therefore are Potentially Responsible Parties (PRPs). In 1987, these four PRPs signed a legal settlement in which they agreed to perform the RI and FS for the site under EPA supervision. The studies began in 1988 and are now complete.

Community Involvement and Concerns

Community concern surrounding the contamination and EPA's activities at the site was moderate until the release of the Proposed Plan. Approximately 45 people attended the August 1990 public meeting on the results of the RI. Comments received at that meeting focused on the following issues:

- Delays in construction of a replacement for the North Street Bridge;
- Risks posed by commercial/industrial use of the OK Tool property;
- Potential reuse of the contaminated aquifer as a water supply;
- Rights and liabilities of landowners on the site; and
- Potential migration of groundwater contamination.

Following the release of the Proposed Plan, community concern increased dramatically. On May 28, 1991 EPA held a public informational meeting to present the Proposed Plan and more than 200 people attended, many of whom were employees of the site PRPs. Public comments at that meeting focused on the potential economic stress the cleanup might place on the PRPs. In general, the audience was critical of the amount of money required for EPA's preferred alternative and questioned EPA's choice of the preferred alternative over other less costly alternatives. They were also concerned over the proportion of the cleanup cost that Hitchiner and Hendrix might have to bear, and they expressed the opinion that these two PRPs should only have to bear costs in proportion to their contribution to the contamination problem. Only one resident spoke in direct support of EPA's cleanup effort.

A complete list of community relations activities conducted at the site is included in Attachment A at the end of this document.

III. Summary of Comments Received During the Public Comment Period and EPA Responses

This Responsiveness Summary addresses the comments received by EPA concerning the FS and Proposed Plan for the Savage Municipal Water Supply Superfund site in Milford, New Hampshire. Forty-one sets of written comments were received during the public comment period (July 12 - August 10, 1991). These included a statement signed by 66 employees of Hitchiner's Littleton plant. Thirty-six people provided oral comments at the July 29, 1991 informal public hearing, which was attended by more than 230 persons. In addition to residents, commentators included representatives of the Town of Milford, neighboring towns, and some of the PRPs. Many of those making comments were employees of Hitchiner or Hendrix. A copy of the transcript of the public hearing is included as Attachment B.

A. Citizen Comments

Many of the comments received during the comment period were associated with the overall cost of the proposed remedy, and particularly with who ultimately would have to bear that cost. The commentators expressed fears that the financial impact on Hitchiner and Hendrix of implementing the proposed remedy could drive both industries out of business with disastrous financial and social impact on the Town of Milford and its residents.

EPA understands the fears and concerns expressed by the public, particularly given the current economic climate in southern New Hampshire as well as in most of the northeast. EPA is bound by federal law to select remedies that comply with specific criteria set forth in

the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). One such criterion is that the remedy accomplish the environmental objectives of the statute in a cost-effective way. EPA believes that the selected remedy is cost-effective in that it achieves environmental protectiveness within an acceptable period of time at a cost that is proportional to the protection it affords.

The remedy selection process is distinct from the process whereby EPA seeks to hold responsible parties liable for the cleanup costs. EPA may not properly base a remedy selection decision on the financial circumstances of particular responsible parties. In negotiating with the responsible parties for performance of the remedy and for payment of response costs, however, EPA can and will take into account any information relating to ability to pay that the negotiating parties choose to bring to EPA's attention.

EPA acknowledges the high level of public interest in this site and appreciates the level of concern that has been shown by the community. Public participation is vital to the cleanup process that Congress envisioned under CERCLA. EPA encourages the community to remain actively involved with the site as it moves into the Remedial Design and Remedial Action phases of the cleanup.

The comments from citizens given at the public hearing and in writing are summarized below along with EPA responses. The comments are organized in the following categories:

Impact of the Cost of the Cleanup on Local Employers and the Community
Source of the Contamination
PRP Negotiations and Cost Allocation
Preferred Alternative
Other Issues

Impact of the Cost of the Cleanup on Local Employers and the Community

COMMENT 1: A State Senator, the Milford Selectmen, a former Milford Selectman, the Littleton Selectmen, and many citizens from Milford and other towns stated that they were greatly concerned over the possibility that Hitchiner and Hendrix might go out of business and/or lay off large numbers of employees if they must bear most of the financial burden for the cleanup. They felt such layoffs would have a severe negative impact on the towns where Hitchiner plants are located. Statements from the Littleton Selectmen and a number of employees from the Hitchiner plant in Littleton described the importance of Hitchiner to Littleton and expressed their desire to see Hitchiner remain a financially stable company in the state. A citizen commented that protection of the environment should include consideration of the quality of life and the health of the economy in the local community. The Milford and Amherst Selectmen stated that EPA must consider the impact of EPA's decisions at the site on the entire community, not just the PRPs. The Milford Selectmen stated that the choice of remedy and the allocation of financial liability for the site cleanup must cause no harm to the town, its taxpayers, or its tax base; and pose no threat to the viability, marketability, and financial soundness of Hitchiner, Hendrix, and other parties. Many citizens commented that the health of the entire community will be determined by EPA's decisions regarding the site cleanup. One citizen commented that a clean aquifer is not worth the loss of any of the town's major employers or the unemployment and depopulation of the town that would result from such a loss. The Milford Selectmen noted that the town's already strained finances would be severely affected by the additional services and benefits that would be required by the unemployed workers and by the loss of tax revenues. A member of the Milford Planning Board commented that, if Hitchiner and Hendrix shut down, approximately one fourth of the households in the town would be directly affected and that a 30% increase in taxation would result. One citizen commented that Hitchiner was already

financially strained and that any additional burden could produce layoffs. Two citizens expressed fear that such layoffs would drive their families into poverty; one asked whether this potential impact disturbed EPA. One citizen suggested that EPA staff does not have sympathy for those who may be laid off because EPA staff are well paid professionals, established in their fields, and would never be faced with requiring welfare assistance for their families. A citizen requested that EPA decision makers consider how they would feel if a government agency came to their town and made a decision they considered very unfair and that would ruin the employment base and the property values in their town.

RESPONSE: EPA acknowledges the concerns expressed at the public hearing and in the letters EPA has received. EPA recognizes the community's apprehension over potential employment losses, the town's tax base, the quality of life, and the economic health of the region. In keeping with CERCLA's mandate, EPA's goal in selecting the remedy for the site is to protect public health and the environment and to clean the aquifer in a reasonable time. Under CERCLA, cost is also one of the criteria for consideration in the selection of a remedy. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) provides that costs shall be considered in relation to the overall effectiveness of the alternatives in order to determine which alternatives offer results proportional to their costs such that they represent a reasonable value for the money. The NCP further explains that alternatives providing effectiveness and implementability similar to that of other alternatives, but at greater cost, may be eliminated.

In proposing alternative MM-11A as the remedy for this site, EPA was careful to select the lowest cost remedy that would achieve the cleanup goals. The well placement strategy embodied in alternative MM-11A was designed to capture the areas of highest contamination with the fewest possible number of wells. Alternative MM-11A also employs the best and most cost-effective treatment methods available today. EPA rejected other more aggressive treatment alternatives in favor of the one that struck the best balance between cost and overall effectiveness. EPA understands the interest of the community in knowing precisely how the funding of the selected remedy will be allocated. CERCLA provides for a negotiating period during which EPA and the PRPs work together to achieve a mutually acceptable agreement for the funding of the cleanup. However, negotiations cannot begin until the remedy has been selected. Therefore, EPA is unable to say at this time precisely how the remedy will be funded.

COMMENT 2: *A citizen commented that an expedient resolution of the cleanup method and liability issues will be crucial to the future prosperity of the community because only when these matters are resolved will local businesses be able to plan and grow.*

RESPONSE: EPA is committed to working toward an expedient implementation of the selected remedy as well as resolution of the liability issues at the site.

COMMENT 3: *A resident stated that EPA's cost estimates for the preferred alternative did not take into account the possibility that the treatment plants may run much longer than 30 years and that costs would continue to affect Hitchiner and Hendrix during that time.*

RESPONSE: EPA's cost estimates for the remedial alternatives that were evaluated in the Feasibility Study (FS) were calculated in the same manner based on a 30 year operating time. A 30 year time frame was selected for two reasons: (1) achieving the site cleanup goals would be likely to take 30 years or more for any of the alternatives, and (2) costs beyond thirty years do not have a significant value in terms of today's dollars as illustrated in Section 4.5 of the FS. Converting future expenditures to values in today's dollars is called net present value analysis. The fundamental question answered by net present value analysis is what amount of money must be invested today at an assumed interest rate (10%) to assure full funding over

the lifetime of a given alternative. All of the total costs for the alternatives were converted to their net present value for comparison. The impact of costs beyond 30 years on net present values can be shown by the following example: the net present value of MM-11A over 60 years is \$16.3 million while its net present value over 30 years is \$15.5 million. As demonstrated in this example, costs beyond 30 years may be funded with only a relatively small investment in today's dollars. Net present value analysis is used because it takes into account the fact that money may be invested over time. Simply multiplying the annual operation and maintenance cost of an alternative by the number of years over which it will operate does not reflect the fact that money available today is more valuable than the same amount of money in the future. Therefore it is not as realistic a method of comparing the total cost of different alternatives as net present value analysis.

COMMENT 4: One citizen stated that government should be encouraging companies to strive and grow and, in particular, to build overseas business to secure the economic health of the state and nation rather than forcing management to expend their resources trying to defend the company against prosecution for crimes they did not commit. The Milford Cabinet also noted that Hitchiner and Hendrix produce products that the nation needs.

RESPONSE: EPA acknowledges the public's concern over the nation's economic health. Through the enactment of environmental laws, Congress has established that the protection of public health and the environment are also national priorities. In enacting CERCLA, Congress created a scheme for the selection of remedies and for the allocation of costs associated with cleaning up hazardous waste sites. That scheme takes into account economic concerns. EPA is required to carry out the program established in CERCLA.

COMMENT 5: The Milford Cabinet asked how much damage EPA has done to the nation's economy by forcing current landowners to pay for pollution caused by former owners. The paper also asked how many industrial properties remain unsold and unused due to the risk of liability for the cleanup of existing contamination.

RESPONSE: EPA acknowledges the public's concern over the nation's economy. However, there is little agreement on the effects of specific factors on the national economy. Although CERCLA's primary mandate is to protect public health and the environment, another goal of the program is to encourage sound waste management practices by private industry.

COMMENT 6: The Littleton Selectmen stated that the funding for the technology to be used in the cleanup should be "amortized" over a time period sufficient to allow the companies involved to remain viable.

RESPONSE: In the context of settlement negotiations, EPA will entertain any good faith proposals for PRP-financing of the remedy. EPA will consider economic viability issues raised by the parties involved in the negotiations.

Source of the Contamination

COMMENT 7: A citizen asked what information EPA has regarding the hazardous waste handling and disposal practices of other firms and individuals in the site area who could have contributed to the contamination. The citizen asked EPA to identify others in the area who might be PRPs. He also asked whether EPA was planning to name any additional PRPs and why EPA has not pursued any other persons or companies located near the site.

RESPONSE: EPA's enforcement process for this site, including the search for other PRPs, is continuing. Because the process is not complete, EPA cannot comment on the investigations at this time.

COMMENT 8: *Many citizens stated the belief that the vast majority or all of the contamination in the aquifer originated from OK Tool, based on the site studies in 1983 as well as more recent RI/FS work. One resident asked why EPA has not publicly identified OK Tool as being responsible for 95 percent to 100 percent of the pollution in the Savage Well. He suggested that EPA had not made this public statement because EPA wishes to implicate PRPs who are financially solvent, and therefore, potentially able to pay for the cleanup.*

RESPONSE: The purpose of the RI/FS process is to determine the nature and extent of contamination, assess potential risks to human health and the environment, and, if necessary, develop alternatives for site cleanup. In determining the extent of contamination, the RI does attempt to determine the physical location of contamination and the direction of its movement. This information has been documented in the site reports which are available to the public. However, the RI/FS process itself does not draw any conclusions regarding who was responsible for causing the contamination or who is financially liable for the cleanup.

Through its enforcement process, EPA develops a list of PRPs that may be responsible for the site contamination. However, CERCLA provides that the question of financial liability for site cleanups will be resolved through negotiations, settlements, and, potentially, court decisions. Until those processes have concluded, EPA is unable to predict which parties will pay what amount of the cleanup costs. Enforcement investigations are continuing and new information may become available that will affect the final allocation of financial liability.

COMMENT 9: *Several citizens commented that OK Tool was the only one of the four major PRPs that used tetrachloroethene (PCE), one of the contaminants found at the site.*

RESPONSE: Based on information available at this time, Hitchiner also used a relatively small quantity of PCE at its Milford plant. However, records for all of the PRPs may not be complete throughout the entire history of their operations in the area. As noted above, EPA's enforcement investigations are continuing and may result in additional information regarding the past chemical use and disposal practices at Hitchiner, Hendrix, OK Tool, and NESFAB.

COMMENT 10: *A resident commented that, prior to construction of the new water pollution building, Hitchiner disposed of large quantities of waste chemicals into floor drains and the Hitchiner/Hendrix discharge stream and, therefore, Hitchiner should be held responsible for 90 percent of the cost of the cleanup.*

RESPONSE: As noted above, EPA's enforcement investigations are continuing and may result in additional information regarding the past chemical use and disposal practices at Hitchiner, Hendrix, OK Tool, and NESFAB. EPA welcomes any additional information regarding past chemical handling and disposal practices at these plants or any other facilities near the site which may have impacted the aquifer. Anyone wishing to discuss such information is encouraged to contact Richard Goehlert at (617) 573-5742. The issue of financial liability, however, is a matter for future negotiations between EPA and the PRPs.

The PRP Negotiations and Cost Allocation

***COMMENT 11:** A State Senator requested that the public be given the opportunity to comment on the process that will determine financial responsibility for the cleanup. A resident asked whether the final amounts to be paid by each PRP for the site cleanup will be made public, noting that the community has a right to know this information.*

RESPONSE: Although the actual negotiations with the PRPs are conducted in private, the public is given an opportunity to comment on the settlement agreement. After an agreement is reached, the government lodges the consent decree in federal district court as well as providing notice of the consent decree in the *Federal Register*. Upon publication of the notice in the *Federal Register*, the public has 30 days in which to submit written comments. EPA is required to respond to the comments. The court will review both the public comments and EPA's response to those comments before deciding whether the settlement is in the public interest. EPA may take additional steps to keep the community informed about these events due to the high level of public interest exhibited during the RI/FS process. Such steps could include the mailing of a notice of any settlement and related public comment period to the site mailing list.

***COMMENT 12:** A State Senator, a State Representative, the Milford Selectmen, the Littleton Selectmen, and many citizens commented that EPA should take a balanced approach to assigning liability for the cleanup so that the liability of the various PRPs at the site would be proportional to the extent of the pollution caused by each PRP. The Milford Selectmen and many citizens commented that holding Hitchiner and Hendrix responsible for the entire cleanup would be unfair and not in the spirit of current legislation. One citizen asked whether EPA would consider it fair if Hitchiner and Hendrix were required to pay for the cleanup when OK Tool is clearly the cause of most of the pollution. Many citizens commented that OK Tool should be forced to pay most or all of the cleanup costs. Several citizens added that the unfairness would be exacerbated by the fact that there is no guarantee that the preferred alternative will achieve the cleanup goals.*

RESPONSE: EPA acknowledges the community's concern over the fairness of the final apportionment of the cleanup costs. Current legislation (CERCLA) provides that EPA may seek recovery of all of the costs of the site investigation and cleanup from any of the PRPs if the harm to the environment cannot be divided among the PRPs in any meaningful way. Federal courts have held that the PRPs, not EPA, must prove that responsibility for the contamination can be divided among the PRPs. At this time, EPA has not made any determination regarding the allocation of responsibility at this site, and EPA may not make any such determination in the future. It should be noted that under CERCLA one PRP may sue another PRP, or other parties not named as PRPs, to recover costs for the site investigation and cleanup.

Based on site studies and experience at similar sites, EPA believes that the remedy will be effective. EPA acknowledges that complete success can never be guaranteed.

***COMMENT 13:** The Milford Selectmen, the Littleton Selectmen, a former Milford Selectman, and many citizens stated that Superfund money should be used to pay the difference between what Hitchiner and Hendrix have offered to pay and the total cost of the remedy if financial contributions from other PRPs are not available. Several citizens stated that only Superfund monies should be used for the cleanup.*

RESPONSE: CERCLA and EPA policy require that EPA seek either performance of or funding for the site investigations and cleanup from the PRPs before committing any Superfund monies to the site. However, CERCLA also provides for mixed funding, which is

the use of Superfund monies to fund a portion of the cleanup. Mixed funding may be considered where some PRPs are unknown or insolvent, or where some PRPs refuse to settle through the negotiation process. In considering the appropriateness of mixed funding at a site, EPA considers several factors including the strength of EPA's liability case against the PRPs, demonstrated cooperation and good faith on the part of the settlors during negotiations, and the amount of the portion for which the Superfund will be responsible. Because the negotiating process has not yet started, it is premature for EPA to make any statements at this time regarding the potential use of Superfund monies to fund the cleanup at this site. More information on EPA's guidelines for mixed funding are available in the EPA memorandum "Evaluating Mixed Funding Settlements Under CERCLA" dated October 20, 1987.

COMMENT 14: *Several citizens asked why EPA will not publicly discuss who is going to pay for the cleanup given that EPA is going to decide unilaterally the nature of the remedial action to be performed. The Milford Selectmen stated that they could not perform a comprehensive review of EPA's cleanup proposal because information regarding the financial liability allocation process for the cleanup and the decision-making rules, authority, and eligibility for the use of the Superfund were withheld from the Selectmen and the public by EPA.*

RESPONSE: As discussed previously, funding of the cleanup will be determined through upcoming negotiations between the PRPs and EPA. Those negotiations will be conducted pursuant to CERCLA § 122. As required by CERCLA, EPA's goal is to have the cleanup fully funded by those parties responsible for the contamination at the site. Liability for contamination at Superfund sites is determined pursuant to CERCLA § 107.

EPA's decision-making rules, EPA's statutory authority, and the rules governing eligibility for use of the Superfund are embodied in CERCLA, the NCP, and other EPA guidance which are all public documents.

COMMENT 15: *The Milford Selectmen requested that the town be a party to the negotiations on the apportionment of the cleanup costs.*

RESPONSE: Those negotiations will be held between EPA and the PRPs in private. One of the reasons for the negotiations being held in private is that the PRPs may wish to maintain confidentiality regarding some of the information revealed in the negotiations. The town would only become a party to the negotiations if the town were named as a PRP; that is, if EPA determined that the town was potentially liable for site cleanup costs pursuant to CERCLA. At this time, EPA does not intend to name the town as a PRP.

COMMENT 16: *A citizen asked what measures EPA had taken to ensure that OK Tool assets will be available to help pay for OK Tool's share of the cleanup costs. The resident also asked whether NESFAB assets could be used to cover a portion of the costs. (Other residents asked why EPA allowed the original owners of OK Tool to sell the company when EPA knew a cleanup would be necessary.) She also alleged that EPA is unwilling to pursue the previous owners of OK Tool, and would instead rather pursue Hitchiner for the cost of the cleanup and thereby force the plant to shut down and lay off all of the workers. She stated that allowing the former owners of OK Tool to keep their assets while forcing Hitchiner to shut down is not fair and that the assets of the former owners of OK Tool should be sold to fund the cleanup.*

RESPONSE: The sale of OK Tool does not render its owners and former owners and operators immune from liability under CERCLA. As part of the enforcement process, EPA is currently investigating the fate of OK Tool's assets. Because this process is ongoing, EPA cannot comment on it at this time. EPA's policy, however, is to seek funding for site cleanups from all PRPs if possible. If a PRP declares bankruptcy, EPA may become one of

the creditors and may still recover costs. Thus, NESFAB assets may eventually be used to pay for a portion of the cleanup.

COMMENT 17: *A State Representative, the publisher of the Milford Cabinet, and many citizens recommended that EPA accept the Hitchiner and Hendrix funding and treatment proposal because it is generous, effective, and reasonable. The Representative noted that by law, if EPA cannot force OK Tool to pay for their share of the contamination, Superfund money must be used to complete the cleanup. He also stated that the amount the two companies had offered to pay was in excess of their share of the responsibility for the pollution. A citizen suggested that the Hitchiner/Hendrix proposal would be the best alternative for treatment until EPA was certain that a more extensive program of treatment would be necessary and effective.*

RESPONSE: The Hitchiner/Hendrix proposal was premature because the formal negotiation period for the site has not yet started. CERCLA and the NCP provide for a special notice from EPA to the PRPs inviting them to submit a proposal either to fund the site cleanup or to undertake the job themselves. This notice is usually sent after the cleanup method has been determined because until that time, there is no firm plan about which to negotiate. Following receipt of the special notice, the PRPs have 60 days in which to present to EPA a proposal for the site cleanup. If EPA determines that the submitted proposal is a good faith offer, EPA will extend the negotiation period for an additional 60 days. If the PRPs are unable or unwilling to perform or to finance the cleanup, EPA may use Superfund monies to fund all or part of the cleanup. EPA may then seek in court to recover the Agency's costs. Please see the response to Comment 13 for a discussion of the use of Superfund monies to finance cleanups.

Since EPA has not made any determination regarding the level of each PRP's responsibility for the site contamination, EPA cannot comment on whether or not the Hitchiner/Hendrix proposal is in proportion to their responsibility for the site contamination.

EPA believes that studies from other sites and existing data from the RI/FS for this site show that implementation of alternative MM-11A would be effective in protecting clean areas of the aquifer from contamination and in achieving a cleanup of the contaminated aquifer within a reasonable period of time.

COMMENT 18: *A citizen asked for an explanation of the rationale EPA would use to justify forcing Hitchiner and Hendrix to remediate the PCE plume given that neither of the companies used PCE in their production processes.*

RESPONSE: EPA understands that the public is very concerned over the outcome of the upcoming negotiations between EPA and the PRPs. However, because the negotiations for funding the cleanup have not yet begun, EPA cannot provide any information on the outcome of those negotiations, including the rationale for any agreements that may be reached. Any discussion of such topics would be premature at this time.

COMMENT 19: *Two residents commented that EPA regulations seem to exempt companies that have gone out of business from responsibility for remediating the pollution they caused. The Milford Cabinet stated that EPA's failure to explain the cost allocation process left the impression in the community that EPA will apportion the cleanup costs based on ability to pay rather than on the contribution made to the pollution. The Milford Selectmen stated that an assessment based on ability to pay is not acceptable to the community. Many citizens commented that Hitchiner and Hendrix should not be held responsible for the cleanup cost only because they are the sole companies remaining in business. One resident stated that Hitchiner ships over \$50 million in products each year and can therefore afford to pay for their past environmental mistakes and carelessness.*

RESPONSE: CERCLA § 107 confers liability on four classes of persons. Ability to pay and financial solvency are not considered in determining Superfund liability.

The apportionment of the costs among the PRPs will be reached through a negotiation process which has not yet begun. EPA expects to enter into negotiations over the cost of the cleanup with all of the PRPs. Ability to pay and financial viability are factors that will be considered during those negotiations.

COMMENT 20: *A citizen commented that an unfair decision on cost allocations by EPA would result in a lengthy legal battle that only would delay the cleanup of the site and be counterproductive to EPA's objectives at the site.*

RESPONSE: CERCLA provides for a negotiations and settlements between PRPs and EPA in an attempt to avoid lengthy and costly legal battles. If EPA and the PRPs cannot reach an agreement, EPA may either (1) order the PRPs to perform the cleanup and collect fines of up to \$25,000 per day if they refuse, or (2) if the PRPs refuse the order, perform the cleanup using Superfund monies and sue the PRPs to recover the cost plus triple that amount in fines. Thus, the PRPs have incentives to settle early in the process.

COMMENT 21: *A citizen commented that CERCLA may need to be changed if it causes innocent parties to be financially liable for environmental contamination.*

RESPONSE: CERCLA does not cause innocent parties to be financially liable for environmental contamination. Rather, CERCLA specifically confers liability on four classes of people:

- a) current owners and operators of a facility;
- b) people who at the time of the disposal of hazardous substances owned or operated the facility at which such hazardous substances were disposed of;
- c) generators of hazardous substances;
- d) transporters of hazardous substances who select the disposal or treatment facility.

CERCLA also protects innocent landowners from liability for environmental contamination. Pursuant to § 101(35)(A), an innocent landowner is a person who acquired by inheritance or bequest the property after the disposal of hazardous substances, or a person who acquired the property after the disposal of hazardous substances and who did not know or had no reason to know that hazardous substances were disposed of on the property.

COMMENT 22: *A resident asked whether Superfund would pay the cost of the cleanup or whether local taxes would be used to cover portions of the cost. Another resident stated that placing the financial burden of the cleanup on local taxpayers would not be fair.*

RESPONSE: EPA will seek to recover cleanup costs from the PRPs in accordance with CERCLA. As EPA has not named the town as a PRP, there is no reason to expect local taxes to be used to fund the cleanup.

COMMENT 23: *A resident noted that EPA has told the town it has a groundwater problem and exactly how EPA will solve that problem without consulting the town about either the problem or the solution. He stated that, if EPA uses Superfund monies to achieve EPA's goals, the townspeople will be fully supportive.*

RESPONSE: During the recent public comment period, EPA solicited comments from the town on EPA's field investigation results, risk assessment, and proposed remedy for the site. EPA has made available all of the site reports for review by the town at the local library, and EPA has also been available for discussions with the town regarding the site.

As stated previously, one of Congress's aims in creating CERCLA was to promote a polluter-pay policy. Funding the cleanup entirely through Superfund monies without attempting to obtain contributions from the PRPs would be contrary to the mandate of CERCLA.

Preferred Alternative

COMMENT 24: A State Senator and several citizens commented that a phased approach to the cleanup would be more economical for reasons including: 1) the lack of an immediate threat to human health or need for the water supply, 2) the fact that the proposed recovery technology is unproven, and 3) the likelihood that less expensive treatment methods will be developed in the foreseeable future. A resident also stated that a faster remedy would not be superior if free phase DNAPLs exist. The State Senator and the publisher of the Milford Cabinet suggested that institutional controls should be implemented and the site allowed to naturally attenuate for a period of time. They proposed that at some later date the site could be re-evaluated and, if progress is not satisfactory, a more aggressive cleanup program could be started. Another citizen also asked why EPA has not proposed a phased implementation program for the remedy and whether a phased approach will be considered by EPA in the future. One citizen proposed limiting the remedial action to containment of the concentrated plume until the pump and treat system has been proven effective or until a more effective and less expensive method of solving the problem has been found.

RESPONSE: EPA believes that a phased cleanup would be inappropriate at this site because the recovery technology proposed by EPA is proven. Based on results at other sites, EPA believes that the proposed treatment technologies will accomplish the cleanup objectives at this site.

If free phase DNAPLs do exist, EPA does not contemplate that the remedy will substantially change, except perhaps for the duration of the treatment of the concentrated plume. EPA is confident that containment of the concentrated plume is possible, and therefore that cleanup of the extended plume is feasible even if free phase DNAPLs exist in the concentrated plume.

EPA agrees that there is no data showing an immediate threat to human health if the groundwater is not consumed, or any urgent need for the aquifer as source of drinking water. EPA has incorporated these facts into the design of the remedy by not choosing the most aggressive cleanup alternatives.

EPA cannot fail to take action at a Superfund site today on the premise that some new technology may become available in the future. A phased approach would only delay the restoration of the aquifer.

Please also see Comment 106.

COMMENT 25: A State Senator commented that he felt the preferred alternative may either fail to achieve EPA's cleanup goals or prove to be more elaborate and expensive than is necessary.

RESPONSE: EPA recognizes the public's concern over the uncertainties involved in the cleanup. Nevertheless, EPA believes that MM-11A will achieve the cleanup goals at the least possible cost, as discussed in Section IX of the ROD.

COMMENT 26: Several citizens requested that EPA work with Hitchiner, Hendrix, and the community in formulating a final cleanup and funding plan for the site that will address threats to both the natural environment and the community.

RESPONSE: EPA has selected a remedy in accordance with the procedures and criteria set forth in CERCLA and the NCP. EPA now intends to work with the PRPs to fund the cleanup through the upcoming formal negotiation process.

COMMENT 27: *Two citizens requested the engineering justification for the two wells at the end of the plume across the river given that these wells will be pumping water with only very dilute concentrations of PCE. One commentor noted that less than one cubic inch of contaminant would be recovered by these wells per day of pumping and that the total volume of contaminants recovered from these two wells would be less than one half of one percent of the total volume of contaminants that would be recovered from all of the wells in the preferred alternative. He also noted that, if all of the contaminants in the northern portions of the aquifer discharge into the Souhegan River, they would quickly be diluted to concentrations below parts per trillion. He commented that the Hitchiner/Hendrix cleanup proposal would recover 97 percent of the contaminants that would be recovered by the preferred alternative. He added that to spend limited resources on such a small amount of additional recovery would be a crime. He stated that he did not wish PRP, local, state, or federal funds to be squandered in this manner.*

RESPONSE: EPA has found contamination across the river near the location of the two wells in question at about 600 ppb, or more than 100 times the Safe Drinking Water Act Maximum Contaminant Level (MCL) for PCE. This represents a high level of contamination. Thus, EPA believes the selection of a remedy including wells on the north side of the river is a prudent choice.

Although it may constitute a small percentage of the total contaminants recovered by the remedy, the one cubic inch per day of pure PCE referenced in the comment above is sufficient to contaminate approximately 865,000 gallons of water to 5 ppb, the MCL for PCE. The protection achieved is therefore significant. In devising Alternative MM-11A, EPA carefully located the extraction wells according to the size and location of the contamination problem. The two wells on the north side of the river were included to ensure treatment of only the most seriously contaminated portions of the aquifer in that area.

COMMENT 28: *A citizen asked for a justification of the additional expense that would be required to construct and operate EPA's preferred alternative instead of MM-5 as proposed by Hitchiner and Hendrix.*

RESPONSE: At a conceptual level, MM-5 is essentially the same as MM-7, which was considered in the detailed analysis of alternatives. Both treat the concentrated plume and the middle section of the extended plume. The principle difference between MM-7/7A and MM-11A is that MM-11A includes wells on the north side of the river. The justification for these wells is provided in the response to Comment 28 above.

COMMENT 29: *A citizen asked what treatment technologies have been successful at similar Superfund sites around the country and whether the treatment technology proposed by EPA is considered current. In particular she asked whether bio-remediation and in-situ treatments have been successful. She also asked whether EPA would work with the PRPs to ensure that the technology used in the site cleanup is current and reasonable.*

RESPONSE: The proposed technologies are being successfully applied at a number of sites in North America and are considered to be current. Within EPA Region I, air stripping is currently being used at Superfund sites in Groveland and Acton, Massachusetts. Ultraviolet oxidation has been successfully pilot tested at a Woburn, Massachusetts Superfund site and is expected to be in operation by the end of the year.

Based on current information, bio-remediation technologies and other in-situ methods are not sufficiently advanced or proven to warrant their recommendation as treatment alternatives at this site.

Since the PRPs prepared the FS, EPA has been working with them to ensure that the treatment technologies to be used are current and cost effective. EPA hopes to maintain a productive working relationship with the PRPs throughout the implementation of the remedy

COMMENT 30: The Milford Selectmen commented that restoring the aquifer to drinking water standards may not be necessary because the aquifer is not currently used as a drinking water supply, other water supplies are available for use by the town in the future, and state regulations may not allow the use of the aquifer due to the nearby industrial, commercial, and agricultural land uses. A citizen also commented that the aquifer would never be used again as a drinking water source due to adjacent land uses.

RESPONSE: EPA concurs that the aquifer is not currently a drinking water source, but disagrees that this fact constitutes a reason for allowing it to remain contaminated. The contamination, if left untreated, may spread to portions of the aquifer that are currently used for drinking, including portions of the bedrock aquifer. The aquifer could also be used as a drinking water supply in the future. EPA's national groundwater policy requires the cleanup of such aquifers, if practicable, within a time frame that is reasonable. This policy only considers the availability of alternative water sources a factor in determining the time frame for the cleanup, not whether a cleanup should be conducted. EPA policy states that reasonable time periods may range from very rapid (one to five years) to relatively extended (perhaps several decades). The selection of Alternative MM-11A, with a restoration time of three to six decades, is consistent with the nation's goals for groundwater restoration and protection.

The state has not ruled out the future use of the aquifer as a drinking water supply. The state's groundwater policy is that all of New Hampshire's groundwater should be considered a potential drinking water source. According to a letter from the state to the Milford Selectmen (7/11/91), "The recently enacted Groundwater Protection Act, RSA 485-C, clearly established that the best use of all state groundwater is drinking water supply, and that all potential contamination source activities shall be conducted so as to eliminate or minimize the threat of groundwater contamination, regardless of where those activities are located . . . Although the aquifer in the vicinity of the Savage Well may remain unsuitable for drinking without treatment for a long period of time, the ultimate goal must remain restoration to drinking water quality." EPA has considered the state's classification of the aquifer in the selection of a remedy for the site, and EPA's remedy is consistent with the state's groundwater policy.

COMMENT 31: The Milford Selectmen commented that EPA has not given sufficient consideration to their projections of water use and supply in determining whether the town may ever need to use the aquifer for drinking water in the future. The Selectmen stated that Milford's water supply is adequate well into the next century (2037+), and they provided worst case scenario projections to document this assertion. The Selectmen also stated that substantial additional amounts of water could be drawn from the Curtis well field, from the Penechuck Water Works, and from the neighboring Town of Amherst. The Selectmen concluded that the cleanup need not take place at an accelerated rate in order to supply the town with drinking water, and that EPA should consider this fact in selecting a final remedy for the site. Many citizens agreed, stating that a longer cleanup period than EPA proposed would be more appropriate.

RESPONSE: MM-11A will achieve drinking water standards in the aquifer within approximately 15-60 years, that is, by approximately 2051. Thus, EPA's cleanup time frame matches well with conservative local projections of potential water demand for the community.

COMMENT 32: *A resident commented that the Proposed Plan appeared to contradict itself on the issue of whether or not free phase DNAPLs exist.*

RESPONSE: There is circumstantial evidence for the existence of free phase DNAPLs. However, no free phase DNAPLs actually have been discovered in the field at this site.

COMMENT 33: *A citizen asked whether EPA's preferred alternative would cost between \$30 million and \$45 million or more over the next 20 to 30 years.*

RESPONSE: EPA's estimate of the net present value of MM-11A for 30 years is \$15.5 million based on a \$2.4 million capital cost and a \$1.4 million annual operation and maintenance cost. This cost estimate is designed to be within a range of -30 percent to +50 percent. Thus the maximum expected net present value would be \$23.3 million.

COMMENT 34: *A citizen asked whether heavy metals would be removed from the treated water to levels that meet drinking water standards, and, if not, what is the purpose of removing the volatile contaminants if the water remains undrinkable due to high concentrations of metals.*

RESPONSE: Metals, as well as organic contaminants, will be removed from the groundwater by treatment to drinking water standards if the treated water is recharged into the ground or the Hitchiner/Hendrix discharge stream, or to standards for the protection of aquatic life if the water is discharged to the Souhegan River.

COMMENT 35: *A citizen asked whether EPA or the state will eventually approve the Savage Well as a drinking water source if the treatment of the extended plume proves effective, but the contamination in the concentrated plume cannot be entirely removed. The Milford Cabinet asked whether the state would permit use of the aquifer as a municipal water supply if the aquifer is cleaned.*

RESPONSE: EPA does not have the authority to approve a municipal drinking water source. This authority rests with the state. Once the extended plume is clean, EPA would allow the removal of institutional controls restricting use of the groundwater whether or not the concentrated plume has been fully restored to drinking water standards, provided that such use of the groundwater would not interfere with any continued treatment of the concentrated plume. EPA cannot predict whether the state would approve of the use of the Savage Well as a drinking water source in the future. However, the state does currently consider the aquifer at the site to be a potential future source of drinking water.

COMMENT 36: *A citizen commented that the failure of the preferred alternative to address bedrock groundwater contamination at the site is a major flaw in EPA's cleanup plan. He stated that some kind of action should be added to the preferred alternative to treat the contaminated bedrock groundwater and thereby protect clean bedrock groundwater.*

RESPONSE: EPA disagrees; the remedy does adequately address bedrock groundwater contamination. The operation of the extraction and treatment system contained in MM-11A will greatly decrease the amount of contamination entering the bedrock aquifer. This will allow the bedrock contamination to attenuate naturally while the overburden cleanup is in operation. EPA will monitor bedrock contamination at the site to ensure that the natural

attenuation is progressing as expected. EPA will also monitor bedrock groundwater in areas not affected by the contamination to ensure that the bedrock contamination is not spreading.

COMMENT 37: *A citizen commented that a report from the U.S. Department of Energy's Oak Ridge National Laboratory concluded that pump and treat is an ineffective method for restoring aquifers to "health based levels" and may, in some cases, do more environmental harm than good. He stated that action on the extended plume should be put on hold because the treatment technology has not been proven to work and another branch of the federal government has stated that it will not work.*

RESPONSE: The conclusions of the Oak Ridge report (ORNL/TM-11866) are debatable. The study was not an evaluation of pump and treat technology, but rather a generalized status report of groundwater remediation at a variety of sites. The report does not include site specific in-depth analyses of factors that can inhibit remedial progress such as hydrogeological complexity, the nature of contaminants, and the adequacy of remedial design. Therefore, it is not applicable to the cleanup EPA plans for this site. EPA is aware of and participating in research on pump and treat technologies. Information to date indicates that pump and treat is very effective in containing or capturing contaminant plumes and is effective in remediating dissolved-phase contamination.

COMMENT 38: *A citizen stated that the Hitchiner/Hendrix proposal would accomplish all of EPA's important cleanup objectives including the protection of public health and the containment of the concentrated plume while having much less of an impact on wetlands than the preferred alternative.*

RESPONSE: The Hitchiner/Hendrix proposal, outlined in a letter dated 5/28/91, primarily addresses funding for the treatment of the relatively small 1,1,1-trichloroethane (TCA) plume and would fund only operation of groundwater treatment at the Savage Well for 20 years. As PCE is the most dangerous and widespread contaminant, and PCE cleanup is likely to take longer than 20 years, the Hitchiner/Hendrix proposal would fail to meet EPA cleanup objectives for almost the entire site.

COMMENT 39: *The owner of property near the site stated that he is opposed to any pumping on his land on North River Road because he believes that pumping the groundwater from his land would spread the contamination rather than contain it.*

RESPONSE: At this time, EPA's remedy does not include pumping from the land mentioned by this commentor, which is located north across the river from the drive-in theater. In general, pumping of the extraction wells will spread the contamination to a limited extent. However, pumping the water from downgradient well locations is the only technologically feasible method of achieving a site cleanup through treatment. Pumping sufficient amounts of contaminated water against the natural direction of groundwater flow would be hydrologically impossible.

COMMENT 40: *A resident expressed support for the preferred alternative and a total cleanup of the site for the benefit of future generations.*

RESPONSE: EPA acknowledges the comment.

COMMENT 41: *A resident expressed doubt that the preferred alternative would be able to clean the aquifer given that the problem above the fish pond and hatchery will not be addressed and could spread to further contaminate the area EPA is attempting to remediate.*

RESPONSE: The Remedial Design phase of the cleanup will specify the location of extraction wells to ensure that all significant contamination in the area of the fish hatchery will be captured and treated. The remaining contamination would attenuate naturally within a reasonable period of time.

COMMENT 42: *The Milford Selectmen stated that human exposure to unsafe groundwater is not a significant possibility. They argue that all of the area in the contaminant plume south of the Souhegan River is served by town water and is zoned to prohibit residential uses and restrict any development in the wetlands or floodplain. They state that residential lands north of the river, according to the RI and FS, are protected from contamination by natural geologic and hydraulic boundaries in the aquifer. They also note that the impact of the plume on the river will be negligible due to the volume of water in the river. They conclude that it is unlikely that the plume will travel beyond the river at harmful levels. The Selectmen stated that the omission of an analysis of the Souhegan River after the SG-5 sampling point and Hartshorn Mill Brook limits EPA's ability to determine the nature of the aquifer/river interaction. They conclude that further research may be necessary to determine whether a potential threat to human health exists on the north side of the river, but that existing information indicates that no human health threat exists. The Selectmen state that EPA should reassess the method and timetable for site cleanup in light of these conclusions.*

RESPONSE: Zoning is not a reliable control on land use for the 100+ year time frames needed by the less rapid cleanup alternatives. Zoning may be changed by future governments for reasons not anticipated at this time.

Domestic wells located north of the river have not shown any contamination to date, but their use constitutes a potential risk. Those wells will be monitored since there is no guarantee that the existing water quality will persist, especially if more residential development occurs. It should be noted that, in some areas, the plume has already traveled beyond the Souhegan River at concentrations above MCLs (see figure in Attachment D).

Although current river water quality appears not to be adversely impacted by contaminated groundwater, there is insufficient data to conclude that the leading edge of the plume is stationary. The extent of the contaminated groundwater discharge zone to the river and resulting impact on surface water quality will require further evaluation during remedial design.

COMMENT 43: *The attorney for the farmer of the corn field on the site stated that the farmer plans to continue cultivation of that land. The attorney commented that this use of the land benefits the community and the state. The attorney stated that the farmer objects to any intrusions into the agriculturally significant portions of the property for the purposes of construction of the preferred alternative. The attorney stated that any such intrusion should be accompanied by a simple and fair plan to compensate the farmer for his financial loss and that any intrusion should be undertaken in a way so as to minimize that loss. The attorney noted that the farmer is not in a position to pursue the PRPs for any loss he may suffer.*

RESPONSE: EPA recognizes the value of the farmland to both the farmer and the community. The remedy requires that necessary construction minimize the impact on the farmland and wetlands in the area. The Remedial Design phase of the cleanup will investigate the potential impact of any construction on the farmland and wetlands. Mitigation measures will be taken to protect the agricultural productivity of the farmland. Such measures should be effective.

COMMENT 44: *The attorney for the farmer of the corn field on the site stated that the proposed pumping is likely to disrupt or destroy the agricultural use of the property because it will lower the water table significantly and dry out the land. The attorney noted that corn can be*

grown on the property without irrigation due to the elevation of the water table. The attorney requested that: 1) further study of the impact of the pumping on the agricultural operations be carried out prior to EPA's commitment to any particular cleanup plan; 2) any alternative selected be consistent with the agricultural use of the property; and 3) any cleanup plan put forth by EPA that could restrict or eliminate use of the farmland contain clear provisions for compensation to the farmer. The attorney emphasized that the farmer wishes to continue using the land for farming and is not interested in exchanging his rights to the land for compensation at this time.

RESPONSE: EPA recognizes the value of the farmland to both the farmer and the community. The Remedial Design phase of the cleanup will investigate the potential impact of the pumping on the water table under the farmland and specify mitigation measures to help protect the agricultural productivity of the farmland. Therefore those concerns are being addressed and no delay in the selection of a remedy is warranted.

COMMENT 45: *The Littleton Selectmen stated that the technology used in the cleanup should be cost effective.*

RESPONSE: Congress, through CERCLA, requires EPA to select remedial technologies that are cost effective. EPA compares the costs of each of the alternatives to their overall effectiveness to determine which alternatives represent reasonable value for the money. Through this balancing of cost with long-term effectiveness, implementability, short-term effectiveness, and the reduction of toxicity, mobility, and volume of the contaminants through treatment, EPA ensures that the final remedy is cost effective. EPA concludes that Alternative MM-11A is cost effective when compared with the other alternatives because it will effectively capture and treat the most highly contaminated portions of the plume and restore the aquifer within a reasonable period of time, but costs less than other alternatives that are able to accomplish the same objectives. Section IX of the ROD discusses further how the chosen remedy provides overall effectiveness proportional to its costs.

COMMENT 46: *A citizen asked EPA to address the potential impact of the preferred alternative on the state owned corn fields and fish hatchery.*

RESPONSE: The potential impact of the remedy on corn fields is addressed in the responses to comments 43 and 44 above. EPA does not anticipate that the remedy will have any impact on the hatchery.

Other Issues

COMMENT 47: *A State Senator commented that the New Hampshire Congressional delegation should become involved in the site due to the extreme importance of the site and the viability of the local PRPs to the community.*

RESPONSE: EPA acknowledges the importance of the site and, as at any site, welcomes the involvement of the state's elected representatives.

COMMENT 48: *A resident asked why EPA had not considered placing a treatment plant at the Savage Well to produce clean water for use by the town instead of wasting the water by discharging it to the river or recharging it to the groundwater. Another citizen asked EPA to address the potential use of treated water by the town for consumption.*

RESPONSE: Under CERCLA, EPA has no authority to authorize municipal use of the treated water or to require the PRPs to provide the equipment necessary to connect any of the treatment plants to the town's water system. However, this does not preclude the possibility that such an arrangement could be made between the PRPs and the town if the PRPs are operating the treatment plants. The town may wish to pursue this option with the PRPs.

COMMENT 49: *A citizen asked whether EPA would modify the proposed remedy to obtain community and state acceptance of the cleanup plan. He noted that this issue was not addressed at the July 11 public meeting.*

RESPONSE: Community and state acceptance are two of the nine criteria used by EPA in selecting remedial actions. Under CERCLA, EPA may modify its proposed remedy in response to state and community comments, and EPA has done so in the past at other sites. CERCLA is very clear, however, that the final decision making authority rests with EPA. Moreover, EPA may not ignore the other criteria in order to achieve state or community acceptance. Congress provided that authority in CERCLA to ensure the protection of public health and the environment as discussed in the introductory paragraphs to this section on page 6.

COMMENT 50: *A citizen commented that EPA's only goal appears to be the cleanup of the entire aquifer to drinking water standards.*

RESPONSE: EPA's goals at the site are to protect human health and the environment and to restore the aquifer to drinking water standards.

COMMENT 51: *A resident requested that EPA release potential purchasers of his property, which is located on the site, from any cleanup liability so that he can sell his land.*

RESPONSE: EPA cannot issue waivers of liability to owners of land or to potential owners of land located on a Superfund site. Under certain circumstances EPA may consider negotiating a settlement with a prospective purchaser of contaminated property.

COMMENT 52: *A resident expressed confusion over how NESFAB could be named as a PRP even though the NESFAB building is not in the contaminant plume. He noted that EPA's methods of determining who is a PRP do not appear to be fair, but that these methods should be fair.*

RESPONSE: Pursuant to CERCLA § 107, PRPs are any individuals or companies, including past or present owners or operators of hazardous waste facilities, transporters of hazardous substances, or generators of hazardous substances who may be responsible for contamination at a Superfund site. On June 18, 1985, EPA notified four parties (Hitchiner Manufacturing Company, Hendrix Wire and Cable, OK Tool, and New England Steel Fabricators) that they were PRPs under CERCLA. Based on a review of each company's past hazardous waste management practices and manufacturing processes, EPA determined that it had reason to believe that each named party had contributed to the contamination of the Savage Well and that each named party may be liable for response action costs at the site pursuant to § 107a of CERCLA. In particular, NESFAB generated hazardous wastes in association with painting processes related to its manufacture of custom steel components and structures. NESFAB voluntarily entered into agreement with EPA to perform the RI and FS with the other three named PRPs.

COMMENT 53: *A citizen asked why EPA has let seven years pass without any containment or treatment of the PCE hot spot at OK Tool when as early as 1984 it was clear that such treatment, at a minimum, would be necessary. Another citizen asked why so much time was required to formulate a solution to the site contamination. Another citizen noted that the plume would have been smaller and easier to contain in the past and blamed EPA for spending large amounts of time and money to determine what the citizen felt has been known for years, that OK Tool is solely responsible for the pollution. One citizen also stated that in the early 1980s the contamination was 1)very localized around OK Tool, 2)had not yet entered the bedrock, and 3)would have been much easier and cheaper to remediate at that time.*

RESPONSE: EPA acknowledges that the cleanup process for the site has been lengthy. This has resulted in part from several factors: 1) the study and cleanup of environmental contamination in general, and groundwater contamination in particular, often poses very complex and difficult scientific problems; and 2) in order to select a cost effective remedy that will reliably protect public health and the environment, EPA must thoroughly investigate the problem and potential solutions, and such investigations can take a considerable amount of time. EPA notes that the processes followed in the investigation of the site are those required by CERCLA and the NCP.

There is no evidence that, in the early 1980s, the contamination had not entered the bedrock or that the contamination was very localized around OK Tool.

COMMENT 54: *A citizen asked whether the PRPs would have any rights of appeal after EPA made its decision on the cleanup method and the apportionment of cleanup cost liability.*

RESPONSE: Courts have generally agreed that judicial review of EPA decisions prior to the filing by EPA of an action to recover its costs or an action to enforce an order is inconsistent with CERCLA's goal of encouraging prompt action to clean up Superfund sites. However, if a settlement is not reached between EPA and the PRPs and EPA brings a cost recovery action against the PRPs, the PRPs will have all of the legal rights afforded to any defendant in court. The PRPs may raise any appropriate defense at that time.

COMMENT 55: *A citizen commented that EPA's meetings on the site were insincere because most citizens do not have the knowledge to evaluate the technical merits of EPA's proposals. He stated that what the public could understand and comment on would be the cost/benefit relationships for different alternatives. He criticized EPA for not being more specific about the costs of each alternative and for not fully disclosing EPA's plans for funding the cleanup. He stated that only when the full costs of the cleanup alternatives to the community's economic health are established could the public ask meaningful questions and make informed judgements concerning the relative merits of alternative strategies. He further stated that EPA's refusal to discuss cost and funding issues suggests that EPA is not sincerely seeking public comment, but merely complying with the letter of the law. Another citizen agreed with these comments, noting that the local community is very anxious due to the lack of information on who will be required to pay for the cleanup and the presumption that EPA will require Hitchiner and Hendrix to pay the entire cost. He stated that EPA could improve its credibility with the community if it would discuss funding issues frankly with the public. A State Representative noted that EPA's rapport with the public is not good because EPA refuses to discuss the topic of funding, which is crucial to the people who are attending the public meetings. The State Representative also urged EPA to more fully inform the public on the costs and proposed funding for the cleanup. The publisher of the Milford Cabinet suggested that a statement from EPA that cleanup costs will be allocated "roughly in proportion to the extent to which the companies involved have contributed to the contamination of the aquifer" would ease public apprehension over this matter, and that the lack of such a statement leads the public to conclude that EPA's final cost allocation decision may not be fair. Another citizen commented that EPA appears arrogant and irresponsible to the*

community when EPA fails to answer all questions put to it in a public forum, including questions on funding.

RESPONSE: EPA recognizes that Superfund remedies are usually technically complex, and EPA has taken measures to make the information more accessible to the public. As part of the Superfund process, EPA actively solicits public comment and review of EPA activities. EPA has held public meetings to ensure that the public has an opportunity both to comment on EPA activities and to ask questions of EPA. EPA also has published fact sheets to help keep the public informed and explain the results of the site studies. EPA's public involvement efforts at the Savage site have gone beyond simple compliance with the letter of the law. EPA will continue these efforts as the site progresses into the Remedial Design and Remedial action phases of the cleanup.

In recognition of the need for citizens to be well informed, EPA also provides Technical Assistance Grants to community organizations to allow them to hire their own consultants to evaluate EPA's studies. The availability of these grants was made known to the public through the RI fact sheet issued in July 1990 and at the August 1990 public meeting. To date, no organization from the Milford community has applied to EPA for one of these grants.

With respect to funding for the cleanup, CERCLA provides that those costs are to be shared by the responsible parties and establishes a negotiation process for the resolution of cost allocation issues. EPA is hopeful that a settlement will result from the process. If not, the allocation of costs may be decided by the courts. At this stage, however, EPA is unable to predict how those costs will be allocated. It should be noted that the costs for each alternative are detailed in the FS report, which has been available to the public in its final form since July 12, 1991 at the Wadleigh Memorial Library.

Because "fair" is a relative term EPA cannot assure that future settlements or court decisions will appear "fair" to all people. However, EPA can assure the public that all of EPA's actions will be consistent with the law.

COMMENT 56: A State Representative asked, if EPA actually does take into consideration the opinions of the community, why EPA had not brought forth any new ideas, information, or modifications to EPA's Proposed Plan based on public comments at the July 11 meeting. Specifically he asked why MM-5 and well head treatment have not been included along with the other alternatives under consideration and why Hitchiner had not received any correspondence from EPA on their proposal of MM-5.

RESPONSE: EPA takes community input into consideration in the remedy selection process. Under CERCLA, the ROD, which includes this responsiveness summary, is the document in which community comments are incorporated, not the Proposed Plan. It should be noted that the purpose of the public hearing held during the comment period is for EPA to receive comments and questions rather than to present new proposals.

EPA considers MM-7 to be representative of MM-5 at the conceptual level, and therefore the MM-5 concept was considered as a potential remedy for the site. All of the alternatives considered by EPA were conceptual alternatives designed to achieve the cleanup in different time periods by capturing different portions of the contaminant plume. The precise number and location of the wells was not intended to be fixed at this time. The Remedial Design will establish the precise number, location, and pumping rate of the extraction wells for the chosen treatment alternative. This is due to the fact that conditions at the site will change between now and the start of the cleanup.

COMMENT 57: A citizen expressed concern that EPA had not given the Hitchiner/Hendrix proposal full and formal consideration and noted the fact that EPA has ignored this proposal gives the appearance of irresponsibility and arrogance on the part of EPA.

RESPONSE: As discussed in previous comments, the Hitchiner/Hendrix treatment proposal would address only part of the contamination problem and therefore would not be able to accomplish the cleanup. As a remedy it would not be complete or protective of human health and the environment and so cannot be considered as a viable alternative under CERCLA. As a funding plan, the Hitchiner/Hendrix proposal was premature. Both Hitchiner and Hendrix are aware that EPA does not consider funding proposals until the final decision on the cleanup method has been made and the costs can be estimated. EPA will accept and respond to funding proposals during the upcoming formal negotiation period provided for by CERCLA.

COMMENT 58: *A State Representative criticized EPA for not presenting the total cost figures for the various alternatives in a manner understandable to the general public in light of the fact that public confusion over this issue was presented very clearly to EPA at the July 11 meeting. He noted that the Proposed Plan distributed at the July 29 hearing showed no evidence of EPA effort to resolve this problem..*

RESPONSE: EPA acknowledges this comment and has provided additional clarification on the methods used for calculating costs in the response to Comment 3 above. With regard to the Proposed Plan, see the response to Comment 56 above.

COMMENT 59: *A citizen asked whether EPA representatives present at the July 29 public hearing were the ultimate decision makers for the site. He noted that conveying the sentiments of the people at the hearing to higher level managers who were not in attendance would be a difficult task.*

RESPONSE: The Regional Administrator, Julie Belaga, has the authority, delegated by the President of the United States, to make the final decision on the site. EPA had the July 29 hearing transcribed and has produced meeting summaries of previous meetings to help convey the community's sentiments. EPA representatives present at public hearings and meetings ensure that the community's feelings regarding the site cleanup are conveyed accurately to the Regional Administrator.

COMMENT 60: *A resident commented that the contaminated groundwater is not going to hurt anyone provided they do not drink it, and that unhealthy water is not a problem unique to Milford. He added that he believed none of the nation's groundwater may be fit for drinking within 30 years.*

RESPONSE: The site groundwater is not harmful to human health unless it is used for household purposes including drinking. However, the possibility that someone in the future may use the contaminated water for household purposes, and the fact that the aquifer is a potential drinking water source, require EPA action at the site under CERCLA and the NCP. EPA agrees that groundwater pollution is not unique to Milford but disagrees with the implication that it therefore should be ignored. On the contrary, EPA's policy is to restore potential drinking water resources so that the prediction voiced by the commentator is less likely to come true.

COMMENT 61: *Several citizens and public officials noted that Hitchiner and Hendrix are good, responsible corporate citizens.*

RESPONSE: EPA acknowledges this comment.

COMMENT 62: *A citizen stated that EPA's expenditure of effort on this aquifer is a poor use of taxpayers' dollars given that other water sources are available to the town. The citizen*

suggested that these dollars would be better spent on other environmental problems such as acid rain and ozone depletion. Another citizen suggested that EPA expertise should be exported to Kuwait, Prague, Germany, Tokyo, Shanghai, Mexico City, or other environmentally damaged areas that could use EPA talent. Still another pointed out that \$1 million could be used to feed, clothe, and shelter many people.

RESPONSE: EPA recognizes that there are many good uses for scarce public funds. Congress has decided, through its enactment of CERCLA, that the identification, investigation, and cleanup of uncontrolled hazardous waste sites in the United States is a significant national priority and that those efforts should be financed by the responsible parties. EPA's efforts at this site are in keeping with the wishes of Congress as expressed through CERCLA.

COMMENT 63: *A citizen asked why a fine sufficient to cover the cost of the investigation and remediation of the site was not levied against OK Tool in 1983 when the first studies of the contamination were performed.*

RESPONSE: EPA did not then and does not now have the authority to levy such fines.

COMMENT 64: *A citizen asked whether EPA is exercising common sense and being fair to the City of Anchorage, Alaska in EPA's enforcement of its sewage treatment requirements as reported in a syndicated newspaper column by Paul Harvey, and how citizens involved in the Savage site can have confidence in EPA given EPA's actions in Anchorage.*

RESPONSE: A copy of the Paul Harvey article and the response by the EPA Region X Administrator are included in the attachments to this Responsiveness Summary.

COMMENT 65: *A citizen proposed that EPA establish a proactive research and development facility at the site funded by federal grants and run by a research university. The justifications given for this course of action are: 1)pump and treat is not yet a proven technology, 2)the aquifer is not needed in the near future for drinking water, and 3)new more effective and less expensive remediation technologies are likely to be developed in the near future. This research facility would help prove the viability of EPA's preferred alternative as well as hasten the introduction of more effective and less expensive remedial technologies.*

RESPONSE: EPA considers pump and treat to be an effective technology based on successful results at similar sites. As EPA continues to refine the technology, the experience gained in the cleanup at this site will contribute to the body of scientific knowledge on groundwater remediation. EPA recognizes that new more cost effective technologies may emerge in the future, and has incorporated provisions for the evaluation of such new technology in the ROD.

COMMENT 66: *A citizen asked whether bioremediation was considered for the Savage site and, if not, why not. He further asked what is the likelihood that bioremediation will become feasible in the next 20-50 years, and, if bioremediation does become feasible, would it render obsolete some or all of the treatment equipment that would be purchased under the preferred alternative.*

RESPONSE: Bioremediation was considered for the site. Based on current information, however, bioremediation is not effective on PCE contaminated water and so was not included in the alternatives retained for detailed analysis. In addition, EPA cannot fail to take action at a Superfund site today on the premise that some new technology may become available in the future.

COMMENT 67: *A State Senator stated that EPA's preferred alternative is a reasonable choice for cleanup at the site. Several citizens expressed support for the cleanup of the site, and one called for the protection of the site wetlands and the nearby fisheries. However, none of these commentators supported any more intensive efforts than those included in the Hitchiner/Hendrix proposal or MM-5. The Milford Cabinet expressed general support for EPA and related state agencies. Another resident expressed support for a strong and effective EPA. The Milford Area League of Women Voters expressed general support for environmental protection, cleanup, and community relations on the part of EPA.*

RESPONSE: EPA acknowledges these comments.

COMMENT 68: *A citizen alleged improper and unethical dealings between the town, Hitchiner, and the local press regarding the town wastewater treatment plant and the purchase of the Savage Well.*

RESPONSE: EPA acknowledges the comment.

COMMENT 69: *A citizen asked for the "state documentation" of the town's pumping and testing of the Savage Well in 1986 as promised at the July 11 public meeting. The citizen did not specify who had made the promise.*

RESPONSE: EPA is unable to identify the document referred to in this comment. EPA suggests that the commentator may wish to contact Carl Baxter at the New Hampshire Department of Environmental Services at 603-271-2910 to pursue this question.

COMMENT 70: *A citizen asked what steps have been taken by the PRPs since 1983 to reduce toxic waste at their plants.*

RESPONSE: As a result of EPA permitting programs, some of the PRPs have made substantial changes in the management of discharges from their plants which have reduced or eliminated the discharge of wastewater to the environment. Some of the wastewaters are now sent to the local sewage treatment plant. EPA refers interested members of the public to the PRPs themselves for additional information on this issue.

COMMENT 71: *A citizen asked for a description of Hitchiner's responses to other EPA citations for violations of environmental laws that were not specified by the citizen.*

RESPONSE: EPA is unable to identify the violations and citations referred to in this comment. The commentator may wish to contact Project Manager Richard Goehlert at (617) 573-5742 to pursue this question further.

COMMENT 72: *A citizen asked whether Hendrix is pumping coolant into the Souhegan River.*

RESPONSE: At this time, Hendrix has a permit to discharge only stormwater on their own property.

COMMENT 73: *A citizen asked how far the contamination has spread and how fast is it moving.*

RESPONSE: The extent of the plume is shown in Figure 1 of the Proposed Plan which is included in Appendix D. Groundwater flow rates calculated by the PRPs' consultants were approximately 1.05 to 1.21 feet per day.

COMMENT 74: *A citizen asked how much attention is being paid to the public health danger posed by contaminated water in the aquifer and the river.*

RESPONSE: EPA has been addressing these issues through its investigation and cleanup process at the site. The cleanup alternative selected by EPA is designed specifically to mitigate the threat to human health posed by the site contamination through the use of institutional controls in the short-term and the eventual restoration of the aquifer through treatment in the long-term. The extensive commitment of government and private funds to this process is evidence that a significant amount of attention is being paid to these issues.

COMMENT 75: *A citizen asked whether the PRPs will attempt to recover the costs of site investigations and the cleanup by suing other PRPs including the town. The citizen also asked whether the town and others will seek compensation for environmental damage under CERCLA.*

RESPONSE: CERCLA does not limit the ability of any party to sue any other party for damages relating to the site except where the party being sued has settled with EPA to pay for some portion of the site work. EPA does not know whether the town or any other parties will seek restitution for any damages relating to the site contamination.

COMMENT 76: *The Milford Cabinet commented that the size of the audiences at recent public meetings on the site should give EPA a sense of the magnitude of concern regarding the cleanup.*

RESPONSE: EPA recognizes the high level of public interest in this site and appreciates the level of concern that has been shown by the community. Public participation is vital to the Superfund cleanup process that Congress envisioned under CERCLA. EPA encourages the community to remain actively involved with the site as it moves into the Remedial Design and Remedial Action phases of the cleanup.

COMMENT 77: *The Milford Cabinet stated that, by delaying construction of a new bridge across the Souhegan River, EPA exposed the public to far more risk than would have been created by disturbance of the contaminated soils required for the construction of the bridge.*

RESPONSE: The question of whether the chromium in the contaminated soils posed a threat to human health raised a number of difficult technical issues. Until the Risk Assessment could be completed and these issues resolved, EPA was unable to evaluate the risk associated with removal of the soil. As soon as the risk was evaluated, EPA promptly notified the state that, based on the available information, EPA has no objection to construction of the bridge once the ROD is issued.

COMMENT 78: *The Milford Cabinet stated that sufficient evidence has not been presented to conclude that the cost/benefit ratio for the preferred alternative is reasonable.*

RESPONSE: Under CERCLA, remedy selection decisions are not based upon a simple cost/benefit ratio. Instead, cost is one factor that is weighed along with long-term effectiveness, reduction of toxicity, mobility and volume through treatment, short-term effectiveness, and implementability. All CERCLA remedies must be cost-effective.

COMMENT 79: *The Milford Cabinet asked whether, in retrospect, the Savage Well contamination was serious enough to merit inclusion on the NPL, and whether EPA could reverse its cleanup decisions if EPA determined that the contamination was not serious enough to warrant remediation.*

RESPONSE: In retrospect, there is no information that has been made available since the time of the site's listing on the NPL which would indicate that the listing was incorrect. If during the RI it becomes apparent that the site no longer meets the requirements for listing as a Superfund site, EPA would initiate the process to delist the site, which would include the selection of a "No Action" cleanup alternative for the site.

COMMENT 80: *The Milford Cabinet asked how the risk from the contamination compares with the risk of cancer from eating meat cooked over a charcoal grill.*

RESPONSE: The health risk associated with exposure to carcinogenic compounds is expressed as the probability of a person developing cancer given some level and duration of exposure. The risk of developing cancer from exposure to benzo(a)pyrene from eating 100 charcoal-broiled steaks over a lifetime is one in one million (based on published information supplied by the commentor). That is, if one million people each eat 100 charcoal-broiled steaks in each of their lifetimes, one of those persons will develop cancer attributable to eating the steaks. The risk of developing cancer from drinking two liters of water from the most heavily contaminated part of the plume every day for a 70-year lifetime is estimated to be one in five. That is, if five people drink two liters of the contaminated water every day of their lives for 70 years, one of them would develop cancer due to the contamination.

It should be noted that the groundwater contains other compounds that are not considered to be carcinogenic. The risks associated with these compounds are not expressed as probabilities, and therefore are not directly comparable to the charcoal-broiled steak risk.

COMMENT 81: *A resident urged EPA to prosecute any criminal violations of environmental law on the part of the PRPs.*

RESPONSE: EPA will enforce the environmental laws which Congress has authorized it to enforce. Under CERCLA, EPA's focus is to clean up the site and to recover response costs from the PRPs.

COMMENT 82: *A resident stated that the cleaning and demolition of a storage tank had taken place and that this activity included the discharge of wash water to the ground. No location was given for this activity.*

RESPONSE: EPA recommends that residents with concerns over activities they observe that may be violations of environmental law report their observations to the New Hampshire Department of Safety at 800-346-7009.

COMMENT 83: *A resident claimed that the resident's household well had been contaminated by benzene, dichlorotrifluoroethane, and trichlorotrifluoroethane by the "Grugnale Waste Disposal site."*

RESPONSE: The Grugnale site is not known to have any relation to the Savage site. More information on the site may be obtained by contacting Carl DeLoi of EPA at 617-573-9645 or Carl Baxter of the New Hampshire Department of Environmental Services at 603-271-2910.

COMMENT 84: *The publisher of the Milford Cabinet had the following comments on EPA's July 11th public meeting: 1) much of the discussion was technical and beyond the understanding of most of the audience; 2) the overhead projector was frequently out of focus and the images were often impossible to read from the back of the room; 3) the public address system was inadequate; 4) EPA failed to repeat questions for the audience resulting in the responses being meaningless to the audience; 5) a larger air-conditioned hall would have been more comfortable; and 6) the audience participated in the meeting and EPA did listen to residents' concerns.*

RESPONSE: EPA recognizes that environmental problems are often very complex, and EPA has made efforts to explain the issues to the public in writing as well as at the meetings. EPA acknowledges the comments regarding the facilities used for the July 11 meeting and notes that EPA took steps to correct all of the deficiencies by the time of the public hearing. EPA appreciated the level of audience attention and participation at both of the recent public meetings.

COMMENT 85: *A citizen made the following comments regarding the July 11 public meeting: 1) EPA should speak clearly and with compassion to convey a caring attitude – residents need to know that EPA is prepared to respond to their concerns in a positive way; 2) the public wants to be informed in terms of certainties, not probabilities; and 3) the public is generally scientifically unsophisticated and lacks interest in technical complexity and the will to make the effort necessary to understand the problem. Another citizen commented that EPA talked "in circles" at the meeting.*

RESPONSE: 1) EPA acknowledges the comment.

2) Scientific data collected regarding environmental problems often contains a great deal of uncertainty. EPA will attempt to explain the nature and level of the uncertainty to the public so that the public can better understand the data and the decisions derived from it.

3) EPA understands that the general public is not schooled in scientific matters, and EPA takes steps to explain issues to the public in a manner that can be readily understood. EPA acknowledges that this effort may not always be successful for all members of the public, however, EPA will continue to strive for increased public understanding of EPA programs and environmental issues in general.

COMMENT 86: *One citizen requested a clear and direct response to her comment letter.*

RESPONSE: EPA hopes that the responses to all of the comments presented in this responsiveness summary will be considered clear and direct by the public. Members of the public may contact Susan Frank, the EPA Community Relations Coordinator for the site, at 617-565-3419 for clarification on responses in this document as well as with any other questions they may have regarding the site.

COMMENT 87: *The League of Women Voters suggested that a meeting be held between EPA, the PRPs, the state, and the Milford Selectmen with an impartial negotiator in attendance to discuss the effects the proposed cleanup plans may have on these parties. The League offered to facilitate such a meeting.*

RESPONSE: CERCLA expressly provides for a negotiation process between the government and the PRPs. Those negotiations will be conducted in private among the negotiating parties. As noted above in the response to Comment 11, the public will have an opportunity to comment on any proposed settlement before it is finalized. Therefore EPA thanks the League, but declines the offer.

COMMENT 88: *The Milford Selectmen stated that the community and state acceptance criteria should carry more weight at this site than is usually allotted to those criteria in the Superfund decision making process.*

RESPONSE: EPA has given serious and thorough consideration to all of the comments given during the comment period. At the same time, EPA must comply with all of the requirements of CERCLA.

B. State Comments

Written comments from the State of New Hampshire are summarized below.

COMMENT 89: The New Hampshire Department of Agriculture requested that EPA include in any cleanup plans provisions to ensure the continued suitability of state-owned farmlands on the site for agricultural use.

RESPONSE: Please see EPA's responses to Comments 43 and 44.

C. Comments from Potentially Responsible Parties

Written and oral comments from PRPs are summarized below. Some of the comments submitted by the PRPs dealt with the allocation of financial liability for the cleanup, responsibility for the contamination, mixed funding, communication of funding issues to the public, EPA's enforcement program at the site, and the impact of the cost of the cleanup on the local economy. EPA has addressed these issues in the previous section on comments from the general public and readers are referred to EPA's responses to the comments in that section.

COMMENT 90: *The responsibility for contamination at the site is easily divisible and must be divided. The cost of the remedy should be apportioned.*

RESPONSE: Although CERCLA does not explicitly confer joint and several liability on defendants, courts have consistently interpreted CERCLA liability to be joint and several unless defendants can demonstrate that the harm is divisible. The courts have reasoned that where all of the contributing causes to contamination cannot fairly be traced, Congress intended that those proven partially responsible should bear the cost of the uncertainty. O'Neil v. Picillo, 883 F.2d 176 (1st Cir. 1989)

EPA cannot impose joint and several liability on a PRP. It is a question of law that can only be decided by a court. However, the guiding principles used by the court are settled. If there are distinct harms, or if there is a reasonable basis for determining the contribution of each cause to a single harm, the court will not impose joint and several liability. The court will look to the PRP to prove its claim that joint and several liability does not apply at this site.

COMMENT 91: *Would the levels of TCA in the Savage Well would by themselves have been high enough to require closure of the Savage Well in 1983 under regulations in effect at that time?*

RESPONSE: The level of TCA in the Savage Well sampled by the state on February 15, 1983 was 326 ppb. A recommended MCL for TCA was proposed by EPA in June 1984. The chemical was not regulated by the Safe Drinking Water Act in 1983. The current MCL for TCA is 200 ppb. TCA, at the level given above, was cited by the state as a contaminant which led to the closing of the well.

COMMENT 92: *Hitchiner is not responsible for the PCE contamination emanating from the O.K. Tool Company. Hitchiner has never used PCE in its production processes.*

RESPONSE: EPA acknowledges the comment and appreciates any information relating to contamination at this site.

COMMENT 93: *The only part of the TCA plume requiring remediation at the site is a small area near the Hitchiner property. Hitchiner is prepared to construct and operate a well and treatment plant at Hitchiner to remediate the TCA plume adjacent to the Hitchiner plant. Hitchiner already has paid part of OK Tool's share of the site investigation costs.*

RESPONSE: In considering the extent of cleanup required at the site, the degradation products of the contaminants cannot be ignored. TCA, which has an MCL of 200 ppb, can break down into vinyl chloride, which has an MCL of 2 ppb and poses a much more significant human health risk. Another breakdown product of TCA is 1,1-DCE, which has an MCL of 7 ppb. Thus the presence of TCA can result in contamination of the aquifer with chemicals that pose a significantly higher risk. The PRP's comment assumes that there is no danger from the continued presence of TCA below MCLs and ignores the potential for degradation of the chemical. Therefore, the PRP has not made a complete assessment of the potential risks to human health at the site.

Funding proposals are premature at this time. The PRPs are aware that, following the signing of the ROD, EPA will send special notices to each of the PRPs inviting them to enter into negotiations aimed at funding the cleanup. EPA will consider funding proposals during the upcoming negotiation period.

COMMENT 94: *TCA contamination did not cause the closing of the Savage Well, TCA levels at the well are below drinking water standards, and TCA is not a carcinogen.*

RESPONSE: As described above (see Comment 91), TCA contamination was cited as one reason for the closure of the Savage Well, and TCA, although not a carcinogen itself, can break down into other chemicals, some of which are carcinogens. Based on limited sampling, the levels of TCA near the Savage Well at this time are below the MCL of 200 ppb. For reasons such as seasonal variability, it is premature to state that TCA concentrations at the well will remain below the MCL.

COMMENT 95: *Hitchiner generally supports EPA's proposed remedy for the site with some reservations regarding technical and phasing matters.*

RESPONSE: EPA acknowledges the comment. Please see EPA's response to Comment 24 for a discussion of phasing.

COMMENT 96: *The site studies confirmed that OK Tool caused the PCE contamination at the site.*

RESPONSE: EPA acknowledges the comment.

COMMENT 97: *The preferred alternative will not, under any circumstances, provide the town with a water supply in the foreseeable future. The preferred alternative was more expensive than necessary.*

RESPONSE: Both of these assertions are incorrect. Please see response to Comment 48. EPA has selected the least costly remedy that will accomplish EPA's cleanup goals. The PRP group, which includes Hitchiner, has had ample opportunity in the RI/FS process to prepare cost estimates, perform studies of technologies, and search for less costly alternatives which will meet the goals of CERCLA. The cost estimates for all of the alternatives were developed under the guidance, direction, and review of the PRP group.

COMMENT 98: *The rate at which Superfund remedies in the nation are being found to be ineffective is increasing, and, therefore, treatment of the extended plume should be deferred until containment of the concentrated plume has been proven effective.*

RESPONSE: EPA is not aware of any evidence that the rate of Superfund remedies being found to be ineffective is increasing. Even if such a trend did exist, it would not apply to this site because proven technologies will be used. In addition, please see response to Comment 24 for a discussion of the difficulties that would arise from delaying the start of any portion of the cleanup.

COMMENT 99: *Hitchiner would be willing to give the Savage Well site back to the town and to extract and treat 500 gpm of water for potential use by the town as a water supply.*

RESPONSE: As this is a matter between the town and Hitchiner, EPA has no comment.

COMMENT 100: *Joint and several liability historically has applied only to those cases where responsibility could not be divided among several parties. The PRP stated that the principle cannot be applied to the allocation of the costs for cleanup at this site because it is possible to divide the responsibility for the pollution of the aquifer. The PRP commented that imposing on Hitchiner and Hendrix financial liability for pollution that they did not cause would be grossly unfair and contrary to the law.*

RESPONSE: These issues will be addressed in the context of settlement negotiations. The burden of proving divisibility rests with the PRPs. Under the law, joint and several liability will apply to this site if the PRPs cannot prove divisibility.

COMMENT 101: *The current owners of OK Tool were not made aware of the magnitude of the contamination problem that may have been caused by the former owners and operators of the plant, and the current owners of OK Tool did not contribute to the contamination because the plant was closed immediately following its purchase.*

RESPONSE: Pursuant to CERCLA § 107, both the current and former owners of the OK Tool facility are potentially liable for the contamination at the site. However, it is also possible that the current owners of OK Tool may be in a position to bring other forms of legal action against the former owners of the facility.

COMMENT 102: *Due to the groundwater flow patterns as established in the site studies, dissolved PCE would not have migrated from the OK Tool plant to the area under the Hitchiner and Hendrix plants. This conclusion is based on the RI groundwater elevation and flow direction figures which were developed while the Hitchiner and Hendrix wells were in full operation. Hitchiner records indicate that Hitchiner did use PCE in the past and that Hitchiner has a past record of problems regarding improper waste disposal practices. Therefore, the PCE contaminated groundwater found on the Hitchiner and Hendrix properties may have resulted from the past operations and waste management practices of those companies rather than from releases of PCE at the OK Tool plant.*

RESPONSE: EPA has drawn no conclusions regarding responsibility for the site contamination.

COMMENT 103: *PCE is the only potential problem at the site, and only PCE or its degradation products exceed EPA required cleanup levels at the downgradient portion of the site.*

RESPONSE: Strictly using exceedences of MCLs, PCE concentrations in the distant downgradient portions of the site are used to drive the required cleanup level. However, the PRP's consultants provided no predictions as to the future transport of other chemicals that may spread to the downgradient portions of the plume or the transport of transformation products of chemicals to downgradient portions of the plume. Two of the transformation products, vinyl chloride and 1,1-DCE, have MCLs of 2 ppb and 7 ppb which are very close to the MCL of 5 ppb for PCE.

1,1 DCE and vinyl chloride may actually result in some of the same biodegradation by-products. This factor would seem to cloud the consideration of impacts as well as the efforts being made to separate the two plumes.

COMMENT 104: *PCE at the site can be attributed to only OK Tool.*

RESPONSE: Capture zones constructed using groundwater contour maps in the RI Report (Figures 3-13, 3-14, 3-16) suggest contaminated groundwater beneath the OK Tool facility has not moved toward the Hitchiner production well but has moved to the Hendrix production well. This information coupled with Hitchiner's admission of PCE use appears to contradict the assertion that the PCE portion of the groundwater contamination is attributable only to OK Tool.

COMMENT 105: *DNAPLs should be the primary concern of the remedy at the site. The most that can be done is to contain DNAPLs to prevent the spread of contamination. Numerous studies of remedial programs at other Superfund sites have confirmed that containment of suspected DNAPL sources is the only way to address such contamination. EPA's continued attempts to deny the presence of DNAPL has led to the selection of an inappropriate remedy for this site*

RESPONSE: There exists a considerable amount of circumstantial evidence to indicate that DNAPLs exist at the site. However, no sample of DNAPL has been obtained from any well and no water samples from a given well have exhibited concentrations of contaminant at 10 percent or more of individual solubility limits. The comment letter itself and attached exhibits actually provide information to support EPA's position. The PRP comment letter itself is contradictory. The PRP letter references an attachment from one of their consultants and provides the following: "...attached as exhibit 3 which further supports the conclusion that

DNAPLs likely are present..." A conclusion of another PRP consultant presented in Exhibit 1 of the package cited above is: "Unfortunately, it is not possible to calculate the reduced, effective solubility at the Savage site because a sample of the DNAPL has not been collected." The use of the word "likely" is not a mistake and provides insight as to what can or cannot be definitely said by the PRP Group. While EPA agrees that DNAPLs may be present, EPA must approach the site recognizing that EPA has no conclusive proof as to its existence, extent or volume.

In light of the lack of conclusive proof of the existence of DNAPLs at this site, EPA has not chosen to emphasize the DNAPL "argument" or the probability of existence of DNAPLs. At no time has EPA expressed or sought to imply that DNAPLs, if they exist in volume, could be remediated within a 30 year time frame. Furthermore, a "containment system" is an integral part of the Proposed Plan in recognition of the probable existence of DNAPL. The predictions of cleanup time have never been misrepresented. EPA has consistently recognized that the cleanup time for DNAPLs would be indeterminate.

COMMENT 106: *A phased approach is necessary and only after containment is accomplished would it be remotely practicable to implement further measures in any portion of the downgradient plume.*

RESPONSE: The NCP indicates that where there is significant uncertainty as to the success of the groundwater remediation a "phased" approach to the remediation may be appropriate. In this case EPA does not believe sufficient uncertainty exists with regard to the success of the remediation of the "extended plume" since contamination within the extended plume is in a dissolved state. Remediation of the extended plume is the functional portion of the remedy which will result in aquifer restoration. The phased approach would delay aquifer cleanup and result in longer time for restoration and a lesser degree of protectiveness.

EPA agrees that successful remediation of the extended plume is in part dependent upon containment, and, if possible, the remediation, of the concentrated plume since it does appear to act as a "source" of contamination for the extended plume. However there is reason to believe that the hydraulic containment proposed will be sufficiently successful such that remediation of the extended plume can commence nearly simultaneously. Additionally, since the two extended plume pumping locations are significant distances from the concentrated plume, the pumping of the concentrated area will have no adverse impact on the physical location of downgradient wells or the design and implementation of these extraction systems. Further, there is nothing in the ROD that precludes a short time lapse between implementation of the concentrated plume remediation/containment system and the downgradient systems should this be determined to be appropriate during the remedial design phase. The "phased" approach as proposed in the comment is not necessary and accomplishes little other than a delay in the time required for the overall cleanup of the aquifer.

COMMENT 107: *TCA (1,1,1-Trichloroethane) is not a significant problem at the site and does not contribute to downgradient groundwater contamination above MCLs.*

RESPONSE: TCA (1,1,1-Trichloroethane) concentrations do exist in the aquifer above the MCL of 200 ppb and therefore it is a contaminant of concern. TCA may also degrade to by-products in a way that individual by-product concentrations, such as vinyl chloride, may eventually exceed MCLs.

COMMENT 108: *EPA has ignored the Town of Milford's zoning designation for the site area and that development and land use in and around the site make the aquifer an unlikely, and under State regulations and policy, unpermitted, site for a drinking water well.*

RESPONSE: Zoning is not a reliable control on land use over the 100+ year time frames of the less rapid cleanup alternatives. Zoning may be changed by future governments for reasons not anticipated at this time. Zoning does not preclude the development of a public water supply well at this time.

The potential use of the aquifer has been diminished only by the need and cost to treat water extracted from it. High yield aquifers are limited in number and it is national and state policy to protect and restore its water resources.

The Department of Environmental Services' letter of July 11, 1991 to the Town states that:

"The recently enacted Groundwater Protection Act, RSA 485-C, clearly established that the best use of all state groundwater is drinking water supply, and that all potential contamination source activities shall be conducted so as to eliminate or minimize the threat of groundwater contamination, regardless of where those activities are located.."

"Although the aquifer in the vicinity of the Savage Well may remain unsuitable for drinking without treatment for a long time, the ultimate goal must remain restoration to drinking water quality. If you would like further discussion on these issues, please call myself or Paul Carrier, P.E., Administrator of the Groundwater Protection Bureau at 271-3503."

In comments on the NCP as presented in the Federal Register Vol. 55 No. 46 3/8/90 Pg. 8732. It is noted that:

"Reasonable restoration time periods may range from very rapid (one to five years) to relatively extended (perhaps several decades)"

"... If there are other readily available drinking water sources ... the necessity for rapid restoration of the contaminated groundwater may be reduced."

The proposed plan recognizes the above discussion with the "several" decade goal clearly considered and adopted.

The Town's zoning and PRP arguments ignore the current use of the aquifer as a water supply for household wells north of the river, which is zoned residential. Those houses represent a current use with a future risk of contamination.

COMMENT 109: *Current conditions do not pose a risk to human health or the environment as documented by the sampling and analysis data and in the documents which address the Human Health Risk Assessment and the Ecological Risk Assessment.*

RESPONSE: The assessment of current risk without any water use is correct. If the water is to be used, there is a risk. It should also be noted that there is a current use of the bedrock aquifer for household water supply north of the river, which creates a future risk. The objective of a site remediation is to clean up the aquifer to a level that will allow future use as a drinking water supply without treatment and to protect existing uses. This policy is used at Superfund sites throughout Region I and is consistent with the NCP, which recognizes that contaminated groundwater be returned to its beneficial use in a reasonable time frame.

COMMENT 110: *EPA's remedy is neither cost effective nor environmentally correct. The costs were not developed correctly.*

RESPONSE: Per RI/FS Guidance and the NCP, a range of alternatives is compared using a total of nine criteria. These nine criteria are explained in detail in the FS and the Proposed Plan, and were also presented at the public meeting on July 11, 1991. The cost comparison guidelines are detailed in the RI/FS guidance and the comparisons are done in accordance with the guidance.

In the EPA's judgement, the selected remedy is cost effective, in that overall effectiveness of the remedy is proportional to the cost of the remedy. EPA came to that conclusion after first identifying alternatives that are protective of human health and the environment and that attain ARARs. EPA then evaluated the overall effectiveness of each alternative by assessing the three relevant criteria: long term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short term effectiveness. The relationship of the overall effectiveness of those remedial alternatives was determined to be proportional to their costs.

COMMENT 111: *The PRP Group states one of its consultants has determined that problems with the pumping configuration combined with flaws in the capture zone analysis would lead to further downgradient migration of high concentrations of PCE from OK Tool. This is interpreted to mean that contamination from the concentrated plume cannot be contained with the well configuration as in the Proposed Plan due to flaws and problems in the Feasibility Study.*

RESPONSE: The capture zone analysis was proposed and implemented with full knowledge of the PRP Group since it was done by one of the PRP consultants. The use of the Hitchiner well pumping test data was requested by the PRP Group and their consultants. Capture zones estimated by these data may be optimistic for lower portions of the aquifer. The estimates are, however, believed to be sufficient for ROD purposes and additional data will be obtained during the Remedial Design phase.

The pumping configuration for the concentrated plume was and is still the proposal from the PRP Group and its consultants. EPA did not alter the PRP proposed configuration of the wells at the concentrated zone. If there are flaws in the analysis, the PRP Group should have identified them during the study rather than after the reports were final and the remedy proposed. Throughout the FS and in the Proposed Plan the number of wells, the location of wells and their extraction rates are subject to refinement during design. The concept of extraction, however, at three locations in the length of a 6000 foot long plume is correct.

COMMENT 112: *UV oxidation technology can be used to treat effectively TCA and the ROD should allow the use of the technology to treat TCA.*

RESPONSE: The FS Addendum was developed at the last minute at the specific request of the PRP Group to include UV oxidation at certain treatment locations. It was the PRP's determination that use of UV oxidation to treat TCA is less effective than air stripping technology. There have been no treatability studies performed specific to the site and the use of either technology must be addressed in the design phase through treatability studies to address the problem of metals in the groundwater. If studies prove that UV oxidation is superior to air stripping, it could be utilized.

COMMENT 113: *There is little difference between the cleanup times of MM-3 and MM-11A thus the extended plume should be allowed to naturally attenuate.*

RESPONSE: The 25-90 year cleanup time frame for MM-3 does not compare favorably with MM-11A. MM-11A is expected to take 15 to 60 years, or roughly 10 to 30 years less than MM-3. The downgradient remediation portion of MM-11A is the truly functional feature of the Proposed Plan. While extraction wells in the more concentrated plume areas may achieve a high mass rate of removal, extraction wells further downgradient will result in a positive and timely effort to remediate much of the bulk volume of the contaminated aquifer. The uncertainty in cleanup times is clearly recognized in the FS and the Proposed Plan. Also, it should be noted that the shorter time frames included in each range are based upon the same pump test that the PRPs themselves question in these comments, and from a technical standpoint seem to be extremely optimistic. The most likely timeframes is somewhere between the range extremes.

COMMENT 114: *The contaminant plumes are chemically distinct and can be separately delineated.*

RESPONSE: The PCE and TCA portions of the plume are alleged by the PRPs to have two distinct origins. TCA was reported to have been used at Hitchiner and Hendrix and possibly at OK Tool. PCE was reported to have been used at OK Tool and in small quantities at Hitchiner. However, both contaminants appear to be intermingled in a single plume.

COMMENT 115: *The capture zone calculations are flawed and the downgradient wells will result in the pumping and treatment of clean water from the Souhegan River.*

RESPONSE: The data used by the PRP consultants to calculate hydraulic coefficients of the sand and gravel aquifer beneath the site were obtained from the Hitchiner well (MW-31) pump test. The Hitchiner well is screened in the highly productive sediments of the middle sand and gravel aquifer. As one might expect, hydraulic conductivity values calculated from this data set are the highest of all the tests conducted. Therefore, the most optimistic range in values (required for flushing) were obtained. As a result of this choice, discharge rates for all well schemes are probably high and the time periods required for plume attenuation or cleanup are short. Accelerated "cleanup" of the extended plume is feasible. However, it may be appropriate to modify alternative MM-11 during design to include pulsed pumping and injection wells.

The number, locations, and rates of pumping of the extraction wells, as has been noted in the responses to several comments above, are used to estimate cost for the ROD. During Remedial Design, specifics as to the array of extraction wells and pumping rates will be determined.

The current aquifer conditions and plume size constrain the volume of extraction well discharge to approximately 1000 gpm. Pumping a volume of water greater than this would extend the capture zones of the extraction wells outside the area of the plume. As a result, an unnecessary percentage of clean groundwater would be mixed with the plume degraded groundwater and the efficiency of the extraction system would be reduced.

Alternative MM-11A would operate at an appropriate pump rate of up to 1100 gpm.

The downgradient wells are located to remediate areas where MCLs or risk based limits are exceeded. While PCE appears to be the contaminant of concern in the extended plume, sample dilution needed to quantify PCE may mask exceedances of MCLs by other compounds. Also the detection limit for vinyl chloride exceeded its MCL and no judgement can be made for this contaminant at this time.

COMMENT 116: Region I chose the incorrect ARAR for the quality of the effluent to be discharged from the treatment plant.

RESPONSE: The use of MCLs to establish treatment/discharge criteria is appropriate where treated water may be discharged either directly to groundwater or a surface water body that recharges an aquifer such that the groundwater quality may exceed MCLs. The goal of CERCLA is to restore the aquifer to drinking water quality and the quality of the discharge of water to the ground is directly related to that goal.

The aquifer, while currently not used for public water supply, may have any number of possibilities as a private water supply and in fact is currently used for drinking water by residences north of the Souhegan River. Thus, a goal of drinking water standards is not unreasonable.

COMMENT 117: The mass removal rate of MM-11A and the Hitchiner-Hendrix phased approach is not so significant as to require additional clean-up of the aquifer beyond the concentrated plume. The additional 300 lbs/yr of MM-11A removed over the 1920 lbs/yr of the Hitchiner-Hendrix proposal is not cost effective.

RESPONSE: The 300 lbs/yr. or mass removal is the 16 percent increase over the mass removal of 1,920 lbs/yr for alternative MM-3. Moreover, MW-11A address a much larger area and volume of the affected aquifer than MM-3 and will inhibit further migration of the more downgradient portion of the plume. The downgradient portion of MM-11A is the functional feature of the Remedy. While the wells in the more concentrated plume are designed to contain that area and may achieve a high mass rate of removal, wells further downgradient will result in a positive and timely effort to remediate much of the bulk volume of the contaminated aquifer. See Comment 106 for further discussion on the extended plume cleanup.

COMMENT 118: The scientific studies and other site information indicate that OK Tool is not the sole source of contamination.

RESPONSE: EPA has drawn no conclusions regarding responsibility for the site contamination in the Record of Decision.

COMMENT 119: *Based on groundwater elevation contours and flow direction figures developed while Hitchiner and Hendrix were pumping the aquifer, PCE migrating with groundwater from OK Tool should not result in contaminating groundwater at the Hitchiner and Hendrix facilities.*

RESPONSE: See Comment 104.

COMMENT 120: *The study shows a bias against OK Tool and clearly favors the other PRPs regarding sources of contamination.*

RESPONSE: EPA has expressed concern about this matter in correspondence to the PRPs during the conduct of the RI/FS. The internal tensions between the PRPs and the influence that one PRP or a group of PRPs exerts over their consultants is not a matter over which EPA has control. However, the reference to bias concerns the identification of sources and associated responsibility for site contamination and not the adequacy of the technical data which is used for remedy selection.

COMMENT 121: *Hitchiner and Hendrix manipulated the RI/FS to avoid investigation of the former "Lake Louise."*

RESPONSE: The investigation of contamination and possible source area is part of EPA's continuing enforcement activities.

COMMENT 122: *The pumping of groundwater at 250 gpm at the OK Tool location would increase the groundwater flux at this location to cause an increase in the non contaminated groundwater from the Souhegan River flowing to the extraction well which would result in an unnecessarily large capacity treatment system and reduce groundwater treatment efficiency.*

RESPONSE: The FS and the Proposed Plan have stated that there are studies to be accomplished in the Remedial Design phase that will address the location, size, and pumping rate of extraction wells. The concern raised in the comment is one that is known to the field of hydrogeology and will be addressed in design.

COMMENT 123: *DNAPL sources in an aquifer affects the design of groundwater extraction systems and it is recommended that multilevel monitoring wells be installed.*

RESPONSE: EPA has acknowledged the potential for DNAPLs and that review and implementation of technologies particular to DNAPLs will be a part of the remedy should design studies indicate they are appropriate. A monitoring plan will be included in the selected remedy.

COMMENT 124: *The Remedial Design should include groundwater modeling to assess pumping rates, groundwater capture zones, contaminant attenuation and potential groundwater contaminant plume migration. It is specifically recommended that extraction well # 2 in the extended plume be relocated or eliminated to avoid treating non-contaminated Souhegan River water, well # 1 be relocated to cut off the contaminated plume, and that wells # 3 and # 4 be eliminated.*

RESPONSE: The FS, Proposed Plan, and the ROD identify broad design issues that would include the assessment of the location and pumping rate of wells for the maximization of extraction and treatment of contaminated groundwater. Wells # 3 and # 4 are located to capture for treatment contaminated groundwater with PCE concentrations greater than 500 ppb. This is 100 times greater than the MCL for PCE. This represent a high level of contamination that must be prevented from spreading. Additionally the low withdrawal rates of 50 gpm for each well is recognition of the need to maximize the efficient removal of contamination at this location in the aquifer. EPA believes the selection of a conceptual remedy that includes wells in the vicinity of the river is a prudent and realistic choice.

COMMENT 125: *Site characteristics, consistent with EPA guidance and CERCLA requirements, indicate a long time frame restoration with limited treatment is warranted. It is recommended that groundwater extraction and treatment be conducted at the OK Tool Company, Hitchiner Manufacturing Company, and in the vicinity of the Savage Well downgradient of Hendrix Wire and Cable Company. The remaining portions of the contaminated plume should undergo natural attenuation.*

RESPONSE: The time frame for restoration is consistent with EPA guidance. The selected remedy, MM-11A has a calculated clean up time of 15 to 60 years. Sixty years is considered a long time frame and is consistent with the NCP.

In comments on the NCP as presented in the Federal Register Vol. 55 No. 46 3/8/90 Pg. 8732. It is noted that:

"Reasonable restoration time periods may range from very rapid (one to five years) to relatively extended (perhaps several decades)"

"... If there are other readily available drinking water sources ... the necessity for rapid restoration of the contaminated groundwater may be reduced."

The proposed plan recognizes the above discussion with the "several" decade goal clearly considered and adopted.

The precise locations, number of extraction wells, and pumping rates will be refined in the Remedial Design. The elimination of three of the wells in the extended plume is not acceptable. The capture of the plume in the middle at the location of wells #1 and #2 is necessary to eliminate further downgradient migration of the highest concentrations of contaminated groundwater in the extended plume. The amount of natural attenuation that is allowed is significant. The elimination of wells # 3 and # 4 is addressed in comment 18 above. Finally, the selected remedy results in the cleanup of the Savage Municipal Water Supply aquifer in a "reasonable" time period as defined by the NCP, whereas the PRP proposal would appear to add a significant number of years to the cleanup.

IV. REMAINING CONCERNS

Issues raised during the public comment period that will continue to be of concern as the site moves into the RD/RA phase are described briefly below. EPA will continue to address these issues as more information becomes available during the RD/RA.

1. **Economic Impact:** The public will continue to be interested in and concerned over the question of who will pay for the cleanup until this issue is resolved through a settlement or court action. The public will wish to be informed on developments related to the negotiations and any legal action EPA may take. Intense public opposition is likely to arise if EPA takes actions which are inconsistent with the public's concept of what is a fair allocation of costs at the site or if EPA takes actions which the PRPs strongly oppose. The public will also expect EPA to fully justify its actions to the community and to be available to listen to community input into the decision making process. Public interest is likely to be high at the time of a settlement, the initiation of a legal action by EPA against either Hitchiner or Hendrix, and at any time during the Remedial Design or the Remedial Action when EPA may make decisions which could greatly increase the cost of the remedy. The issue of economic impact is the chief cause for public concern at this site, and when this issue is resolved public interest can be expected to wane considerably.
2. **Public Water Supplies:** The town is likely to pursue the potential for use of the treated water as public water supply. Public interest could increase if EPA took any steps that could preclude the use of the water by the town or increase the cost of that water.
3. **Spread of Contamination:** If the contamination spreads to encompass many additional private properties or contaminate water supply wells, public interest may increase. Issues that would arise include: 1)the ability of the remedy to stop further spread of the plume, 2)delays in implementation of the remedy, 3)the liabilities and rights of the property owners impacted by the plume, and 4)the extend of EPA well testing programs related to the site.

ATTACHMENT A

Formal Community Relations Activities Conducted To Date at the Savage Municipal Water Supply Superfund Site

continuous	EPA maintenance of the site mailing list.
6/85	EPA Community Relations Plan (draft only).
7/22/85	EPA press release announcing 7/29/85 public meeting to discuss start of Remedial Investigation and Superfund process.
(undated)	EPA Meeting Summary of 7/29/85 public meeting.
9/86	EPA Community Relations Plan completed.
8/10/87	EPA press release announcing Consent Order between EPA and Potentially Responsible Parties.
1/88	Community Interviews for Community Relations Plan Revision.
10/88	Revised Community Relations Plan.
12/88	Fact Sheet covering site history and providing an overview of the Remedial Investigation/Feasibility Study and the Superfund process.
12/6/89	EPA Community Relations Coordinator letter to citizen in response to inquiry regarding Technical Assistance Grants program.
7/90	EPA fact sheet on the Remedial Investigation/Risk Assessment announcing 8/8/90 public meeting.
8/8/90	EPA public meeting on the Remedial Investigation.
8/90	EPA meeting summary of 8/8/90 public meeting.
7/91	EPA Administrative Record made available to public.
7/2/91	EPA press release announcing availability of EPA's Proposed Plan, the public comment period, public meeting, and public hearing.
7/3/91	EPA public notice of the Proposed Plan, comment period, public meeting, and public hearing.
7/11/91	EPA public meeting on the Proposed Plan and Feasibility Study.
7/12/91-8/10/91	EPA public comment period on the Proposed Plan and Feasibility Study.
6/21/91	EPA public notice of new public hearing location and time.
7/29/91	EPA public hearing on the Proposed Plan and Feasibility Study.
9/27/91	EPA responsiveness summary and press release for the ROD.

ATTACHMENT B

Transcript of the July 29, 1991 Informal Public Hearing

1
2 UNITED STATES OF AMERICA
3 ENVIRONMENTAL PROTECTION AGENCY
4 BOSTON REGION
5

6 In the Matter of:

7 PUBLIC HEARING RE:

8 SAVAGE MUNICIPAL WATER SUPPLY
9 SUPERFUND SITE
10 MILFORD, NEW HAMPSHIRE
11

12 Monday
13 July 29, 1991

14 John Burns Room
15 Hampshire Hills Sports & Fitness
16 50 Emersam Road
17 Milford, New Hampshire

18 The above entitled matter came on for hearing,
19 pursuant to Notice at 2:15 o'clock p.m.

20 BEFORE: DANIEL COUGHLIN
21 Chief
22 New Hampshire Superfund Section
23 U.S. Environmental Protection Agency
24 J.F.K. Federal Building
25 Boston, Massachusetts 02203

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 APPEARANCES: Continued

2 RICHARD GOEHLERT
3 Remedial Project Manager
4 U.S. Environmental Protection Agency
5 J.F.K. Federal Building
6 Boston, Massachusetts 02203

7 RICHARD H. PEASE
8 Supervisor of Remedial Engineering
9 New Hampshire Department of Environmental Services
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

APEX REPORTING
Registered Professional Reporters
(617)426-3077

I N D E X

AFTERNOON SESSION

<u>TOPIC</u>	<u>SPEAKER</u>	<u>PAGE</u>
Opening Remarks	Mr. Coughlin	2
Proposed Plan Overview	Mr. Goehlert	7
Public Comments	Participants	16

EVENING SESSION

<u>TOPIC</u>	<u>SPEAKER</u>	<u>PAGE</u>
Opening Remarks	Mr. Coughlin	58
Proposed Plan Overview	Mr. Goehlert	62
Public Comments	Participants	71

P_R_O_C_E_E_D_I_N_G_S

COMMENCED [2:15 p.m.]

MR. COUGHLIN: Good afternoon.

My name is Dan Coughlin. I'm Chief of the
New Hampshire Superfund Section at EPA in Boston.

As you know, we're here today to conduct an
informal public hearing on the proposed plan for the cleanup
of the Savage Municipal Well Superfund site.

Present with me tonight are, on my right,
Dick Goehlert, he's the Remedial Project Manager for EPA, and
on my left, Dick Pease from the New Hampshire Department of
Environmental Services.

The purpose of this hearing is to formally receive
public comment on EPA's proposed plan of the Savage site as
well as the other alternatives that we've considered in the
remedial investigation and feasibility study. On Thursday,
July 11th, EPA held a public information meeting in which we
presented the results of those studies, RI and FS as we call
them, and presented the proposed cleanup plan. The proposed
cleanup plan looks like this. There are copies available as
you come up the stairs out back if you don't have one. I
would encourage you to get one if you don't.

The public comment period began on Friday,
July 12th and will run till Saturday, August 10, 1991.

Before beginning, I would like to describe for you

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 the format for the hearing. First I'm going to ask Dick to
 2 give us a brief overview of EPA's proposed cleanup plan.
 3 Essentially, the plan is outlined in that proposed, in that
 4 document I just held up.

5 Following that, we will accept any oral comments
 6 from anybody who wishes to make a comment on the record. That
 7 record will be taken, we're transcribing everything in its
 8 entirety and we'll take that back and put together a complete
 9 copy.

10 So that everybody has an opportunity to comment,
 11 I'm going to ask that you keep your comments to a maximum of
 12 fifteen minutes. If you think your comments are going to run
 13 over the fifteen minute period, please summarize them for the
 14 purpose of the oral presentation and then give them here today
 15 in the written form or mail them to us during the comment
 16 period. Again, that's so that everybody will have an
 17 opportunity. We have a lot of people here and we want to make
 18 sure that everybody has an opportunity to offer whatever input
 19 they would like to.

20 If I find that your comments are wandering a
 21 little bit, I may attempt to focus you a little bit. Again,
 22 there are a lot of people that want to give comments. This
 23 will not be an attempt for me to try to limit on what you want
 24 to say but rather to make sure we accomplish what we want to
 25 do at this particular hearing and that's to get all the

1 comments from everybody that wants to comment on the proposed
2 plan and on the alternatives that we're presenting for the
3 clean up the Savage Municipal Well Superfund site.

4 The hearing is an opportunity for EPA to listen to
5 your concerns regarding the studies that we did on the Savage
6 site as well as the proposed plans and the alternatives
7 investigated. This is not a meeting as we had a couple weeks
8 ago in the public hearing for exchange of information. It's a
9 public hearing, we will take comments, transcribe them and
10 there will not be a back and forth that we had at the previous
11 meeting.

12 If you wish to make a statement, you should sign
13 up on an index card that's available up back or at the top of
14 the stairs when you came in. I have several here. If there
15 are more of you who wish to make a statement, please sign on
16 the cards, I will get the cards and then I'll ask you to speak
17 in order of which you signed them up, unless you have
18 indicated that you have some particular pressing reason why
19 you should go earlier.

20 After all the comments have been heard, I will
21 close the public hearing. And if anybody would wish to submit
22 written comments during the public comment period, which ends
23 August 10th, I would encourage you to do so. They should be
24 postmarked no later than August 10th. They should be mailed
25 to our address in Boston and the address is on the third page

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 of that proposed plan.

2 The summary of today's hearing and EPA's responses
3 to your comment, both written and given here tonight will be
4 part of the Record Of Decision for the Savage site. The
5 Record Of Decision is a legal document in which EPA describes
6 its selected remedy and the basis for that remedy.

7 So, I thank you all for coming. I hope you have
8 plenty of comments for us, I'm sure you do. But before we do
9 start, I would like to thank the Hampshire Hills for having us
10 here today, it makes for a nice comfortable setting, I think
11 everyone can hear well.

12 So, with that, Dick, perhaps you can give your
13 presentation.

14
15
16
17
18
19
20
21
22
23
24
25

1 Proposed Plan Overview

2 MR. GOEHLERT: I would like to make one
3 suggestion, if you want to mail comments, mail them to me at
4 this address. And obviously we're not at the Milford Town
5 Hall, but we are on a low budget now and we didn't revise the
6 overheads.

7 Much of what you'll see now was said approximately
8 two weeks ago. Briefly, this is the process we're going
9 through and we are at the hearing. The next step is the
10 Record Of Decision with a response and a summary and the
11 response and summary is the responses to the comments that are
12 given both during the comment period and today. And there
13 will be negotiations to facilitate and implement the final
14 decision of EPA, that is known as remedial action. There are
15 two portions of that remedial action, construction and
16 operational maintenance.

17 Briefly, these are again the results of the
18 remedial investigation, site contaminants, the extent and the
19 site risks. These are also in the proposed plan.

20 A question as to why a cleanup, this was begun at
21 the last informational meeting and there have been several
22 calls to me as well as some letters written in. And again,
23 the reason for the cleanup is to protect residents to exposure
24 to unsafe groundwater, to restore the aquifer drinking water
25 standards and those drinking water standards are known as

1 maximum contaminant levels. We believe the aquifer could be
2 needed for drinking water in the future. And we also believe
3 the aquifer can be suitable for drinking water.

4 This is the extent of contamination and it goes
5 from by the OK Tool, Hitchiner, Hendrix facilities, basically
6 parallel to Elm Street and across back over to Elm Street all
7 the way down to the river, other side of the river back over
8 there. The number on each of these contours of 10, 100, 1000,
9 represents parts per billion of contamination, and this is of
10 total volatile organic contamination in the aquifer.

11 The portion in the light blue down at the end of
12 the plume is is considered to be below the maximum contaminant
13 levels and if you were to sink a well down in here and
14 withdraw water, it would be considered safe for drinking.
15 Anywhere above this line, approximately above the 5 contour,
16 if you were to sink a well in any of that area, that would be
17 considered unsafe drinking water.

18 Before putting on an overhead showing you the
19 components of the preferred alternative, this map shows the
20 locations of the six production wells that would provide
21 withdrawal of groundwater here, here, two one here and one
22 here, and two here on the other side of the river.

23 The volumes of water to be withdrawn from the
24 aquifer total 1100 gallons per minute. So that would be
25 approximately 400 gallons per minute at the head of the

1 contaminant right in there, approximately 600 gallons a minute
2 withdrawn from the middle of the plume, and approximately 100
3 gallons a minute withdrawn from the end of the plume on the
4 other side of the river. There would be an amount of
5 contamination which is not covered by the shaded green
6 portions here which would not be captured for treatment and
7 would undergo what is known as natural attenuation. Each of
8 the alternatives that EPA studied included natural
9 attenuation as part of the remedy.

10 The preferred alternative, if any of you have
11 gotten over to the library to see the documents over there,
12 the preferred alternatives had a number and some letters, MM
13 stands for management of migration and the alternative number
14 was 11A and basically this is what I've just described using
15 the map. There would be two treatment plants, one using air
16 stripping, one using ultraviolet oxidation in the location
17 near OK Tool and the Hitchiner facilities, and there would be
18 one treatment plant in the middle of the plant presently
19 located near or at the existing Savage Well using ultraviolet
20 oxidation.

21 An important point to be made is that all
22 alternatives, including the preferred alternative, would have
23 to have institutional controls over the plume to prevent the
24 use of the groundwater until the groundwater is safe to use,
25 that is for drinking water purposes. MM11A has a minimization

1 of wetlands and what impacts, as do all alternatives. We
2 believe that there may be wells or pipes, one of the plants,
3 treatment plants would have to be located in the flood plain of
4 the wetland. Pumping of the water from the aquifer could
5 impact the water table which would impact wetlands.

6 These items will be carefully considered in design
7 and every effort will be made to minimize any impact of that
8 nature. There will also be site monitoring. Groundwater will
9 be tested on a periodic basis, both on the site where
10 contamination is and where contamination has not yet reached
11 or where sampling is necessary to be protective of people
12 using drinking water from bedrock wells.

13 Cost, this is it's present worth, cost, we have
14 summed all the costs to today's dollars, would be 15.5 million
15 dollars.

16 I would like to briefly go through the other
17 alternatives. I will go through this overhead and the present
18 the maps that go along with each of the treatment
19 alternatives.

20 Plan number 1, the management migration number 1
21 is no action. No action is required by the national
22 contingency plan which is the regulation under which we study
23 these sites and remediate these sites. The no action
24 alternative was carried forward as a requirement of that as a
25 contingency plan.

1 If we did nothing, the MCL, the maximum
2 contaminant levels would not be attained in over a hundred
3 years. Cost of monitoring under a no action alternative for
4 thirty years is estimated at \$764,000.

5 A limited action plan or management migration 2
6 includes natural attenuation and institutional controls. Now,
7 the difference between number 1 and number 2 is that number 1,
8 is we do nothing except monitor. Number 2 is we have
9 institutional controls on the land wherever contamination is
10 above the maximum contaminant levels allowed. Again, natural
11 attenuation would mean you would have the aquifer restored to
12 drinking water quality in over a hundred years.

13 Cost of the monitoring, because the monitoring
14 would be increased over what we do in no action, would be 1.2
15 million dollars over a thirty year time period.

16 And then 3 is treatment of the concentrated plume
17 only. And then 7 and 7A is treatment of the concentrated
18 plume and treatment of a portion of the plume downstream.

19 Before I get any further, let me point out what we
20 mean by the concentrated plume. There is an area in here
21 which we have designated a concentrated plume. The remaining
22 portion of the contamination is considered to be dissolved.
23 The concentrated plume and the dissolved or extended plume
24 will be treated basically in the same manner; the water will
25 be withdrawn for treatment and a discharge made to a surface

1 water with possible recharge.

2 The main thing to understand is that in this area
3 here, the concentrations are of a significantly higher level
4 that we felt that we had to identify that area as a separate
5 area to be addressed.

6 This is a slide which is for alternative numbers 7
7 and 7A. And before I describe that, if the alternative which
8 I described as MM3 would only have wells pumping at location 1
9 and location 2. That would be in the concentrated plume.
10 That would be the withdrawal points under management migration
11 number 3.

12 Alternative 7 and 7A begins the withdrawal here and
13 at four other locations, Savage Well, downstream of the Savage
14 Well, and two wells here. The remaining part of the plume
15 would be left to what would be natural attenuation purposes.

16 There were three other alternatives considered in
17 the feasibility study in the proposed plan. The proposed plan
18 lists 9 and 9A, this would have cleanup contained in twenty to
19 eighty five years at a cost of 21 million to 16.3 million, and
20 actually the 21 million would go with the eighty five years.

21 And then 10 would have MCOs, maximum contaminant
22 levels, or the aquifer cleaned up the drinking waters and that
23 would be attained in ten to thirty years, crossed for a thirty
24 year period and that is 44.3 million.

25 And then 11 is the same as the preferred

1 alternative, MM11A. The difference is in the limitation of
2 treatment. The difference between whether an alternative has
3 an A, is that ultraviolet oxidation is added as a treatment
4 technology in place of air stripping. When an alternative
5 does not have an A, the treatment technology is strictly air
6 stripping. The ultraviolet oxidation represents a cost
7 savings as compared to air stripping for treating a portion of
8 the aquifer. That water which is more efficiently treated
9 with ultraviolet oxidation thus represents a reduction in
10 costs.

11 This would be alternative 9 and 9A, there would be
12 treatment at the head of the plume for the concentrated plume
13 locations 1 and 2 shown on the map. And then all other
14 withdrawal points would be down close to the river. The
15 contamination that was not captured here would have to flow
16 through the aquifer to be caught by these wells located here.
17 The contamination, again, not captured by the shaded area in
18 green would be left for natural attenuation, that
19 contamination in the groundwater would not be captured and
20 treated.

21 And then 10 is the most aggressive alternative
22 that's being presented. This represents capture and treatment
23 of wells in locations 1 and 2 and then capture at thirteen
24 other locations throughout the aquifer, the line from here to
25 there. There would still be an area of contamination of

1 groundwater which would be left for natural attenuation. The
2 number of wells and the amount of pumping total almost 3,000
3 gallons a minute. It means that you are withdrawing a great
4 volume of water. A greater volume of water speeds the cleanup
5 of the aquifer.

6 I would like to end with this one. For those
7 of you at the last meeting, this is a much shorter
8 presentation.

9 Comparing MM11A to the other alternatives, no
10 action is not protective of human health.

11 The limited action alternative, which was number
12 2, will not restore groundwater in a reasonable time and
13 institutional controls may be difficult to enforce over longer
14 periods of time.

15 And number 3, it would take much longer to reach
16 MCLs. It would not control the spread of high concentrations
17 of contamination and would cost nearly as much as MM11A.
18 MM11A requires less time and cost to restore the aquifer than
19 alternatives 7, 7A, 9 and 9A.

20 And then 10, which is again the most aggressive,
21 is not necessary because the alternative are expected adequate
22 to go into the near future.

23 MM11A thus represents a balanced approach that is
24 capturing the highest concentrations of contamination in the
25 aquifer. It is allowing natural attenuation to occur over a

1 pretty good portion of the aquifer. And it is also being
2 protective at the end of the plume where they do have high
3 concentrations of over 600 parts per billion.

4 This brings to close my presentation. I will not-
5 turn you back over to Dan who will allow comments.

6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 Public Comments

2 MR. COUGHLIN: Thanks, Dick.

3 I will now read your names and if you would come
4 to the middle and present us with your comment, please tell us
5 your name and who you represent and then provide the comment.

6 Again, we thank you very much for coming. It's a
7 good turnout for an afternoon. We know this is important to
8 all of you, it's important to us as well. And I would
9 encourage anybody that wishes to say something to feel free to
10 stand up and say it, we do want to hear what you have to say.

11 First, Senator Charles Bass, please.

12 SENATOR BASS: Thank you very much.

13 I want to thank you for the opportunity to appear
14 here today and give us the opportunity to make comments on the
15 EPA's plan to ameliorate the Savage Well hazardous waste
16 problem.

17 For the record, my name is Charles Bass. I
18 represent New Hampshire in the State Senate from District 11,
19 Milford and eighteen other towns comprise my district.

20 Obviously, the Savage Well situation is not one
21 that is new to me. We've been aware of this for some period
22 of time. And I guess it's time that this whole situation came
23 to a head and was resolved and I'm glad that we have the
24 opportunity, as I said, to appear here today.

25 It's my understanding that as part of this whole

1 process, there are two major events. The first, which is what
2 we are considering here today is the proposed cleanup plan
3 which you so ably described to us. And I guess the second
4 part of this process is the discussion of the settlement of
5 the cost of paying for this proposed cleanup. It's my
6 understanding that that portion of the discussion will occur
7 at a later time and it is my hope that if the opportunity
8 presents itself, we, as members of the public, will have an
9 opportunity to make comments for the record on the issue of
10 who should pay for the cost of cleaning up this problem. I
11 will only make one brief comment on that matter.

12 As far as this report is concerned, I was frankly
13 rather pleasantly surprised that EPA didn't choose the most
14 expensive and costly alternative because I didn't see that
15 there was any particular incentive for EPA to do anything
16 differently. I certainly think that the MM11A proposal is
17 reasonable.

18 However, I would make one observation. Your
19 report itself indicates that there really is no immediate
20 health threat from this particular spill or this hazardous
21 waste problem. So, as a result, I think it would make more
22 sense, both economically and also in terms of planning, to
23 make a commitment on a much more limited basis for a period of
24 time, say the MM2, for a period of time to really determine
25 what the extent of the problem was, institute the

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 institutional controls and so forth and then move to something
2 a little bit greater if you weren't satisfied after a period
3 of time as to how that progress was occurring and then move up
4 from there.

5 The plan that you have here calls for a fifteen
6 million dollar expenditure, and although there have been
7 cleanups made in the past of underground hazardous waste
8 problems, we're by no means certain that the MM11A will do
9 what you say it will do. It may do more than it needs to do
10 or it may do less and it certainly puts an unreasonable
11 potential economic burden on this area to achieve those
12 results.

13 As far as the proposed settlement is concerned, I
14 think that your own tables indicate that the major source, or
15 your maps indicate that the major source of this pollution is
16 from a bankrupt company that no longer exists. And I hope
17 that at the appropriate time that it would be clear that the
18 harm is divisible, that it will be possible to assess a
19 percent of responsibility to those parties involved, and limit
20 the liabilities of those parties that are involved on the
21 periphery of this problem to that portion that they were
22 responsible for.

23 I'm also hopeful that our Congressional
24 delegation, our two senators and our congressmen from this
25 area will become involved in this issue over the coming months

1 to give the EPA the benefit of their position on this because
2 this issue is of extreme significance and importance to this
3 community.

4 And I appreciate again the opportunity to speak.

5 MR. COUGHLIN: Thank you very much.

6 Paul Mercier, please.

7 MR. MERCIER: Paul Mercier, and I represent
8 Hitchiner Manufacturing.

9 I have a question that I would like put into the
10 public record and that is, since the TCA, which is the 1,1,1
11 trichloroethane at the Savage Well is within drinking water
12 limits, would the TCA contamination at the well have closed
13 the Savage Well back in 1983?

14 Thank you.

15 MR. COUGHLIN: Dick, do you have any question on
16 his question?

17 I just wanted to make sure that we understand what
18 your question was.

19 MR. GOEHLERT: Paul, do you mean at the Savage
20 Well?

21 MR. MERCIER: Well, the Savage Well was closed
22 down in 1983 because contamination was high. Since the TCA
23 portion was within drinking water standards, and back in 1983
24 by the way, those standards were 1,000 ppb, they're still
25 within drinking water standards at the current 200 ppb; would

1 the Savage Well have been closed down because of TCA
2 contamination.

3 MR. GOEHLERT: If it was just TCA alone?

4 MR. MERCIER: Correct.

5 MR. COUGHLIN: All right, we understand the
6 question. I just wanted to make sure that we knew what it
7 was.

8 Just let me explain that comment. It is a public
9 hearing and we're taking comment here and we're not here to
10 swap information back and forth. So, I don't want to seem
11 that I don't want to answer questions here. I want that
12 understood. We will respond to these questions in the
13 administrative record which is part of the Record Of Decision.

14 Thank you, Paul.

15 Linda Rychwa.

16 MS. RYCHWA: Hi.

17 I'm also a Milford resident for over twenty years.
18 And I'm also a Hitchiner employee. And I would like a
19 question for record, also.

20 I would like to know why the EPA hasn't considered
21 an option that would place a treatment at the Savage Well that
22 would allow the town of Milford to drink the water from the
23 well.

24 Also, under the EPA's goal, the goal is to allow
25 the town to drink the water safely sometime in the future, why

1 not now? The water will be just as clean coming from the
2 treatment plant now as it will in thirty or sixty years,
3 whatever EPA is proposing. Why wait and waste all the water
4 and dump it into the ground or the river?

5 Thank you.

6 (Applause)

7 MR. COUGHLIN: Thank you.

8 Dennis Patschke.

9 MR. PATSCHKE: Yes, my name is Dennis Patschke.

10 I work at Hendrix. Although I haven't moved into
11 Milford yet, I'm working on it and I was considering being a
12 small business operator in the future. But all this is kind
13 of on hold because it's to my experience that when the main
14 bread winning industry of the local community is taken away,
15 the ripple affect is so profound. I've already gone through
16 this in the steel industry of Pennsylvania where the town went
17 literally bankrupt, social services, medical services that
18 were lost, vocational schools were lost and it was all because
19 there couldn't have been a reasonable compromise with the
20 industry at the time. And it looks to me like almost the same
21 thing is happening again here. And it seems like a clean
22 Savage Well is not much compensation when half the town's
23 population can no longer thrive there and the next generation
24 moves on.

25 Thank you.

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 (Applause)

2 MR. COUGHLIN: Thank you.

3 Greg Babich.

4 MR. BABICH: My name is Greg Babich.

5 I'm also an employee at Hitchiner and a resident
6 of Amherst.

7 I have a couple of questions here to bring up that
8 are related, with some comments to follow.

9 It was said in the meeting, the last public
10 meeting, that EPA used nine criteria for establishing and
11 selecting a remedial action. So two questions in regard to
12 that, of the criteria, one of the nine criteria that Congress
13 established for selecting remedial action requires that the
14 state accept the EPA's proposed alternative and also that
15 another of the criteria requires that acceptance of the EPA
16 remedy be also by the community, which is the Milford area.

17 So, two questions that I have are, will the EPA
18 modify its proposed remedy to obtain state acceptance and will
19 the EPA modify its remedy to obtain community acceptance in
20 the Milford area. That was not addressed in the proposal at
21 the public meeting. And there were some concerns brought up
22 the state at that meeting that were not addressed by the EPA
23 concerning the impact on state lands where the corn fields are
24 and also the state fish hatchery. Also, concerns were brought
25 up by the community in regards to use of the water for

1 drinking water which at this time is not an immediate need for
2 the community.

3 It seemed to be the EPA's stance that their one
4 and only assumption and objective was to make the water whole
5 for drinking purposes.

6 These two issues are very important considering
7 the, and given the power that the EPA holds in making
8 environmental decisions such as this on the cleanup.

9 And I just wanted to make a comment that the
10 environmental impact does not just concern clean water, corn
11 fields and fish, but also the environmental impact is on all
12 of us, all of us as part of the environment as part of this
13 community, in this town and this state. Our lives and
14 livelihood, quality of life, impact on local businesses is all
15 really hinging on what comes out of this total decision.

16 We are now at a point now where two of the four
17 PRPs that are left as being viable are both companies that
18 were born and raised in New Hampshire and in this area,
19 neither one of which caused this problem, neither did the town
20 of Milford cause this problem. So, it would be unfair, in my
21 judgment, for the EPA to propose that the two remaining PRPs
22 be held responsible for this cleanup, particularly given the
23 fact that there's no certainty for the success of the proposed
24 method of the clean up.

25 I would strongly urge that the EPA work closely

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 with the community and the PRPs that still exist, in coming up
2 with a reasonable alternative that will address all the
3 environmental impacts within the community, within the people
4 of the community, along with the natural environment itself.

5 Thank you.

6 MR. COUGHLIN: Thank you.

7 Charles Hayward, please.

8 MR. HAYWARD: I would like to stand here because
9 it's hard for me to get around.

10 I'm not going to be here to tell you how to do it
11 or what to do. What I'm saying is do it and do something.
12 Last year, I had my 140 acre farm sold and by the laws of the
13 EPA, whoever I sold it to could be made to help clean it up.
14 Now, I can't sell it and I can't do anything with it until
15 something happens.

16 I think maybe it's so that somebody could release
17 that farm or at least my 140 acres so I can do something with
18 it and not come back on somebody I sell it to. I think it's
19 terrible that they can come back on something that I tried to
20 do with it and sell and get some money out of it, I own it and
21 I can't do a thing with it. I can't farm it, nobody else
22 wants to farm it. If I sell it, then the EPA says if you sell
23 it to them, they can be held liable for it or part of it.
24 Then the banks closed up and wouldn't lend them money and I
25 can understand that.

1 And all I'm asking is, somewhere along the line
2 and soon, I hope that somebody will get a release so we can do
3 something.

4 (Applause)

5 MR. COUGHLIN: Thank you.

6 Avis Rosenfield.

7 MS. ROSENFELD: My name is Avis Rosenfield.

8 I represent Hitchiner Manufacturing.

9 I'm not a resident of Milford with the exception,
10 however, of being an employee at Hitchiner and looking for the
11 future of my life being at Hitchiner. I would like to see
12 Hitchiner and other companies in this area prosper. And I
13 don't see how that's going to happen if there is not an
14 expedient resolution to this matter, just as the previous
15 gentleman stated.

16 Other than being politically expedient, what is
17 the engineering justification for the two wells at the very
18 dilute end of the plume? That would be my first question.

19 Additionally, even a nontechnical person can see
20 that these wells will be pumping such dilute amounts of PCE
21 that nothing significant would be captured. That's a rather
22 large expense without much benefit. I would like to know,
23 again, what would be your justification for doing that?

24 Seeing that in the past there have been a number
25 of Superfund sites across the United States, what have been

1 your successes as of late? Have they been bio, have they been
2 strippers, have they been in situ situations? What have they
3 been and what technology do you consider current and would you
4 be imposing something or would you be working with companies
5 to make sure that it is current technology and reasonable?

6 Thank you.

7 MR. COUGHLIN: Thank you.

8 David Godbout.

9 MR. GODBOUT: I'm David Godbout from Hitchiner
10 Manufacturing.

11 I have a question. If, as it seems apparent, the
12 EPA is unilaterally going to decide what the remedial action
13 is going to be, why won't you discuss who is going to be
14 ordered to pay for it?

15 Thank you.

16 MR. COUGHLIN: Thank you.

17 Leon Stillwagon.

18 MR. STILLWAGON: Yes, I'm Leon Stillwagon.

19 I'm an employee of Hitchiner Manufacturing and a
20 resident of Amherst for fifteen years.

21 I would like to make a comment first, and then I
22 have a couple of questions about PRPs. It's a great
23 abbreviation. It could stand for Positively Responsible
24 Party. It could stand for Probable Responsible Party. It
25 could stand for and does, Potential Responsible Party.

1 My questions are in line with that. My first
2 question is, what information does the EPA have concerning the
3 hazardous waste practices of the dozens of other companies and
4 individuals located at the site who could have contributed to
5 the contamination? We focused in on four potentially
6 responsible parties and made a lot of that. But these
7 contaminants are very common chemicals that are used
8 throughout many industries and many businesses. I would like
9 to know who the other PRPs might be? Why hasn't the EPA
10 pursued any of these other PRPs? And, does the EPA intend to
11 name any of these additional PRPs that I've asked for?

12 Thank you.

13 MR. COUGHLIN: Thank you.

14 Steve Checkoway.

15 MR. CHECKOWAY: My name is Steve Checkoway.

16 I'm a Hitchiner employee and a Milford resident.

17 I just have a couple of quick questions for the
18 record. Why hasn't the EPA adopted a phased approach to
19 installing the treatment wells? And, will the EPA in the
20 future consider a phased approach?

21 Thank you.

22 MR. COUGHLIN: Thank you.

23 Jim Hendrix, please.

24 MR. HENDRIX: My name is Jim Hendrix.

25 I'm a resident of Amherst for all my thirty three

1 years.

2 I would just like to, I don't know if you people
3 are the decision makers that sit before us, but I would like
4 the decision makers on the financial responsibility for the
5 cleanup to just think for a minute about, you know, I'm going
6 to assume that you all have families and, you know, you live
7 in a nice home and a nice community and a nice town somewhere
8 in America. I would like you to just think for a minute about
9 the EPA coming in and making a decision what we, as laypeople,
10 believe is very unfair in making a decision to financially
11 wipe your community, your home, your ability to make a living
12 and your way of life, just wipe it economically and
13 financially off the map. I would just like you to keep that
14 in mind.

15 Thank you.

16 (Applause)

17 MR. COUGHLIN: Thank you.

18 Frederick Lofgren.

19 MR. LOFGREN: I'm Frederick Lofgren.

20 I'm the Chief Financial Officer for Hitchiner
21 Manufacturing Company.

22 I have a few comments to make. And being a
23 financial person, I'm sensitive to Mr. Goehlert's reduced
24 budgets, so I will also give you a transcript of what I'm
25 about to say. But I think it's something that everybody ought

1 to have an opportunity to hear.

2 Hitchiner Manufacturing Company wants it to be a
3 matter of public record that first, Hitchiner is not
4 responsible for the tetrachloroethylene, or PCE, contamination
5 which is emanating from the OK Tool Company site and which is
6 the principal cause of the contamination of the Savage Well
7 aquifer. Hitchiner has never used PCE in its production
8 process and, as everyone knows, PCE is a carcinogen.

9 Hitchiner is prepared to construct and operate a
10 well and treatment plant at the Hitchiner facility to clean up
11 the relatively small area of concentrated
12 1,1,1-trichloroethane, or TCA, which is adjacent to the
13 Hitchiner plant.

14 The small amount of TCA at the site did not cause
15 the closing of the Savage Well. And even today, as
16 Mr. Mercier pointed out, the concentrations of TCA in the
17 Savage Well are well below current drinking water standards.
18 TCA is not a carcinogen.

19 Hitchiner generally supports the proposed remedy
20 for the site which the EPA has selected, although we have some
21 technical and some phasing concerns which we will -- which
22 will be addressed in a written technical brief sometime before
23 the August 10th deadline.

24 Hitchiner insists that the issue of fairness in
25 deciding who's going to pay for the cleanup is as important or

1 perhaps even more so than just how it's going to be done.

2 The well and aquifer problem was caused by OK Tool
3 Company. OK Tool Company should bear the major share of the
4 cost. Since the EPA has allowed the assets of the OK Tool
5 Company to be disbursed to its past and present owners,
6 fairness dictates that Superfund monies should be used to pay
7 for OK Tool's share of the costs that can not be recovered
8 from OK Tool Company.

9 Four local companies, Hitchiner, Hendrix Wire and
10 Cable, New England Steel Fabricators and ourselves, originally
11 agreed to conduct a study of the Savage Well site and share
12 the cost equally. It was obvious in 1985 that a primary cause
13 of the contamination at the site was the handling of PCE at OK
14 Tool Company. Nevertheless, the four companies agreed to
15 conduct the study to determine the extent of the problem and
16 what should be done to deal with it.

17 Hitchiner joined in the effort to study the site
18 and working closely with the EPA as required by the Superfund
19 law and we did this because we believed that it was the fair
20 and reasonable thing to do as responsible members of our
21 community. That study has been completed and you've given
22 some of the results here. It has confirmed what we knew all
23 along, that the principal source of the contamination which
24 closed the well and which will require remediation at the site
25 came from OK Tool. And yet, as the study progressed, OK Tool

1 Company sold its business, closed its Milford plant, stopped
2 paying its share of the investigation costs and was allowed to
3 distribute the profits from the sale of the company to its
4 former owners. To complete the study, Hitchiner paid OK Tool-
5 Company's share.

6 In early 1990, New England Steel Fabricators filed
7 for bankruptcy protection and has gone out of business. The
8 investigation was completed by Hitchiner and Hendrix.

9 The study also disclosed that there is a
10 relatively small area of TCA contamination adjacent to the
11 Hitchiner plant. It's important to understand that the
12 concentration of TCA in the groundwater outside of the
13 Hitchiner property, or a very short distance from it, is below
14 the cleanup standards which the EPA will be working to.

15 In other words, the only area where TCA is a
16 problem and requires remediation is adjacent to the Hitchiner
17 plant itself. Hitchiner publicly offered several weeks ago to
18 bear 100 percent of the costs of remediating this area of TCA
19 contamination.

20 And I again, I would like to say that Hitchiner
21 generally supports the EPA's proposed remedy at the site. But
22 I would like to mention a few technical concerns in that
23 regard.

24 While there's a growing national debate as to
25 whether the methods currently used for remediating Superfund

1 sites are working, there is general agreement that the most
2 concentrated areas of contamination should be and can be
3 contained. But perhaps they can not be cleaned up to drinking
4 water standards. Both the EPA's remedy and Hitchiner's
5 proposal provide for containment and treatment of the
6 extracted groundwater at the OK Tool plant and in the TCA area
7 adjacent to Hitchiner.

8 The EPA proposed plan, despite being more
9 expensive than is necessary, will not under any circumstances
10 provide a water supply for the town of Milford in the
11 foreseeable future. In other words, an enormous amount of
12 money is going to be spent to reduce the contamination in the
13 aquifer simply to do it in a shorter period of time with no
14 water from the site being available to the town.

15 The Hitchiner/Hendrix proposal calls for
16 implementing containment at the OK Tool and Hitchiner
17 locations. All the technical evidence strongly suggest that
18 additional steps out in the middle of the aquifer and at the
19 eastern end of the aquifer ought to be deferred or phased so
20 that it can be determined whether containment at the western
21 end of the plume is effective. If it's not effective, it
22 significantly alters what can be done at the eastern end of
23 the plume in the foreseeable future.

24 It's becoming more and more common around the
25 country for Superfund remedies to be selected and imposed on a

1 site only to find within a relatively short period of time
2 that they are ineffective and something else needs to be done.
3 We do not believe that this community can afford to spend huge
4 sums of money at the site, especially in the face of growing
5 evidence that Superfund remedies that seem like a good idea on
6 paper do not work when they are built in the field.

7 For this simple reason, Hitchiner strongly
8 believes that the remedy at this site should be phased. If,
9 after containment is achieved and a period of time of
10 monitoring the site has demonstrated its effectiveness,
11 Hitchiner believes that EPA should then proceed to install
12 wells in the middle portion of the plume to capture and remove
13 contamination between the containment area and the midpoint of
14 the plume.

15 Hitchiner has proposed, along with Hendrix, to pay
16 for and operate one of those large mid plume wells located at
17 the Savage Well. Since making our proposal in May, we have
18 heard the town's concerns as they were expressed at the
19 July 11th meeting that the treatment plant at the Savage Well
20 could produce usable water, at least for emergency backup
21 purposes and could be easily connected to the town water
22 system.

23 Hitchiner is quite willing to explore that option
24 to the extent it is practicable to do so. In fact, if the
25 town wishes to pursue that option, Hitchiner, after the

1 treatment plant is built at the Savage Well site, is willing
2 to give the Savage Well property, which it now owns, to the
3 town, or to lease it to the town at no cost, subject only to
4 whatever technical and legal limitations the government may
5 impose upon us.

6 In connection with this modification of our
7 earlier offer, actually as part of our earlier offer,
8 Hitchiner would be willing to increase the pumping rate of the
9 Savage Well, which would include treatment at the well head,
10 from 300 to 500 gallons per minute. That's an amount which
11 would equal the earlier output of the well to the municipal
12 public water supply system.

13 In another matter, EPA has proposed two small 50
14 gallon per minute wells to be located at the far easterly end
15 of the plume. While we will have environmental engineering
16 consultants make some formal comments on this, I simply want
17 to point out that those wells add cost for virtually no
18 benefit at the site. The level of contamination in the water
19 at that point in the point is near to the cleanup level and is
20 at the lower limit of detection capability. Pumping 100
21 gallons per minute of water for an indefinite period of time
22 would simply mean that significant amounts of water would be
23 spent to pump enormous quantities of water while attempting to
24 remove nearly undetectable amounts of contamination. The
25 levels are so low in this part of the aquifer that as the

1 water discharges to the river, the level of contamination
2 becomes truly nondetectable. We think the wells are simply
3 not required.

4 The EPA proposal, unlike Hitchiner's proposal,
5 calls for a second mid plume well, which would be located
6 somewhere in the vicinity of the Savage Well. The PCE
7 contamination emanating from OK Tool Company is the basis, no
8 doubt, for EPA proposing this second well. And it is as plain
9 as it can be that the liability for the cost of that well
10 should be imposed on OK Tool Company.

11 If EPA, for whatever reason, does not succeed in
12 compelling OK Tool to pay for the contamination at its own
13 property and for treatment in the mid plume area, then EPA
14 should use the Superfund, which was created for this purpose,
15 to pay for this second mid plume well as well as all of the
16 costs at the OK Tool Company.

17 If the EPA continues to believe that the two wells
18 located at the end of the plume serve any useful purpose, then
19 it should require that OK Tool Company or the Superfund defray
20 the cost of those wells, too. In fact, most of the
21 contamination down there, if not all of it is PCE anyway,
22 which Hitchiner never used.

23 In summary, Hitchiner has always felt that it has
24 a responsibility to this community. And in this case, it's
25 taken the lead in trying to deal with the problem which it did

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 not cause.

2 To the argument that Superfund rules of so called
3 joint and several liability should be applied in a
4 devastatingly harsh fashion by EPA to compel Hitchiner and
5 Hendrix to pay for the problem caused by OK Tool, I would
6 offer just this brief, illegal response. The century old
7 principle of joint and several liability was applied to
8 situations where several parties are involved in an accident
9 or an injury and it's impossible to determine the relative
10 share of the responsibility. You can almost picture if four
11 cars come together at an intersection without anybody being
12 able to determine why they met in the middle, this is the kind
13 of situation that's required to be used. However, when you
14 are able to divide the responsibility, you must do so. At the
15 Savage Well site, nothing could be clearer than that OK Tool
16 Company caused the PCE releases that closed the Savage Well.

17 In light of that fact, it would be grossly unfair
18 and contrary to the law to try and impose on Hitchiner and
19 Hendrix liability for contamination at this site that they
20 clearly did not cause. The offer made by these two companies
21 to pay all of the costs of the containment well at the
22 Hitchiner property and all of the costs of the treatment
23 facility at the Savage Well far exceeds what their legal
24 liability could possibly be at this site.

25 Hitchiner and Hendrix did not cause the problem

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 requiring remediation of the Savage Well and the surrounding
2 aquifer. That problem was clearly caused by OK Tool Company.
3 Nevertheless, Hitchiner continues to be prepared to put its
4 community responsibilities ahead of other, more narrow
5 interests and it has always hoped that the other potentially
6 responsible companies would do the same.

7 Since I can see Mr. Coughlin watching his watch,
8 I'll just wrap up.

9 As you can see from my remarks, we're offering
10 general support for EPA's approach at this site. We've worked
11 closely with the EPA over the last several years as the
12 Superfund process contemplated private companies would do.
13 And there haven't been any more cooperative companies, I
14 think, than you could find with Hitchiner and Hendrix. We
15 stand ready to continue to do more than should be strictly
16 required of Hitchiner, to pay more than its fair share and to
17 work with EPA towards the end of cleaning up the aquifer.

18 As we've said before, however, it would be unfair
19 to attempt to impose a grossly disproportionate share of the
20 cost, of the liability at this site on Hitchiner
21 Manufacturing. And we will resist by all means available to
22 us.

23 We will submit specific comments on items I've
24 outlined today before the public comment period closes. We
25 urge EPA to deal with the only real issue which separates us,

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 mixed funding. EPA should determine, consistent with the
2 mandate of Congress, as expressed in Section 122 of the
3 Superfund law, that if it can not compel OK Tool Company to
4 pay its fair share at this site, the Superfund must be used to
5 pay for OK Tool's share of the remedy.

6 Thank you.

7 (Applause)

8 MR. COUGHLIN: Thank you.

9 Lee Mayhew.

10 MR. MAYHEW: We are also forwarding a copy of this
11 letter to your office so you will have it for your files.

12 Writer's correspondence to the Board of Selectmen
13 formally notifies the Regional Office of criteria acceptable
14 to the town of Milford, and that the town, as former owner of
15 the subject well, formally and officially requests to be a
16 party to the resolution, remedy, negotiation process.

17 The position of the current and past Boards of
18 Selectman has been that any solution to the Savage Well issue
19 must be balanced and cause no harm to the town, its taxpayers
20 and its tax base. Additionally, the solution must pose no
21 threat to the viability, marketability and financial soundness
22 of Hitchiner Manufacturing Company, Hendrix Wire and Cable and
23 other parties.

24 As you are aware, there are only two functioning
25 companies left of the original potentially responsible

1 parties, those being Hitchiner and Hendrix. As such, it is
2 even more imperative that any remediating program be one which
3 is fair and proportionate to the alleged involvement and
4 impact of the companies upon the Savage Well. Where there is
5 proven responsibility for contamination, there must be a
6 proper apportionment of costs. Where there is responsibility
7 but no apparent source of funds for remediation, agency or
8 Superfund monies must be committed. A so called deep pocket
9 solution shall not be acceptable.

10 The only solution acceptable to the citizens of
11 Milford and its Board of Selectmen is one which is impeccably
12 and holistically fair to all members of the community.

13 As has been mentioned in prior correspondence, the
14 Board of Selectmen is aware that there will be discussion and
15 concerns over the Savage Well and this aquifer as a water
16 source. We are also cognizant that circular places a high
17 priority on a principal drinking water supply which has become
18 contaminated. However, we would be remiss if we did not
19 remind EPA that the Savage Well site is not currently used as
20 a drinking water source. The property is not owned by the
21 town, having been sold to Hitchiner Manufacturing Company with
22 the approval of the voters at a special town meeting.

23 In addition, adequate water supplies are currently
24 available to replace the supply formerly provided by the
25 Savage Well. New Hampshire regulations may proscribe future

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 use of the aquifer as a municipal supply because the current
2 and foreseeable future use of the land that is contributory to
3 the aquifer includes incompatible uses such as agriculture,
4 commercial and industrial operations. Therefore, remediation
5 of the aquifer to high human health criteria may not be
6 appropriate.

7 Further in this correspondence, we will present
8 data regarding the availability of water supplies which we
9 believe the agency has not given sufficient and credible
10 review to in fashioning a fair and mitigated proposed
11 settlement.

12 We must point out at this time, as we have in the
13 past, how difficult it is for us and other interest groups to
14 give a comprehensive and thorough review to the agency's plans
15 when so much information is withheld from the municipality and
16 the general public. The requirement to receive comments as
17 they relate to community acceptance can not be properly served
18 without a complete release of information as to allocation
19 process and parameters, decision making rules, authority and
20 eligibility for use of federal Superfund monies. Without this
21 data, we are assuming that the agency could decide its course
22 of action without taking all factors into consideration. We
23 have not been able to obtain any information to dispell this
24 concern.

25 We are concerned with the potential for major

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 economic and financial impact to the town without a balanced
2 solution. In the remaining and functioning companies, we have
3 almost 1300 employees who face the loss of their livelihood
4 should a balanced solution not be developed. Of these 1300
5 employees, over 200 are residents of the town of Milford. If
6 these people become unemployed due to the financial failure of
7 the companies, vis a vis a Savage Well solution, the
8 horrendous impact is spread across the entire town.

9 The welfare budget, which all have been aghast at
10 as it has increased this past year, would be increased again
11 by a minimum estimate of \$180,000 for services. The town will
12 suffer an estimate, worst case scenario, loss of real estate
13 tax of \$818,846, and we would note that the balance of the
14 taxpayers of the town of Milford would have to assume this
15 lost tax burden.

16 The only alternative to this assumption would be
17 the reduction of services. The town of Milford and the school
18 department have been operating on relatively tight, relatively
19 flat budgets over the last year or year and a half.

20 In 1985, after the Savage Well was removed from
21 our system's capacity, the town's analysis of Milford's
22 average daily pumping demand versus our total capacity,
23 without the Curtiss Well, number one, would fall short of
24 meeting the state's standards by approximately twenty seven
25 percent.

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 As a result of this, the town of Milford and the
2 State Water Supply Division looked at other long term
3 alternatives for the town. The State advised the town that
4 long term alternatives for supplying water to Milford were
5 very limited and serious consideration should be given to out
6 of town alternatives. Four options were identified by the
7 State, the most viable being construction of a water main and
8 booster pump station to connect Milford's water system to the
9 Penechuck Water Works. As such, State officials steered the
10 town in this direction of finding a safer and more reliable
11 source of drinking water. This was accomplished in June of
12 '87 with the Penechuck Water Works. This agreement offers the
13 town of Milford up to two million gallons of water a day.

14 It is important to note that our decision was
15 based on cost, source reliability, water quality, ability to
16 meet long term demand requirements, ability to implement the
17 complexity and safety of the operation of the system. The
18 ability to flexibly meet long term quantity and quality was
19 and is a key factor. The Penechuck agreement assures the town
20 that a safe, portable water source is available for several
21 years.

22 On numerous occasions most recently outlined in
23 the agency's proposed plan and dated July of 1991, the EPA has
24 alluded to the fact that Milford's current water supplies are
25 adequate for the near future or the short term.

1 In addition, the EPA goal of restoring the Savage
2 Well to drinking water standards and making it available as a
3 future water supply has always also been stated. The purpose
4 of the following discussion is to document that Milford's
5 existing water supplies are not only adequate for the near
6 future, but will last well into the next century.

7 Since EPA advocates the use of worse case
8 scenarios, the following analysis assumes that Milford's
9 population will expand at an annual growth rate of 3.1 percent
10 over a fifty year period. This rate of growth reflects the
11 population expansion that occurred during the 1980s, the
12 largest growth period in the state's history.

13 Today, Milford has the ability to obtain 4.25
14 million gallons of water a day. This supply is obtained from
15 the community's existing wells and reflects the maximum
16 capacity available from the existing Pennechuck water line. In
17 projections of future water use, the current ratio of gallons
18 to people in 1990 was kept constant throughout the projection,
19 table 1(a) which will be in the documents we provide you,
20 outlines a fifty year scenario and demonstrates that Milford's
21 current water supplies are more than adequate through the year
22 2037. The above analysis is useful in demonstrating that
23 Milford's water supply is more than sufficient even under the
24 worst case scenarios.

25 But, eventually the reality of real world events

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 must enter into this discussion. The use of an occurrence of
2 a sustained growth of 3.1 percent over a fifty year period is
3 absurd. The fact that New Hampshire has currently experienced
4 one of the worst recessions ever to visit the state, further
5 acknowledge that this type of growth will never occur. It is
6 also important to note that over the past decade, when Milford
7 grew at such an unprecedented rate, the community's average
8 daily water use fluctuated a mere 40,000 gallons a day over
9 that ten year period.

10 It must also be pointed out that another well
11 could be located in the Curtiss Well field with a capacity of
12 700 gallons per minute. This would provide an additional
13 672,000 gallons of water a day. In fact, the U.S.G.S. of this
14 portion of the aquifer indicates a potential yield of an
15 additional six million gallons of water per day. In addition,
16 Penechuck Water Works currently has an eleven million gallon a
17 day reserve capacity along with another million gallons a day,
18 we will soon be obtaining from an groundwater source in
19 Amherst.

20 It is clear from the evidence presented that
21 Milford not only has adequate water supplies to serve our
22 needs to the year 2037, but well beyond. It may well be the
23 goal of EPA to restore the Savage Well to drinking water
24 standards, but the timing of this cleanup process should not
25 be hastened in order to supply our community with additional

1 water. This fact is of particular importance when discussing
2 the migration management alternative that is proposed. And we
3 should do an analysis of the time, the cost and everything
4 over the phased approach.

5 It is therefore incumbent upon the EPA to weigh
6 the fact that Milford does not need the Savage Well at this
7 time and should temper any final action with this in mind; the
8 economic viability of our community rests upon it.

9 The town of Milford and its Board of Selectmen
10 wants EPA to recognize our deep concern in fashioning a cost
11 effective and reasonable remedy for the Savage Well site as
12 required by EPA's own regulations.

13 We are aware that two of the FRFs, Hitchiner
14 Manufacturing Company and Hendrix Wire and Cable are prepared
15 to pay for a significant portion of the cleanup, even though
16 the most contaminated area is not on their property. We
17 believe that it would be wrong and not in the spirit of
18 current legislation to expect them to pay for the entire
19 remediation but rather, Superfund monies must be used to cover
20 costs of the aforementioned companies' responsibility and what
21 they are prepared to commit to.

22 Milford has always dealt with its problems in a
23 cooperative and reasonable manner. This community and its
24 members have not shirked responsibility and we are not doing
25 so at this time. We do insist on fairness and that the agency

1 understands the needs of the community as a whole and do not
2 proceed with a functionally myopic solution. This is a
3 community issue and we wish to deal with it in that manner.
4 It would be a crime to damage our community and our resources
5 with an unworkable solution.

6 Thank you.

7 (Applause)

8 MR. COUGHLIN: Thank you.

9 Scott Higgins.

10 MR. HIGGINS: I'm Scott Higgins.

11 I'm a resident of Milford and an employee at
12 Hendrix.

13 I want to touch base on a couple things.
14 Reviewing the proposal that you set forth, talked about DNAPLs
15 and, out of your text, PCE, TCA may exist below the water
16 table as DNAPLs. Because current technology can not easily
17 locate free phase DNAPLs, the existence is based on
18 circumstantial evidence and the amount of DNAPLs is not
19 possible to be determined. If pockets of free phase DNAPLs
20 are slowly dissolving and contaminating surrounding
21 groundwater, then they will continue to be a long term source
22 of contamination.

23 It also says EPA estimates that groundwater would
24 be restored drinking water standards in less than thirty years
25 if no free phase DNAPLs exist. If free phase DNAPLs exist,

1 drinking water standards might not be met within the
2 foreseeable future for reasons of technological
3 impracticability. Then you go back into it, on the concentrated
4 plume, the EPA has not determined that free phase DNAPLs exist
5 in the plume or, that it is technically impractical. Back and
6 forth, two different ways, it can only be one.

7 On the costs, you said in the last session that
8 the costs were figured to have a measurement error of minus
9 30, plus 50 based on thirty years. We may not just be talking
10 thirty years, we may be talking a lot longer. And if DNAPLs
11 do exist, the costs will continue to the two viable parties
12 left for the next hundred years or more.

13 Faster is not better especially if DNAPLs exist.

14 Talking about PRPs out of your proposal, NHDAS,
15 inspection of OK Tool plant found a degreasing tank had been
16 directly connected to a drain in the plant floor. Later on,
17 groundwater flows eastward from the OK Tool building. The
18 remaining principal PRPs, Nesfab isn't even in the plume, yet
19 it gets named as a PRP. I'm looking for the fairness. The
20 analogy I put down here is my neighbor murders his wife and
21 then commits suicide, under my understanding of what the EPA
22 has put out as a PRP, I am responsible and I have to pay.
23 That's what I see out of it.

24 Thank you.

25 (Applause)

1 MR. COUGHLIN: Thank you.

2 Maureen Raiche.

3 MS. RAICHE: I'm Maureen Raiche.

4 I'm an attorney here representing OK Tool, Inc. as
5 it exists today. I have a brief statement to make.

6 The contamination of the Savage Well was
7 discovered in 1983. Since that time, the entire Savage Well
8 site including the manufacturing operations of all companies
9 in the vicinity have been under the careful watch and control
10 of the New Hampshire Department of Environmental Services and
11 the EPA.

12 In the early to mid '80's the original owners of
13 OK Tool began looking to sell several companies including OK
14 Tool. The former owners made the purchase of OK Tool the
15 requirement of any deal. The current owner of OK Tool
16 purchased it in September of 1987, some four years after the
17 contamination was discovered.

18 However, at the time of the sale the only
19 disclosure made was that there were allegations that a minor
20 contamination problem may exist at the site and that upon
21 further examination, the company would be cleared. On those
22 representations, the current owner bought OK Tool and the
23 other company.

24 At the time of the purchase, the plan was to shut
25 down OK Tool because it was not profitable and was unable to

1 employ any significant number of Milford residents. The
2 operations of OK Tool ceased in July of 1987. Williams &
3 Hussey, a division of OK Tool, was sold in December of 1987
4 and the manufacturing operations ceased there in February of
5 1988.

6 The new owner sold the product line and
7 manufacturing equipment to outside interests. A significant
8 portion of the monies from the sale, almost \$300,000, was
9 given to the group of potentially responsible parties
10 including Hitchiner, Hendrix and New England Steel Fabricators
11 to cover OK Tool's share and the EPA remedial investigation
12 and feasibility study. The balance of the money was used to
13 maintain the building as well as to support engineering and
14 legal costs at the site. At the current time, the only asset
15 of OK Tool is the land and building on Elm Street here in
16 Milford.

17 From the studies at the site, it appears that
18 prior manufacturing operations and waste management practices
19 of OK Tool may have contributed to the contamination of the
20 Savage Well aquifer. The same studies establish that the
21 manufacturing operations and waste management practices of
22 Hitchiner and Hendrix also contributed to the contamination.
23 To the extent that OK Tool contributed to the contamination,
24 it was done under the direction and control of the former
25 shareholders, managers and operators of the company.

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 It appears that instead of buying a company with
2 an insignificant problem, the current owner bought a company
3 with an apparently larger problem.

4 The site remedial investigation indicates a source
5 of PCE contamination in the vicinity of the OK Tool facility
6 north of Elm Street and other possible PCE sources to the
7 south of Elm Street.

8 The feasibility study reports an additional PCE
9 source in the vicinity of monitoring well MW20 which is
10 located down gradient of the Hendrix facility. A source is a
11 release of contaminants to the soil and groundwater. The PCE
12 released to the Savage Well aquifer may have included both
13 nonaqueous phase PCE solvent and trace concentrations of
14 dissolved PCE solvents.

15 According to the remedial investigation,
16 groundwater contour, elevation and flow direction figures,
17 groundwater does not flow from the OK Tool Company building to
18 the south of Elm Street where the Hitchiner Manufacturing
19 Company facility and Hendrix Wire and Cable facility are
20 located.

21 According to the remedial investigation, the
22 groundwater elevation contours and flow direction figures were
23 developed while Hitchiner and Hendrix had their production
24 wells in full operation.

25 Further, the changes in groundwater flow

1 directions during operation of the former Savage Well would
2 result in an easterly groundwater flow direction making it
3 less likely for PCE contaminated groundwater to flow from the
4 OK Tool facility to the Hitchiner and Hendrix facilities.
5 Therefore, dissolved PCE migrating with groundwater from the
6 OK Tool Company facility source should not result in
7 contaminating the groundwater at the Hitchiner Manufacturing
8 Company and Hendrix Wire and Cable Company facilities.

9 The 1985 hydrogeological study report of the
10 Savage Well site reported that Hitchiner had used TCA in their
11 process and also used PCE in the past. Many New England
12 facilities used PCE as a solvent and industrial degreaser from
13 the 1950's to the late 1970's before changing to the less
14 toxic TCA in the late '70's and early '80's.

15 Hitchiner Manufacturing has indicated that their
16 records today include the purchase of two fifty five gallon
17 drums of PCE. Just one gallon of PCE, if dissolved in
18 groundwater, can contaminate up to 100 million gallons of
19 groundwater at a concentration of five parts per billion,
20 which is the EPA drinking water standard for PCE.

21 Based on the remedial investigation and
22 feasibility study reports and DES information, it appears that
23 Hitchiner and Hendrix have PCE contaminated groundwater on
24 their property south of Elm Street that may be due to their
25 past operations or waste management practices.

1 We were surprised to see that the other PRPs
2 claimed that OK Tool was the only participant of contamination
3 at this site. Clearly, the scientific studies and other site
4 information indicates that that is not the case. For many
5 years, both Hitchiner and Hendrix discharged water into a
6 stream which traveled off their properties.

7 Hitchiner has had a history of fines and problems
8 with the State regarding waste disposal practices. Hitchiner
9 in fact paid the consequences of contaminating cows in a
10 neighboring property. Also, Hitchiner discharged waste for
11 many years into an unlined, waste water lagoon on their
12 property known as Lake Louise.

13 According to the available records, OK Tool had
14 been shipping its chemical waste off the property to
15 appropriate disposal sites in accordance with state and
16 federal laws since the early 1980's. In addition, the company
17 ceased using or purchasing PCE in 1984.

18 Clearly, the current ownership did not participate
19 in and had no control over the prior manufacturing and
20 management practices that may have contributed to the problem.
21 In fact, the current owner of OK Tool, along with Hitchiner
22 and Hendrix, have filed a lawsuit against the past owners and
23 operators of the OK Tool Company seeking contribution from
24 them for the damages they have done to the aquifer. Any
25 assistance that the EPA could provide in that endeavor would

1 greatly increase the likelihood of causing the people who are
2 actually responsible for the problem to pay for its
3 remediation.

4 Lastly, OK Tool would urge EPA to select a remedy
5 that will not bankrupt the remaining companies. The result
6 would only put hundreds of Milford employees out of work.

7 Thank you.

8 (Applause)

9 MR. COUGHLIN: Thank you.

10 Dan Coolidge.

11 MR. COOLIDGE: My name is Dan Coolidge and I'm
12 counsel for Hendrix.

13 I had not planned to make a statement, so I
14 apologize as I don't have any prepared notes here. But I
15 wanted to make a couple of comments. We have heard it stated
16 that both Hitchiner and Hendrix have contributed to the
17 contamination based upon the RI/FS study. And I'm not sure
18 that's altogether a fair statement.

19 It is a fair statement and a matter of public
20 record that the outfall from Hendrix contained both PCE and
21 TCA. It's also a matter of public record that it contained
22 those contaminants at levels that were less than the levels in
23 the water it was pumping out of the ground. That in fact it
24 was pumping contaminated water, contaminated from an up
25 gradient source, out of the ground, using that water for

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 cooling and putting it out into its discharge stream. They
2 didn't put those chemicals in there, they were in the water.

3 It was also stated that water doesn't flow south
4 of Elm Street. South of Elm Street up until about a year ago,
5 there were two production wells, one at Hitchiner and one at
6 Hendrix, each pumping large volumes of water, which anybody in
7 this room is permitted to do. That water, when you pump
8 water, it sucks it from somewhere. And it appears that it was
9 sucking it from across Elm Street.

10 We've heard it pointed out that there are levels
11 of contamination found at Hitchiner and Hendrix. Well, I
12 would point out that the levels of contamination of PCE found
13 at OK Tool, which is in the record, were very often levels of
14 15,000 parts per billion. The levels of contamination found
15 in the groundwater at the Hendrix facility in the order of 0
16 to 100 parts per billion, and indeed is the same level as the
17 water all around the area.

18 There's no indication of a source at Hendrix;
19 there's an indication that Hendrix has suffered contamination
20 from an up gradient source. So, to point out that there is
21 contamination, no one denies that there's contamination in the
22 groundwater. There's contamination in the groundwater
23 underneath the police station, I don't think anybody is going
24 to suggest that it came from the police station.

25 It's been pointed out that there is contamination

1 of PCE found at NW20, down gradient from Hendrix. Well, NW20
2 is also down gradient from OK Tool. And indeed, the levels of
3 contamination of PCE between Hendrix and NW20 dropped
4 precipitously. There's no indication, none whatsoever, that
5 the contamination at NW20 is flowing, by merely being down
6 gradient, is coming from Hendrix. Now, don't believe that
7 misconception.

8 It's a little disingenuous, I suspect, to be
9 pointing at the moat in the eye of Hendrix and perhaps
10 Hitchiner when there is a mountain of contamination that's
11 coming from OK Tool and I just don't want to leave the
12 impression here that anybody has been playing fast and loose
13 with the facts here on the part of Hitchiner or Hendrix;
14 certainly not on the part of Hendrix.

15 The fact is, there is no evidence in the RI that
16 would indicate that there is contamination that is emanating
17 or sourced from Hendrix, absolutely no evidence, nothing.
18 There is speculation that because they have used some
19 chemical, there isn't a person in this room who probably has
20 not used some chemical, and the mere fact that the chemical
21 has been used does not lead to the fact that it was also
22 released into the environment.

23 The amounts of chemicals that have been used by
24 Hendrix and by Hitchiner and by all of the companies has also
25 been disclosed to the EPA as part of a 104-E request. You'll

1 find that the amounts of chemicals are rather small on the
2 part of Hendrix.

3 I just did not want to leave any of these
4 misimpressions on the record.

5 Thank you.

6 (Applause)

7 MR. COUGHLIN: Thank you.

8 That's it for the people who signed up. Is there
9 anybody else that would like to make comment? Please feel
10 free to come to microphone. And if you could please give us
11 your name and spell it for us so we can make sure we get it in
12 the record correctly, and also who you represent.

13 MR. BEZANSON: My name is Bruce Bezanson, and I'm
14 an employee of Hitchiner Manufacturing Company. It's spelled,
15 B-E-Z-A-N-S-O-N.

16 I just have one small question. Isn't it true
17 that the total cost of the EPA's proposed remedial alternative
18 is going to be between thirty and forty five million dollars
19 or more over the next twenty to thirty years?

20 Thank you.

21 MR. COUGHLIN: Thank you.

22 Anybody else? If you do have comments, please
23 feel free to step up and let us hear them. We do want to hear
24 everything you do want to say.

25 (No response)

1 MR. COUGHLIN: Okay. If not, we will close up
2 this portion of the hearing and we're going to reconvene
3 tonight at 7:00 and take any other additional comments of
4 those who come to that particular part of the hearing.
5 (The public hearing adjourned at 5:00 p.m.)
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

EVENING SESSION

COMMENCED [7:05 p.m.]

MR. COUGHLIN: Good evening.

My name is Dan Coughlin. I'm Chief of the New Hampshire Superfund Section at EPA in Boston. We have a real good turn out and we appreciate that.

As you know, we're here tonight to conduct an informal public hearing on the proposed plan for the cleanup of the Savage Municipal Well Superfund site. I essentially am going to serve as the Hearing Officer for this hearing.

Present with me tonight are, on my right, Dick Goehlert, he's the Remedial Project Manager for EPA, and on my left, Dick Pease from the New Hampshire Department of Environmental Services.

The purpose of this hearing is to formally receive public comment on EPA's proposed plan of the Savage site as well as the other alternatives that we've considered in the remedial investigation and feasibility study. On Thursday, July 11th, EPA held a public information meeting in which we presented the results of those studies, RI and FS as we call them, and presented the proposed cleanup plan. The proposed cleanup plan looks like this. There are copies available as you come up the stairs out back if you don't have one. I would encourage you to get one before you leave, certainly.

The public comment period began on Friday,

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 July 12th and will run till Saturday, August 10, 1991.

2 Before beginning, let me describe for you the
3 format for the hearing. First I'm going to ask Dick Goehlert,
4 to give us a brief overview of EPA's proposed cleanup plan.

5 After Dick has given his overview, we will accept
6 oral comments from anybody who wishes to make a comment on the
7 record. That record will be taken, we're transcribing
8 everything in its entirety and we'll take that back and put
9 together a complete copy and become a part of the
10 administrative record for the Savage Municipal Well Superfund
11 site.

12 So that everybody has an opportunity to comment,
13 I'm going to ask that you keep your comments to a maximum of
14 fifteen minutes. If you think your comments are going to run
15 over the fifteen minute period, please summarize them for the
16 purpose of the oral presentation and then give them here
17 tonight in the written form or mail them to us during the
18 comment period. Again, that's so that everybody will have an
19 opportunity. We have a lot of people here and we want to make
20 sure that everybody has an opportunity to offer whatever input
21 they would like to.

22 If I find that your comments are wandering a
23 little bit, I may attempt to focus you a little bit. Again,
24 there are a lot of people that want to give comments. This
25 will not be an attempt for me to try to limit on what you want

1 to say but rather to make sure we accomplish what we want to
2 do at this particular hearing and that's to get all the
3 comments from everybody that wants to comment on the proposed
4 plan and on the alternatives that we're presenting for the
5 clean up the Savage Municipal Well Superfund site.

6 The hearing is an opportunity for EPA to listen to
7 your concerns regarding the studies that we did on the Savage
8 site as well as the proposed plans and the alternatives
9 investigated. The purpose of the hearing is to receive public
10 comment. The purpose is not to engage in an information
11 exchange as we did during the public information hearing.
12 Those of you who wish to make comments should indicate so by
13 filling out an index card, which are available out back, you
14 should have filled them out when you came in, but if you would
15 like to make a comment, I would ask that you go back and get a
16 card and fill it out and they will forward them as we go along
17 here. I will call on you in the order in which you signed
18 those cards.

19 After all the comments have been heard, I will
20 close the hearing. And if anybody would wish to submit
21 written comments during the public comment period, which ends
22 August 10th, I would encourage you to do so, but remind you
23 that they must be postmarked no later than August 10th. They
24 should be mailed to our office in Boston and the address is on
25 the third page of that proposed plan, which I showed you

1 previously.

2 The summary of tonight's hearing and EPA's
3 responses to your comment, both written and given here tonight
4 will be part of the Record Of Decision for the Savage site.
5 The Record Of Decision is a legal document in which EPA
6 describes its selected remedy for that site and the basis for
7 that remedy.

8 So, I thank you all for coming. I hope you have
9 plenty of comments for us, I'm sure you do. But before we do
10 start, I would like to thank the Hampshire Hills for having us
11 here tonight, it makes for a nice comfortable setting and
12 makes the hearing that much easier for all of us.

13 So, with that, Dick, perhaps you can give your
14 presentation.

15

16

17

18

19

20

21

22

23

24

25

1 Proposed Plan Overview

2 MR. GOEHLERT: I would like to make one
3 suggestion, if you want to mail comments, mail them to me at
4 this address. And obviously we're not at the Milford Town
5 Hall, but we are on a low budget now and we didn't revise the
6 overheads.

7 Much of what you'll see now was said approximately
8 two weeks ago. Briefly, this is the process we're going
9 through and we are at the hearing. The next step is the
10 Record Of Decision with a response and a summary and the
11 response and summary is the responses to the comments that are
12 given both during the comment period and tonight. And there
13 will be negotiations to facilitate and implement the final
14 decision of EPA, that is known as remedial action. There are
15 two portions of that remedial action, construction and
16 operational maintenance.

17 Briefly, these are again the results of the
18 remedial investigation, site contaminants, the extent and the
19 site risks. These are also in the proposed plan.

20 A question as to why a cleanup, this was begun at
21 the last informational meeting and there have been several
22 calls to me as well as some letters written in. And again,
23 the reason for the cleanup is to protect residents to exposure
24 to unsafe groundwater, to restore the aquifer drinking water
25 standards and those drinking water standards are known as

20
1 maximum contaminant levels. We believe the aquifer could be
2 needed for drinking water in the future. And we also believe
3 the aquifer can be suitable for drinking water.

4 This is the extent of contamination and it goes
5 from by the OK Tool, Hitchiner, Hendrix facilities, basically
6 parallel to Elm Street and across back over to Elm Street all
7 the way down to the river, other side of the river back over
8 there. The number on each of these contours of 10, 100, 1000,
9 represents parts per billion of contamination, and this is of
10 total volatile organic contamination in the aquifer.

11 The portion in the light blue down at the end of
12 the plume is is considered to be below the maximum contaminant
13 levels and if you were to sink a well down in here and
14 withdraw water, it would be considered safe for drinking.
15 Anywhere above this line, approximately above the 5 contour,
16 if you were to sink a well in any of that area, that would be
17 considered unsafe drinking water.

18 Before putting on an overhead showing you the
19 components of the preferred alternative, this map shows the
20 locations of the six production wells that would provide
21 withdrawal of groundwater here, here, two one here and one
22 here, and two here on the other side of the river.

23 The volumes of water to be withdrawn from the
24 aquifer total 1100 gallons per minute. So that would be
25 approximately 400 gallons per minute at the head of the

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 contaminant right in there, approximately 600 gallons a minute
2 withdrawn from the middle of the plume, and approximately 100
3 gallons a minute withdrawn from the end of the plume on the
4 other side of the river. There would be an amount of
5 contamination which is not covered by the shaded green
6 portions here which would not be captured for treatment and
7 would undergo what is known as natural attenuation. Each of
8 the alternatives that EPA studied included natural
9 attenuation as part of the remedy.

10 The preferred alternative, if any of you have
11 gotten over to the library to see the documents over there,
12 the preferred alternatives had a number and some letters, MM
13 stands for management of migration and the alternative number
14 was 11A and basically this is what I've just described using
15 the map. There would be two treatment plants, one using air
16 stripping, one using ultraviolet oxidation in the location
17 near OK Tool and the Hitchiner facilities, and there would be
18 one treatment plant in the middle of the plant presently
19 located near or at the existing Savage Well using ultraviolet
20 oxidation.

21 An important point to be made is that all
22 alternatives, including the preferred alternative, would have
23 to have institutional controls over the plume to prevent the
24 use of the groundwater until the groundwater is safe to use,
25 that is for drinking water purposes. MM11A has a minimization

1 of wetlands and what impacts, as do all alternatives. We
2 believe that there may be wells or pipes, one of the plants,
3 treatment plants would have to be located in the flood plan of
4 the wetland. Pumping of the water from the aquifer could
5 impact the water table which would impact wetlands.

6 These items will be carefully considered in design
7 and every effort will be made to minimize any impact of that
8 nature. There will also be site monitoring. Groundwater will
9 be tested on a periodic basis, both on the site where
10 contamination is and where contamination has not yet reached
11 or where sampling is necessary to be protective of people
12 using drinking water from bedrock wells.

13 Cost, this is it's present worth, cost, we have
14 summed all the costs to today's dollars, would be 15.5 million
15 dollars.

16 I would like to briefly go through the other
17 alternatives. I will go through this overhead and the present
18 the maps that go along with each of the treatment
19 alternatives.

20 Plan number 1, the management migration number 1
21 is no action. No action is required by the national
22 contingency plan which is the regulation under which we study
23 these sites and remediate these sites. The no action
24 alternative was carried forward as a requirement of that as a
25 contingency plan.

1 If we did nothing, the MCL, the maximum
2 contaminant levels would not be attained in over a hundred
3 years. Cost of monitoring under a no action alternative for
4 thirty years is estimated at \$764,000.

5 A limited action plan or management migration 2
6 includes natural attenuation and institutional controls. Now,
7 the difference between number 1 and number 2 is that number 1,
8 is we do nothing except monitor. Number 2 is we have
9 institutional controls on the land wherever contamination is
10 above the maximum contaminant levels allowed. Again, natural
11 attenuation would mean you would have the aquifer restored to
12 drinking water quality in over a hundred years.

13 Cost of the monitoring, because the monitoring
14 would be increased over what we do in no action, would be 1.2
15 million dollars over a thirty year time period.

16 And then 3 is treatment of the concentrated plume
17 only. And then 7 and 7A is treatment of the concentrated
18 plume and treatment of a portion of the plume downstream.

19 Before I get any further, let me point out what we
20 mean by the concentrated plume. There is an area in here
21 which we have designated a concentrated plume. The remaining
22 portion of the contamination is considered to be dissolved.
23 The concentrated plume and the dissolved or extended plume
24 will be treated basically in the same manner; the water will
25 be withdrawn for treatment and a discharge made to a surface

1 water with possible recharge.

2 The main thing to understand is that in this area
3 here, the concentrations are of a significantly higher level
4 that we felt that we had to identify that area as a separate
5 area to be addressed.

6 This is a slide which is for alternative numbers 7
7 and 7A. And before I describe that, if the alternative which
8 I described as MM3 would only have wells pumping at location 1
9 and location 2. That would be in the concentrated plume.
10 That would be the withdrawal points under management migration
11 number 3.

12 Alternative 7 and 7A begins the withdrawal here and
13 at four other locations, Savage Well, downstream of the Savage
14 Well, and two wells here. The remaining part of the plume
15 would be left to what would be natural attenuation purposes.

16 There were three other alternatives considered in
17 the feasibility study in the proposed plan. The proposed plan
18 lists 9 and 9A, this would have cleanup contained in twenty to
19 eighty five years at a cost of 21 million to 16.3 million, and
20 actually the 21 million would go with the eighty five years.

21 And then 10 would have MCOs, maximum contaminant
22 levels, or the aquifer cleaned up the drinking waters and that
23 would be attained in ten to thirty years, crossed for a thirty
24 year period and that is 44.3 million.

25 And then 11 is the same as the preferred

1 alternative, MM11A. The difference is in the limitation of
2 treatment. The difference between whether an alternative has
3 an A, is that ultraviolet oxidation is added as a treatment
4 technology in place of air stripping. When an alternative
5 does not have an A, the treatment technology is strictly air
6 stripping. The ultraviolet oxidation represents a cost
7 savings as compared to air stripping for treating a portion of
8 the aquifer. That water which is more efficiently treated
9 with ultraviolet oxidation thus represents a reduction in
10 costs.

11 This would be alternative 9 and 9A, there would be
12 treatment at the head of the plume for the concentrated plume
13 locations 1 and 2 shown on the map. And then all other
14 withdrawal points would be down close to the river. The
15 contamination that was not captured here would have to flow
16 through the aquifer to be caught by these wells located here.
17 The contamination, again, not captured by the shaded area in
18 green would be left for natural attenuation, that
19 contamination in the groundwater would not be captured and
20 treated.

21 And then 10 is the most aggressive alternative
22 that's being presented. This represents capture and treatment
23 of wells in locations 1 and 2 and then capture at thirteen
24 other locations throughout the aquifer, the line from here to
25 there. There would still be an area of contamination of

1 groundwater which would be left for natural attenuation. The
2 number of wells and the amount of pumping total almost 3,000
3 gallons a minute. It means that you are withdrawing a great
4 volume of water. A greater volume of water speeds the cleanup
5 of the aquifer.

6 I would like to end with this one. For those
7 of you at the last meeting, this is a much shorter
8 presentation.

9 Comparing MM11A to the other alternatives, no
10 action is not protective of human health.

11 The limited action alternative, which was number
12 2, will not restore groundwater in a reasonable time and
13 institutional controls may be difficult to enforce over longer
14 periods of time.

15 And number 3, it would take much longer to reach
16 MCLs. It would not control the spread of high concentrations
17 of contamination and would cost nearly as much as MM11A.
18 MM11A requires less time and cost to restore the aquifer than
19 alternatives 7, 7A, 9 and 9A.

20 And then 10, which is again the most aggressive,
21 is not necessary because the alternative are expected adequate
22 to go into the near future.

23 MM11A thus represents a balanced approach that is
24 capturing the highest concentrations of contamination in the
25 aquifer. It is allowing natural attenuation to occur over a

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

pretty good portion of the aquifer. And it is also being protective at the end of the plume where they do have high concentrations of over 600 parts per billion.

This brings to close my presentation. I will not turn you back over to Dan who will allow comments.

1 Public Comments

2 MR. COUGHLIN: As you give you comments, if you
3 would, as Mr. Barss is doing, come up to the microphone in the
4 middle and tell us who you're affiliated with.

5 MR. BARSS: Good evening.

6 My name is Lloyd Barss.

7 I'm a concerned employee of Hitchiner
8 Manufacturing.

9 My comment is going to come in the form of a
10 question and that would be, quite simply, why has the EPA
11 allowed seven years to pass without beginning any containment
12 pumping and treatment of the PCE hot spot at the OK Tool? It
13 was clear from the state study in 1984 that, at a minimum,
14 such pumping and treatment would be required.

15 That's my comment.

16 (Applause)

17 MR. COUGHLIN: Thank you.

18 Jack McDonald.

19 MR. MC DONALD: Yes, I also am a concerned
20 employee at Hitchiner.

21 I have a question. Is it not true that after
22 you've arbitrarily made your decision regarding the cleanup
23 methods, costs and allocation of same, that the potential
24 responsible parties do not have any recourse to judicial
25 review?

1 MR. COUGHLIN: Let me explain the format again for
2 everybody. This is not a question and answer session. We are
3 taking comments for the record. The comments will be answered
4 in the responsiveness summary that we produce when we produce
5 the record of decision.

6 Charles Sullivan.

7 MR. SULLIVAN: My name is Charles Sullivan.

8 I've been here in Milford with my family since
9 1957. I have never worked at Hitchiner Manufacturing, Hendrix
10 Wire and Cable or any other company in this town. I'm here as
11 a taxpayer of the town of Milford tonight and very concerned
12 about this pollution problem. And we all want to help solve
13 it and solve it in a fair way to all concerned.

14 I do not feel what I hear and read is really being
15 fair to the two companies that are left here, Hitchiner
16 Manufacturing and Hendrix Wire and Cable.

17 I would like to take you back just for a moment,
18 please, to the late '60's and early '70's. I had the
19 privilege of being a Selectman for the town of Milford. At
20 that time, we had some very serious droughts in our town.
21 Bob Courage was the Superintendent of Public Works.

22 Hitchiner Manufacturing was also having a very
23 serious problem being on our well system. They were losing
24 water pressure. A gentleman named Frank Doyle was the
25 Engineer at that time. We met with Frank Doyle several times

1 and he was concerned about the loss of water pressure and came
2 up with the idea that Hitchiner Manufacturing will put in a
3 well of their own, recylce the water and stay on our town
4 water as an emergency use. I understand that well at that
5 time is gone, but a new well has taken its place. Hitchiner
6 Manufacturing paid for this full expense, nothing to do with
7 the town whatsoever.

8 Now, all indications show at this time, from what
9 I hear and what I see, there are two companies left here that
10 are supposed to take the brunt of all this problem. The other
11 companies are still owned, one of them is still owned by
12 people who bought it at the time of the pollution. Therefore,
13 when you buy something, you buy the problems.

14 And I feel that we don't want to be a ghost town
15 here. We don't want to lose 1,000 jobs in our town, and this
16 could happen, it could even be made that these companies will
17 decide they no longer want to stay here in Milford. 1,000
18 jobs would cause a lot of hardship, losing of homes, going on
19 welfare, moving out of town. And certainly those of us that
20 are left are going to be straddled with heavy taxes, and lord
21 knows we're paying our share right now.

22 And I feel that the money that we pay in taxes
23 that we should be entitled to a Superfund. After all, who
24 pays the Superfund? We do with our internal revenue. Who
25 pays EPA? Taxes.

1 I think at this time we ought to be able to solve
2 the problem here. And give us some money, help us. We don't
3 want to go down. Don't bury us before our time. We're having
4 a struggle now. And feel this way here, if we work together,
5 Hitchiner and Hendrix Wire and Cable are two great companies,
6 they are the backbone of our town. Don't put them down. Help
7 us. Help them and help us.

8 Thank you.

9 (Applause)

10 MR. COUGHLIN: Thank you.

11 Dick Bickford.

12 MR. BICKFORD: Good evening.

13 My name is Dick Bickford.

14 I'm a concerned employee of Hitchiner's.

15 My comments take the form of a couple of
16 questions. What has the EPA done to ensure that OK Tool
17 Company assets will be available to help pay for their fair
18 share of the cleanup costs? And secondly, what about New
19 England Steel Fabricators and its owner/operators?

20 MR. COUGHLIN: Thank you.

21 Steven Turner.

22 MR. TURNER: I yield to the next speaker.

23 MR. COUGHLIN: Okay.

24 Paulina Cox.

25 MS. COX: I'm Paulina Cox.

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 I'm a concerned employee of Hitchiner
2 Manufacturing Company.

3 I just wanted to make a comment that I hope that
4 the EPA will be fair in their assessment of who pays for the
5 cleanup. See, everything I've heard from all the meetings
6 that I've been to make it clear that OK Tool caused most of
7 the contamination, therefore, should pay for most of the
8 cleanup. I just want to implore EPA to be fair.

9 (Applause)

10 MR. COUGHLIN: Thank you.

11 Al Dixon.

12 MR. DIXON: Evening.

13 My name is Al Dixon, Town Manager of the town of
14 Littleton, New Hampshire.

15 I'm down here tonight on behalf of the town of
16 Littleton Board of Selectmen. We'd like to go on record in
17 this case because of the potential impact the resolution of
18 this matter may have and could have on Hitchiner Manufacturing
19 in our community.

20 Hitchiner is what we refer to as a very
21 responsible corporate citizen in our community and has been
22 since 1984. I think I should echo the sentiments expressed
23 here tonight by Charles Sullivan, former Selectman of Milford.
24 That's one of the primary reasons why I'm here tonight,
25 because the people of Littleton and the town officials are

1 impressed with the sense of social responsibility demonstrated
2 by Hitchiner. And we desire to do all we can within our power
3 to help them remain a financially stable company in Littleton
4 and the state of New Hampshire.

5 In the north country, jobs, tax base and good
6 industry are very important. We've watched Hitchiner
7 Manufacturing grow from thirty five employees in 1984 to a
8 little over 300 today. They contribute about 6.8 million in
9 annual payroll and an associated two million dollars in
10 employee benefits. This is significant to us. In 1989
11 unemployment in Littleton was less than five percent. As of
12 June of 1991, the total is 10.6 and rising.

13 We hope that the resolution of this case, as we
14 seek the resolution and remedial action that is applied, will
15 not result in the loss in the employment and the benefits of
16 the employees of Littleton and of Milford, which we
17 understands totals approximately 1300 statewide.

18 We would request that the parties seeking to
19 resolve the Savage Well aquifer remediation consider a
20 balanced approach. In that balance, I think we should take a
21 look at the technology, the technology applied and the cost
22 can have a significant impact on the companies involved. The
23 time in which the remediation is desired to be accomplished
24 also can have a significant impact.

25 Lastly, I guess, we'd like to have you consider a

1 mixed funding. Obviously, as you've heard tonight and as you
2 well know from the record, there are some companies that are
3 no longer in the area to partake in the funding of this
4 situation. So, we hope that the Superfund will consider --
5 the Superfund program and those who administer it, will
6 consider a mixed funding approach that will take into
7 consideration the absence of the parties that are not here to
8 deal with their responsibility, which they are very much a
9 part of.

10 Thank you for your time and, again, I hope we can
11 all work together to keep the companies in New Hampshire that
12 are viable here and employing our people.

13 Thank you.

14 (Applause)

15 MR. COUGHLIN: Thank you.

16 Bill Paradise.

17 MR. PARADISE: My name is Bill Paradise.

18 I'm a resident of Amherst and I'm an employee of
19 Hendrix Wire and Cable.

20 I find myself frustrated by the EPA's public
21 meetings and find them to be disingenious, particularly the
22 July 11th meeting. The EPA holds a public meeting to explain
23 its reasons for selecting the particular cleanup remedy and
24 invites the public to ask questions and provide comments.
25 Ostensibly, I imagine the EPA is also attempting to gun

1 support for its selected remedy.

2 However, the issues involved with the aquifer and
3 the proposed cleanup methods are highly technical. They
4 involve a broad range of scientific disciplines and are
5 shrouded in specialized jargon and acronyms. Expecting the
6 general public to formulate insightful or informed questions
7 and comments concerning the technical merits of various
8 cleanup technologies and the characterization of the Savage
9 Well aquifer is akin to having National Aeronautic and Space
10 Administration ask for public questions and comments
11 concerning alternative guidance systems for the space shuttle.

12 Indeed, even the EPA, after five years of study
13 and hundreds and thousands of dollars worth of consultants can
14 offer nothing or little more definitive than the aquifer may
15 or may not be cleaned up in thirty to a hundred plus years.

16 The public can, however, make intelligent
17 judgments concerning the cost benefit ratios of different
18 alternatives. Like everything else in life, however, in order
19 to formulate judgments of relative value, one must know the
20 costs, an issue the EPA steadfastly refuses to discuss.

21 Shrouding the supposed costs in net present value figures that
22 are minus thirty and plus fifty percent over thirty years or
23 fifty years or a hundred years does very little to address the
24 true costs associated with the undertaking, without even a
25 breath of who or how this enormous moving target is going to

1 be funded.

2 The value of the differing cleanup strategies must
3 be weighed against the cost to the community's economic
4 viability. Only then can the EPA ask for meaningful questions
5 and comments and only then can the public make informed
6 judgments concerning the value and tradeoffs associated with
7 alternative strategies.

8 The EPA's refusal to discuss the cost and funding
9 side of the cleanup equation is a disservice to the community
10 that purport to serve and smacks of little more than the
11 political expedience of the EPA going through the motions of
12 holding public meetings that they are required by law to
13 conduct.

14 (Applause)

15 MR. COUGHLIN: Thank you.

16 Tom Peterson.

17 MR. PETERSON: I would just like to reiterate what
18 some of my fellow employees at Hitchiner Manufacturing have
19 been talking about all along, and that's the issue of
20 fairness.

21 The question I have is, does the EPA really feel
22 that it's fair that Hitchiner Manufacturing and Hendrix Wire
23 pay for the cleanup of the Savage Well when it's clear that OK
24 Tool caused the majority of the contamination?

25 (Applause)

1 MR. COUGHLIN: Thank you.

2 MR. FARIKAS: Attila Farikas, Savage Road,
3 Milford.

4 I'm also an employee of Hitchiner Manufacturing.

5 I just got back from vacation and took all your
6 papers with me to read and I was too busy enjoying nature to
7 get through all of it. I did read a paper by, I did some
8 superficial calculations.

9 I'm a little concerned about some of the outlying
10 well locations. It seems to me that at the pollution levels
11 that are indicated in the aquifer and also at the levels that
12 you were planning to pump the aquifer, you'd be recovering
13 less than one cubic inch of the pollutant, of the PCE
14 pollutant per day.

15 Now, it seems to me that initial capital costs of
16 laying in all the pipe and buying up right of ways to send the
17 pipe back to the reclamation plant is going to be quite high.
18 And also, to do it on these remote sites is going to be also
19 high, mainly because you're going to have to send people out
20 there to monitor it and so on.

21 Is it really cost effective to do this type of
22 work? And my guess is that your car, driving to this meeting,
23 caused much more pollution than that one cubic inch per day
24 that it would cause at those particular sites that you're
25 hoping to reclaim.

1 I do agree with the right of Hitchiner and
2 Hendrix, that it might make a lot more sense to phase these
3 wells in one at a time and see really are you recovering what
4 you're planning to recover and then evaluate do you really
5 need those remote wells before you go to all that expense of
6 putting that in.

7 I also detect a lot of paranoia at this meeting
8 and it's mainly due to what the gentleman from Hendrix said,
9 that we don't have enough information. I got the impression
10 that both Hitchiner and Hendrix is assuming you are going to
11 stick them with the whole bill for that cleanup, which I
12 personally feel would be totally unfair, and it really would
13 be appreciated if you came out and said that that would not be
14 the case. I know this is up for negotiation and all that, but
15 it definitely does sound like you're just dodging the issue.

16 And I think it would be a lot more credit to the
17 EPA and give a lot more credibility to any of these cleanup
18 claims if you could talk more openly. I understand you have
19 legal problems and so on and some people get on your back and
20 telling you you're not doing enough, but it really makes
21 communication very difficult between us if we don't know what
22 you're really up to.

23 I would like to reiterate that it would not be
24 fair to stick these two companies with cleaning up the whole
25 site. Because I think it doesn't take a rocket scientist to

1 look at your diagrams and figure out where the pollution is
2 coming from.

3 Thank you.

4 (Applause)

5 MR. COUGHLIN: Thank you.

6 Gary Daniels.

7 MR. DANIELS: For the record, my name is
8 Gary Daniels.

9 I'm a State Representative from Milford.

10 I appreciated the opportunity to sit through the
11 informational meeting two weeks ago. While the meeting was
12 overall informative, I came away with a certain amount of
13 skepticism. If the EPA is interested in our opinion and takes
14 into consideration those opinions in formulating their final
15 decisions, why were the opinions reviewed today, those that
16 the EPA had previously presented, and not any of the new ideas
17 that came forward two weeks ago. Why isn't alternative MMS, a
18 proposal sent to you by Hitchiner and Hendrix considered
19 viable enough to be reviewed at this meeting. It is my
20 understanding that, as of the time I talked to Hitchiner this
21 morning, that they had not received any correspondence from
22 you concerning that proposal. Why not? What about the idea
23 that someone had two weeks ago of filtering the water at the
24 well head? There is no mention of that.

25 If you are truly seeking constructive opinions

1 from the public, why don't you present the total cost in a
2 manner that the general public can understand rather than
3 leaving us trying to figure out how a cost of 1.4 million per
4 year times thirty years comes out to 15.5 million?

5 (Applause)

6 MR. DANIELS: This confusion was brought out two
7 weeks ago at the meeting, and yet your informational packet
8 that you hand out today shows no effort to resolve this
9 confusion.

10 It is my understanding that the Hitchiner/Hendrix
11 proposal would consist of three wells: one pumping at 150
12 gallons per minute at the OK Tool property which OK Tool or
13 the EPA would pay for, one on the Hitchiner property pumping
14 at 250 gallons per minute which Hitchiner would pay for, and
15 one downstream, most likely at the Savage Well site, pumping
16 300 gallons per minute which both Hitchiner and Hendrix would
17 pay for.

18 Considering the correspondence from the EPA on
19 record at the library states that there is, "no absolute
20 guarantee of ultimate success", I would recommend that the EPA
21 accept the Hitchiner/Hendrix proposal. By law, if the EPA can
22 not get OK Tool to pay for their share of the contamination
23 cleanup, Superfund money must be used. Within the
24 Hitchiner/Hendrix proposal, the two companies are willing to
25 pay in excess of their share of contamination, yet at a price

1 that they can afford and continue to operate.

2 In no way, no way, should Hitchiner or Hendrix be
3 forced to pay more than the proven percentage of contamination
4 that each company caused.

5 It should be obvious to you by the number of
6 testimonies that have come before you today in the form of
7 questions that while your rapport may be good with the town,
8 it is not with the people. At the public meeting, you did not
9 want to discuss liability or who would clean up what, yet the
10 livelihood of most of the people that have come before you
11 today hinge on those decisions.

12 I urge you to open up to the public, answer their
13 questions and eliminate the vagueness that shrouds this issue.
14 I also urge you to accept the Hitchiner/Hendrix proposal on
15 their terms, not yours; they know what they can afford and
16 still consider the welfare of their employees.

17 Thank you.

18 (Applause)

19 MR. COUGHLIN: Thank you.

20 That's the last of the cards I have. Is there
21 anybody else who would like to speak? If you would tell us
22 your name and spell it for us please so we can get you
23 properly logged in the record.

24 MR. MC NAMARA: My name is Mike McNamara,
25 M-C--N-A-M-A-R-A.

1 I'm a resident of Milford, New Hampshire and I
2 have two concerns. I'm a concerned resident as well as a
3 concerned employee of Hitchiner Manufacturing. I have two
4 questions, one as a resident and one as an employee of
5 Hitchiner Manufacturing and the affiliated company, Hendrix.

6 As a resident, I'd like to know why isn't it made
7 public that OK Tool has been ninety five or maybe even a
8 hundred percent guilty with polluting this well? The last
9 meeting I went to, it was very clear to me that OK Tool was
10 the culprit and we're just beating around the bush and wanting
11 to charge somebody that's sitting there making bucks. Okay,
12 that's fine, we'll pass the buck.

13 Now, as an employee of Hitchiner Manufacturing,
14 I'm concerned for my own job and my own well being, as well as
15 many in this community, I'd like to ask one question and
16 basically it's a very good question, why isn't EPA willing to
17 discuss with the PRPs and the public how the EPA expects the
18 cost in remedial action to be apportioned? And the way I'm
19 reading this is, where's the cost? Is it Superfund? As a
20 resident, I ask is it Superfund or is it directly out of my
21 tax pocket?

22 Thank you for your time.

23 (Applause)

24 MR. COUGHLIN: Thank you.

25 Is there anybody else that would like to make a

1 comment? There's a lot of you out there and we'd like to have
2 each and every one of you who has a comment to give us, we'd
3 like to have it.

4 Yes, sir.

5 MR. SALSBURY: My name is Kieth Salsbury and I
6 work for the town of Milford.

7 What I was wondering about, the gentleman brought
8 up before, is the EPA knew about this pollution and stuff back
9 in 1983 when it first started, why did it take so long to come
10 up with a solution to do anything about it.

11 That's my question. Thank you.

12 MR. COUGHLIN: Thank you.

13 Anybody else? Yes, sir.

14 MR. FARIKAS: This is a question and I haven't had
15 a chance to read this document that was handed out at the last
16 meeting, so I couldn't ask at the last meeting. Your document
17 on page 6 does state that arsenic, chromium, beryllium, nickel
18 and lead were the only metals detected in groundwater levels
19 exceeding drinking water standards. I get the impression that
20 none of these remedial actions address cleaning up the heavy
21 metals in the water. What's the sense of cleaning up the
22 aquifer from the volatile compounds if it's just going to be
23 potable because the metals are still in there.

24 Can you please answer this? I mean, this
25 information wasn't available to us until you handed these out

1 at the end of the meeting last time.

2 MR. COUGHLIN: Again, we aren't answering
3 questions at this part of meeting. We're taking public
4 comments and we will address those comments and your questions
5 in the responsiveness summary.

6 I do believe this handout was handed out before
7 the first meeting.

8 MR. FARIKAS: No; I got it in the middle of the
9 meeting because there weren't enough to go around, so I didn't
10 get to read it until after the meeting. Even if you get it at
11 the meeting, if you listen to what's going on, you don't have
12 time to read it during the meeting.

13 MR. COUGHLIN: I understand.

14 MR. FARIKAS: Thank you.

15 MR. COUGHLIN: Thank you.

16 Anybody else? Yes, sir.

17 MR. SULLIVAN: Charles Sullivan.

18 I just want to end, I think, I personally have got
19 the feeling here tonight of how the people, the workers, and
20 the taxpayer feel. And I'm going to end mine for good when I
21 say we know that the EPA is a very powerful committee. You
22 come in and tell us we have a problem. You do not ask us how
23 we're going to clean it up or what we're going to do about it.
24 But you come in here and tell us, you're going to do it.

25 Now, I ask you, find that Superfund, help us, and

1 you've got us on your side.

2 (Applause)

3 MR. COUGHLIN: Thank you.

4 MR. TURNER: Steve Turner. I filled out one of
5 your cards.

6 I'm on the Planning Board here in Milford and I
7 guess I'm the pseudo town statistician. I've done a number of
8 fiscal impact studies, not only for Milford, but for other
9 communities in southern New Hampshire. I confess I haven't
10 done my homework on this issue, I don't have any hard numbers
11 to give you, but I can talk in terms of the ballpark here.

12 My concern is with the taxation issue if these
13 companies are burdened financially to the point where they
14 would have to leave town. One of the more recent cases of a
15 commercial concern coming into town, Mark Flugier, the Town
16 Planner, and myself went through the analysis on this company
17 and basically we came down to the issue of roughly that
18 company would handle 600 single family detached units in town.

19 Now, again, I don't have the numbers, but if each
20 one of the two companies involved here handles the same
21 amount, 600 single family units for a total of 1200, roughly
22 that's a fourth of our housing unit count in town, a fourth.

23 So, the translation of all that, in the ballpark
24 now, not hard numbers, but basically we're talking about a
25 thirty percent increase in taxation if those two companies had

1 to leave town.

2 Norm Marrison, our Chairman of the Planning Board,
3 is here as well. I think he can verify that as a Planning
4 Board, not only the Planning Board but the Board of Selectmen,
5 all the town boards, I think are doing an outstanding job of
6 trying to take care of Milford; we do our homework, we review
7 all applications very carefully. I think the whole town can
8 be proud of everything that the boards do. Every decision we
9 make, we're thinking about those people that are on the edge,
10 you know, push them a little bit and what's going to happen to
11 all these people who are just barely able to handle the
12 taxation burden.

13 So, my bottom line, and just keep this thirty
14 percent figure in mind, somehow, when you negotiate with these
15 potentially responsible parties, please be careful. I just
16 can't underline to you how important it is, not only to all
17 the employees of these companies, but to all the citizens of
18 Milford.

19 Thank you.

20 (Applause)

21 MR. COUGHLIN: Thank you.

22 MR. BABICH: I'm Greg Babich, a resident of
23 Amherst and a concerned employee of Hitchiner.

24 I have a couple concerns and questions I'd like to
25 bring up. The first one, in regards to the down gradient

1 treatment system, if this proves effective in cleaning the
2 drinking water standards, particularly in the area of the
3 Savage Well as it exists today, but the OK Tool site can not
4 be cleaned up and continues to contaminate the aquifer, will
5 the state or the EPA eventually look to approve the Savage
6 Well as a drinking water source?

7 A second concern, there's been a lot of discussion
8 in regards to who is going to pay for all this. I think it
9 would be assumed by everyone here that Hitchiner and Hendrix
10 are potentially responsible and since you classified them as
11 PRPs in your report, so one question to leave in your minds
12 there and hopefully you'll address this in your statement, is
13 by what logic is the EPA going to use to try to force
14 Hitchiner and Hendrix to pay for the cleanup of PCE at the
15 site when they have not used this chemical in their production
16 processes.

17 Thank you.

18 (Applause)

19 MR. COUGHLIN: Thank you.

20 MR. HAMLIN: I'm Jim Hamlin with Hitchiner
21 Manufacturing.

22 I'm curious about something. I would like to know
23 if you folks here are the ones that are going to make the
24 ultimate decision on this issue. It would be pretty hard, I
25 think, to convey the flavor of this meeting to your bosses or

1 whoever you are going to write this down and address it to. I
2 think it's fairly clear, if you haven't noticed, the sentiment
3 of the people here. And that it would be best for all
4 concerned if you accept the Hitchiner and Hendrix proposal.
5 (Applause)

6 MR. COUGHLIN: Thank you.

7 MS. LOVEJOY: Paula Lovejoy.

8 I'm an employee of Hitchiner and I am also a
9 resident and I drink a lot of water.

10 My brother and my father both were employed by OK
11 Tool and I believe that they were all found, the four
12 companies were found responsible for pollutants before the
13 company was sold. I find it very hard to believe, knowing
14 that this well was going to have to be cleaned up, that they
15 were allowed to sell and nobody wants to go to the family that
16 ended up with the money and say, you're responsible. We're
17 accepting responsibility for our behalf and I think it's only
18 fair, which everybody else feels too, that you're
19 responsible -- I was brought up to be responsible for my own
20 actions. And I don't think they should be sitting on property
21 that could be sold to help pay for their share if you're going
22 to turn around, because you don't want to do that, and make us
23 all out of jobs, because why wouldn't Hitchiner want to close
24 their door and just leave. If they're not in business at the
25 time, they're not going to have to pay; right?

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 (Applause)

2 MR. COUGHLIN: Thank you.

3 MR. RICHARDI: Rozario Richardi, a Selectman of
4 Milford.

5 Hitchiner and Hendrix has been two good companies
6 and they've been real good with Milford. And the only thing
7 I'm going to say is I hope that when you come to a solution,
8 that you use common sense.

9 (Applause)

10 MR. COUGHLIN: Thank you.

11 MR. ROULE: My name is Rene Roule.

12 I'm an employee at Hendrix.

13 I've been around this area for thirty two years.
14 I worked seven years at Hitchiner and twenty five at Hendrix
15 and I'm very concerned about what's going on here. From what
16 I can see here, the water in the ground is not going to hurt
17 anybody except you can't drink it. I've been doing a lot of
18 traveling camping around between here and Florida and west to
19 Arkansas, and I think I can tell by the placement of my
20 fingers, you can drink the water, most of the time you can't
21 drink it, I carry it with me.

22 When I came here thirty years ago, whoever told
23 you you would have to buy water in the store. I say thirty
24 years from now I don't think we'll be able to drink any water
25 in the ground.

1 I would suggest right now that you accept the plan
2 at Hendrix and Hitchiner until you find out if you can get
3 something better to clean up the water instead of just
4 guessing at it.

5 Thank you.

6 (Applause)

7 MR. COUGHLIN: Thank you.

8 Anybody else?

9 (No response)

10 MR. COUGHLIN: Okay, we appreciate your coming
11 tonight. We appreciate your comments. I know you don't like
12 to hear that we can't answer your questions now and we won't
13 answer your questions and that sort of thing. That's just the
14 way the process is run. We will respond to your comments. We
15 will consider them carefully as we write our Record Of
16 Decision and the responses will be there. We understand what
17 you're saying and we understand your concern about Hitchiner
18 and Hendrix and we understand you're concerned about your jobs
19 and community, et cetera. It's not our desire to put any of
20 you out of a job and it's not our desire to put any company
21 out of business. I hope you'll believe that.

22 I will remind you that if you do wish to submit
23 written comments, and I would encourage you to do so, you have
24 until August 10th. Please send them to the address on page 3
25 of the proposed plan. Make sure they're postmarked by August

APEX REPORTING
Registered Professional Reporters
(617)426-3077

1 10th.

2 One last chance for a comment, anybody else?

3 (No response.)

4 MR. COUGHLIN: Once again, we thank you for coming
5 and we appreciate your comments.

6 (The public hearing concluded at 8:30 p.m.)

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

CERTIFICATE OF REPORTER AND TRANSCRIBER

This is to certify that the attached proceedings
before: DANIEL COUGHLIN, Chief, New Hampshire Superfund Sect.

in the Matter of:

PUBLIC HEARING RE:

SAVAGE MUNICIPAL WATER SUPPLY
SUPERFUND SITE

Place: Milford, New Hampshire

Date: July 29, 1991

were held as herein appears, and that this is the true,
accurate and complete transcript prepared from the notes
and/or recordings taken of the above entitled proceeding.

Stephen Madi
Reporter

08/05/91
Date

Laura Madi
Transcriber

08/05/91
Date

APEX REPORTING
Registered Professional Reporters
(617)426-3077

ATTACHMENT C

Paul Harvey Article and EPA Region X Response

RIBBONNEAU "in the broad sense," he never have been elected to

event, Swett may look at it Sure, Abraham Lincoln did you can't fool all of the people."

ie never said that you y. —Jim Finnegan

nt

greeing that prostitution is in the Queen City — de- "extremely high" Reed's hat 100 prostitutes were e city.

day that they spoke, se- ester women were arrested tion sweep by the police t. The accused were arrest- e wearing rubber gloves, as ely do.

tics aside, it does seem s remarks focused atten- problem marvelously. At ast, they heightened pub- ss. —Jim Finnegan

ons

head of Gun Owners of shire for daring to back onent in the last cam-

ot bitter, Rubega told The ler. Well may King hope a's friends are similarly Where personal vendettas ned, what goes around es around.

—Jim Finnegan

tator of the Philippines; Saddam Hussein; arms dealer Adnan Khashoggi; and the Medellin drug cartel. According to Time, within the bank was a "black network" of 1,500 which functioned as a "global intelligence operation and a Mafia-like enforcement squad," kidnapping, beating and perhaps murdering to protect the secrets of BCCI's involvement in fraud, bribery, money laundering, gunrunning and narcotics.

In Miami, prosecutors are looking into BCCI ties to Centrust Savings & Loan, whose collapse could cost U.S. taxpayers \$2 billion. Centrust owner David Paul raised big bucks for Democrats, including Sen. John Kerry, the lead senator in investigating BCCI.

Most interesting is a charge by an ex-BCCI official to an ex-Senate investigator that BCCI brought millions into Washington to bribe U.S. officials, with particular "targets" in Congress. To do what, is unrevealed. According to a story quoted by AP, the head of the criminal division at Justice is also investigating an "array of offenses involving BCCI and possibly linking international terrorists and drug barons to powerful people in the U.S. government."

of First American.

In scandals of such magnitude, there comes a moment when the rats decide the ship is sinking and the great scramble begins, when folks who have only been touched or mildly tainted come forward — to declare themselves on the side of the "good guys," and spill their guts about old comrades and ex-patrons. We appear, after years of back-room investigation, to have reached that moment. Regulators, prosecutors, investigators in the executive and legislative branches have caught the scent, all the media are now in the hunt, the pack of hounds is growing geometrically; the hares are on the run.

The BCCI scandal will take years to unfold. But, already, with ex-U.S. Presidents and prime ministers, ex-senators and defense secretaries, Gulf sheiks and Saudi intelligence officers, Third World despots and drug dealers, arms traffickers and Mideast terrorists involved, we are surely seeing the first great scandal of The New World Order. A certain result will be that Americans will see that order as irredeemably corrupt and ask again: Exactly who and what is the United States defending in these nether regions of the world?

Beware: Alaskan Water Too Clean

By PAUL HARVEY

Anchorage, Alaska, has some of the best drinking water anywhere. It may be some of the cleanest, purest on Earth. But Alaska wanted to be a state.

Alaska is now a state.

And the federal government in Washington, in its infinite wisdom, decrees that "municipalities must remove at least 30 percent of the organic material from its sewage."

That's an order!

The National Clean Water Act, as amended in 1987 by the Congress, specifies that cities with only primary sewage treatment plants must remove at least 30 percent of organic material from their sewage.

Anchorage has no organic material in its water.

Nonetheless, Carla Fisher of the Environmental Protection Agency says the 30 percent rule is "a flat-out re-

quirement."

So Anchorage is in trouble because its waste water is too clean!

And because Congress is unlikely to do the sensible thing, the city of Anchorage is forced to do something that sounds utterly foolish.

Anchorage is purposely polluting its water. Anchorage is buying from canneries bones and fish viscera which ordinarily go into fertilizer and is dumping this garbage into the city waste-water system — so that 30 percent of it can be removed, thus to meet federal government requirements.

To remove 30 percent of the organic material from its present water, Anchorage would have to build a secondary sewage treatment plant at a cost of at least \$100 million.

Instead the city of Anchorage is dumping 5,000 pounds of ground-up fish parts into its waste water a day so that 30 percent of it can be removed — thus to comply with the federal law.

Now ...

This practice also raises the amount of organic waste pouring into Cook Inlet. Anchorage, to comply with what the bureaucracy demands, is polluting its own harbor with thousands of pounds of organic waste.

I've not yet mentioned the fact that before being allowed to dump the ground-up fish sludge into the city's waste-water system, it must first be hauled to and from a reduction plant in Seward at an added cost of 2 to 5 cents a pound.

And with all these accommodations, the city might yet run afoul of the Alice-in-Wonderland federal law. Come breakup time, or when fall floods hit, there will be so much clean water pouring into Anchorage sewers that they'll have to truck in garbage from landfills and dump that garbage into the storm drains, thus to keep the runoff dirty enough so that the 30 percent removal requirement can be met.

09/17/91 09:30 FAX 208 442 0149

US EPA RA DIV. BOSTON MA
REGIONAL ADMIN

303

004/005

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington



September 13, 1991

Reply To
Attn Of: SO-143

Honorable Warren Rudman
U.S. Senate
Hart Senate Office Building
Washington, D.C. 20510

Dear Senator Rudman:

This letter is in response to inquiries from your constituents regarding Paul Harvey's article about the city of Anchorage.

Mr. Harvey's article is accurate in stating that cities such as Anchorage, which provide primary treatment, must remove a minimum of 30% of the organic material from their sewage. This requirement was established by Congress, not the Environmental Protection Agency (EPA), in section 301(h) of the Clean Water Act Amendments of 1987.

The article also accurately states that Anchorage may occasionally have difficulty meeting the percent removal requirement during times of the year when the influent to their treatment plant is less concentrated (i.e., in the spring, when snowmelt and rain water leak into the treatment system). This is because the less concentrated a solution is, the more difficult it is to remove a fixed percentage of the pollutants. Data submitted by the city, however, shows that they have been achieving 30% removal or better for over a year, including during spring.

Paul Harvey makes several statements, however, that are clearly in error. Obviously, he is wrong when he states that "Anchorage has no organic material in its water." This statement may apply to the city's drinking water, but all sewage contains organic material.

According to the city's consultant, Mr. Harvey is also in error in stating that the city is buying fish waste from processing plants. The city is accepting fish waste, but it is at the request of the processors. This is not, as Mr. Harvey contends, "purposely polluting" the city's water in order to meet federal requirements. By that logic, any city that accepts domestic and industrial waste into its sewer system is "purposely polluting" its water.

Anchorage has been approaching the problem of the percent removal requirement from two directions. One, they are attempting to locate pipe sections receiving excessive infiltration and inflow (fresh water leaking into the sewer from groundwater or illegally connected roof drains, etc.) and correcting the problem at its source. And two, they are exploring ways to more effectively treat the diluted wastes in the treatment plant in order to meet the statutory removal requirements. As indicated above, these measures have been successful in that the requirements have been met over the past year. Even with future growth, Anchorage will be able to maintain 30% removal of organic material through upgrading its primary treatment plant, without having to construct a \$100 million secondary treatment plant.

The Paul Harvey account of the Anchorage situation makes good reading, and tends to confirm the worst fears of the uninformed about how certain government rules are applied. Nonetheless, Mr. Harvey's account is simply not based on all the facts. Region 10 has been working with the city of Anchorage on this issue for some time, and is confident the federal requirements can be applied in a fashion that can be met by the city, without resorting to some nonsensical ploy such as dumping organic material into storm drains (which, incidentally, would not solve their problem, as their storm sewers are separate from their sanitary sewers).

Thank you for bringing your concern to our attention. Please let me know if we can provide additional information on this issue.

Sincerely,

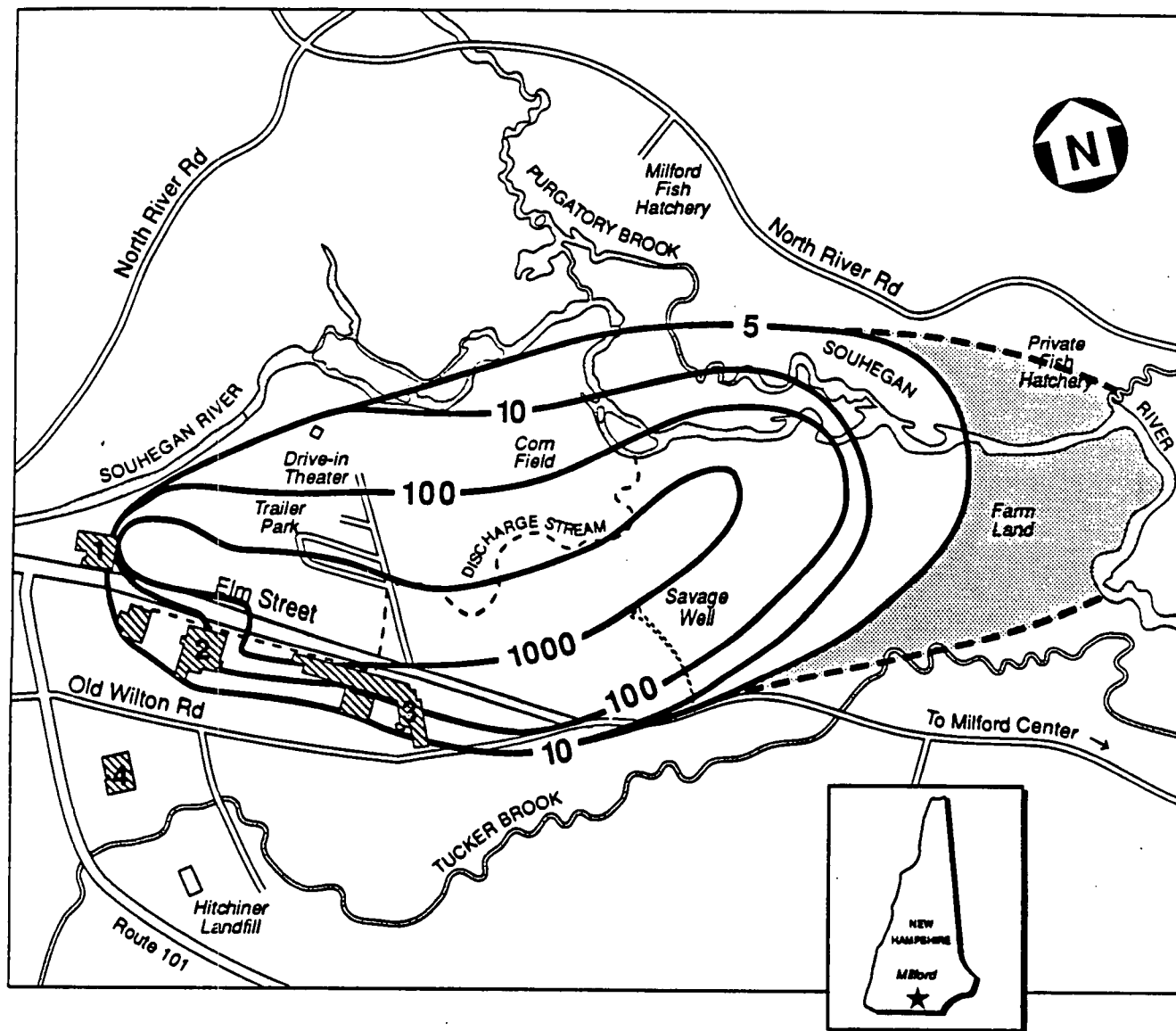


Dana A. Rasmussen
Regional Administrator

ATTACHMENT D

Figure 1 from the July 1991 Proposed Plan

Figure 1
Savage Municipal Water Supply Site Groundwater Contamination



Legend

Drawing Not to Scale

- 1 OK Tool
- 2 Hitchiner Manufacturing
- 3 Hendrix Wire & Cable
- 4 New England Steel Fabricators

--- Hitchiner-Hendrix Discharge Stream

~ Total VOC Groundwater Contamination Plume (concentrations in parts per billion)

▨ Total VOC Groundwater Contamination Below MCLs

SAVAGE MUNICIPAL WATER SUPPLY SUPERFUND SITE

APPENDIX E

ADMINISTRATIVE RECORD INDEX

Savage Municipal Water Supply

NPL Site Administrative Record

Index

Compiled: July 12, 1991
ROD Signed: September 27, 1991

Prepared for

Region I
Waste Management Division
U.S. Environmental Protection Agency

With Assistance from

AMERICAN MANAGEMENT SYSTEMS, INC.

One Bowdoin Square, 7th Floor • Boston, Massachusetts 02114 • (617) 557-2000

Introduction

This document is the Index to the Administrative Record for the September 27, 1991 Record of Decision (ROD) for the Savage Municipal Water Supply National Priorities List (NPL) site. Section I of the Index cites site-specific documents and Section II cites guidance documents used by EPA staff in selecting a response action at the site.

The Administrative Record is available for public review at EPA Region I's Office in Boston, Massachusetts, and at Wadleigh Memorial Library, 21 Nashua Street, Milford, New Hampshire. Questions concerning the Administrative Record should be addressed to the EPA Region I site manager.

The Administrative Record is required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA).

Section I

Site-Specific Documents

ADMINISTRATIVE RECORD INDEX
for the
Savage Municipal Water Supply NPL Site
(ROD Signed: September 27, 1991)

1.0 Pre-Remedial

1.6 Hazard Ranking System (HRS)

1. "Hazard Ranking System," EPA Region I (June 10, 1983).

2.0 Removal Response

2.1 Correspondence

1. Memorandum from Pi-Yun Tsai and Clara Chow, EPA Region I to John Moebes, EPA Region I (February 18, 1983). Concerning analytical results of the Savage Municipal Well and the trailer homes well.
2. Memorandum from Pi-Yun Tsai and Clara Chow, EPA Region I to Richard Leighton, EPA Region I (March 9, 1983). Concerning the analytical results of the February 17-22, 1983 well sampling.

2.9 Action Memoranda

1. Memorandum from Lester A. Sutton, EPA Region I to EPA Headquarters (March 9, 1983). Concerning the request to initiate an immediate removal action at the site.
2. Memorandum from H.D. Van Cleave, EPA Headquarters to Steve Novick, EPA Region I (March 29, 1983). Concerning authorization to proceed with immediate removal action at Milford Trailer Park.
3. Memorandum from William N. Hedeman Jr., EPA Headquarters to Lee M. Thomas, EPA Headquarters (March 29, 1983) with the attached fact sheet. Concerning Region I's request for an immediate removal action at the site.

3.0 Remedial Investigation (RI)

3.1 Correspondence

1. Letter from Merrill S. Hohman, EPA Region I to Herbert Whiting, State of New Hampshire Department of Environmental Services (August 9, 1985). Concerning notification that Savage Municipal Water Supply is a proposed Superfund Project to be funded by EPA or a potentially responsible party.
2. Memorandum from Paula S. Cappello, HMM Associates, Inc. to Charles Purfort, EPA Region I (November 23, 1988). Concerning transmittal of the pages to be replaced in the October 1988 "Project Operations Plan," HMM Associates, Inc.
3. Letter from James B. Zeppieri, State of New Hampshire Department of Environmental Services to Robert Scharnett (May 19, 1989). Concerning analysis of the water sample taken on April 14, 1989.

3.1 Correspondence (cont'd.)

4. Letter from James B. Zeppieri, State of New Hampshire Department of Environmental Services to Richard A. Goehlert, EPA Region I (May 19, 1989). Concerning notification that additional groundwater sampling will be done during the last week in May 1989.
5. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (June 21, 1989). Concerning the topics of discussion at the May 22, 1989 meeting.
6. Letter from Richard A. Goehlert, EPA Region I to Richard C. Cote, HMM Associates, Inc. (July 10, 1989). Concerning the groundwater monitoring wells to be sampled during the "Phase II Groundwater Sampling Program."
7. Letter from Richard A. Goehlert, EPA Region I to Richard C. Cote, HMM Associates, Inc. (July 18, 1989). Concerning the installation of piezometers and staff gages to identify levels of groundwater.
8. Letter from Richard A. Goehlert, EPA Region I to Richard C. Cote, HMM Associates, Inc. (August 1, 1989). Concerning rock well installation.
9. Letter from James B. Zeppieri, State of New Hampshire Department of Environmental Services to Richard A. Goehlert, EPA Region I (February 16, 1990). Concerning data gaps in the groundwater contour mapping of the northern side of the Souhegan River.
10. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (April 18, 1990). Concerning piezometer installation on the Hayward property and the attached groundwater contour map.
11. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (December 24, 1990). Concerning further review of surface water portions of the Remedial Investigation, reevaluation of seismic refraction data, and the attached "Comments on Surface Water Chapter and Appendices."
12. Letter from Bradley W. Schwab, Environmental Science & Engineering, Inc. to Richard A. Goehlert, EPA Region I (March 20, 1991). Concerning explanation of the changes made in the Revised Health Risk Assessment and the attached "Appendix I - Alternative Exposure Scenarios," Environmental Science & Engineering, Inc. (March 20, 1991).
13. Letter from Bradley W. Schwab, Environmental Science & Engineering, Inc. to Richard A. Goehlert, EPA Region I (April 2, 1991). Concerning the transmittal of the pages to be inserted into the March 20, 1991 "Baseline Health Risk Assessment," Environmental Science & Engineering, Inc.
14. Cross-Reference: Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (April 26, 1991). Concerning confirmation that the PRP Group will be unable to meet the May 15, 1991 deadline for the Feasibility Study Report, that an extension until May 22, 1991 is acceptable, and that changes to the Remedial Investigation Report are minimal [Filed and cited as entry number 4 in 4.1 Correspondence].
15. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (June 18, 1991). Concerning transmittal of the Final Remedial Investigation Report and notification that the PRP Group objects to many of the changes that were required by EPA Region I.
16. Memorandum from Ken Brown, EPA Region I to Richard Willey, EPA Region I. Concerning EPA's review of the seismic refraction data.

3.2 Sampling and Analysis Data

1. Memorandum from John A. Golden Jr., NUS Corporation to David J. Newton, EPA Region I (January 20, 1986). Concerning explanation of the attached laboratory results for acetophenone and methyl styrene analysis of groundwater samples collected on May 22, 1985.
2. Memorandum from John A. Golden Jr., NUS Corporation to David J. Newton, EPA Region I (February 27, 1986). Concerning transmittal of the attached CLP sampling results from the O.K. Tool Company, Inc. monitoring wells and test pit.
3. Letter from James B. Zeppieri, State of New Hampshire Department of Environmental Services to Richard A. Goehlert, EPA Region I (August 17, 1989). Concerning transmittal of the attached analysis of groundwater samples taken during Round II sampling obtained by HMM Associates, Inc. and split with State of New Hampshire Department of Environmental Services.
4. Letter from Richard A. Goehlert, EPA Region I to Richard C. Cote, HMM Associates, Inc. (August 17, 1989). Concerning the review of the proposed surface water and sediment sampling and the attached Letter from Kenneth Finkelstein, U.S. Department of Commerce National Oceanic and Atmospheric Administration to Richard A. Goehlert, EPA Region I (August 7, 1989).
5. "Split Sample Survey," Roy F. Weston, Inc. (August 29, 1989).
6. Letter from Shawne M. Rodgers and Joseph D. Mastone, Roy F. Weston, Inc. to Dennis Gagne, EPA Region I (September 6, 1989). Concerning transmittal of the attached validation on the inorganic analytical sample collected by Roy F. Weston, Inc.
7. Letter from Vicki Maynard and Joseph D. Mastone, Roy F. Weston, Inc. to Dennis Gagne, EPA Region I (September 12, 1989). Concerning transmittal of the attached validation on the organic analytical sample collected by Roy F. Weston, Inc.
8. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (October 3, 1989). Concerning the proposal to perform additional soil sampling at the site and the attached sampling map.
9. Letter from Richard A. Goehlert, EPA Region I to Richard C. Cote, HMM Associates, Inc. (October 18, 1989). Concerning review of the October 3, 1991 proposal to perform additional soil sampling at the site.
10. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (October 26, 1989). Concerning transmittal of the attached results of the Phase II Groundwater split sampling.
11. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (November 1, 1989). Concerning the response to EPA's comments on the October 3, 1989 proposal to perform additional soil sampling at the site.
12. Letter from James B. Zeppieri, State of New Hampshire Department of Environmental Services to Richard A. Goehlert, EPA Region I (January 22, 1990). Concerning the attached results of the November and December 1989 and January 1990 samples split with HMM Associates, Inc.

The maps associated with the record cited as entry number 13 are oversized and may be viewed, by appointment only, at EPA Region I in Boston, Massachusetts.

13. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (February 6, 1990). Concerning transmittal of the attached draft results of the pump test of the Hitchiner Manufacturing Company production well.

3.2 Sampling and Analysis Data (cont'd.)

14. Letter from James B. Zeppieri, State of New Hampshire Department of Environmental Services to Richard A. Goehlert, EPA Region I (February 14, 1990). Concerning the attached January 1990 split sample results.
15. "Comparison of Savage Well Split Sampling," Roy F. Weston, Inc. (January 26, 1990 - Revised February 16, 1990).
16. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (February 20, 1990). Concerning a summary of the additional soil sampling done at the site.
17. Memorandum from Patricia Bickford, State of New Hampshire Department of Environmental Services to James B. Zeppieri, State of New Hampshire Department of Environmental Services (February 28, 1990). Concerning clarification of testing done to samples numbered 140725, 140726, 140565, and 140566.
18. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (March 28, 1990). Concerning transmittal of the attached results from the split samples taken from the bedrock wells.
19. Letter from James B. Zeppieri, State of New Hampshire Department of Environmental Services to Richard A. Goehlert, EPA Region I (May 21, 1990). Concerning fourth quarterly groundwater sampling round results.
20. "Revised Data Validation Letter Report - Organic Case 11934," Camp Dresser & McKee (November 27, 1989 - Revised September 24, 1990).
21. Letter from Richard A. Goehlert, EPA Region I to Mark O. Huebner, HMM Associates, Inc. (November 6, 1990). Concerning review of the third quarterly sampling round submitted October 16, 1990.
22. Memorandum from Mark O. Huebner, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (February 25, 1991). Concerning December 1990 quarter sampling and the attached analytical results from the recent groundwater sampling round at the site.

Analysis of the State of New Hampshire split sampling is located in Appendix 35 of the June 1991 "Remedial Investigation Report," HMM Associates, Inc. which is filed and cited in 3.6 Remedial Investigation (RI) Reports. Other split sampling data may be viewed, by appointment only, at EPA Region I in Boston, Massachusetts.

3.3 Scopes of Work

1. Memorandum from Robert J. Flatley, HMM Associates, Inc. to Savage Municipal Water Supply File with attached "Table I Target Compounds to be Identified During the Savage Well Air Investigation - Phase II" and "Figure 1 Phase II Sampling Locations" (September 28, 1988). Concerning the Scope of Work for the Phase II Air Investigation at the site.
2. Memorandum from Mark Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (March 22, 1990). Concerning the scope of work for additional hydrology studies to be conducted at the site.

3.4 Interim Deliverables

Reports

1. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (October 13, 1989). Concerning transmittal of the attached "Draft Subtask SE - Surface Water and Sediment Sampling - Phase II," HMM Associates, Inc.
2. "Draft Baseline Health Risk Assessment Report," Buonicore-Cashman Associates (October 31, 1989).
3. "Savage Well Treatability Study - Phase I - Technology Assessment," HMM Associates, Inc. (October 1989).

The reports cited as entries numbers 4 to 8 are oversized and may be viewed, by appointment only, at EPA Region I, Boston, Massachusetts.

4. "Savage Well Treatability Study - Air Stripping Computer Modeling Data - Volume I," HMM Associates, Inc. (October 1989).
5. "Savage Well Treatability Study - Air Stripping Computer Modeling Data - Volume II," HMM Associates, Inc. (October 1989).
6. "Savage Well Treatability Study - Air Stripping Computer Modeling Data - Volume III," HMM Associates, Inc. (October 1989).
7. "Savage Well Treatability Study - Air Stripping Computer Modeling Data - Volume IV," HMM Associates, Inc. (October 1989).
8. "Savage Well Treatability Study - Granular Activated Carbon Computer Modeling Data," HMM Associates, Inc. (October 1989).
9. "Ecological Risk Assessment," The Cadmus Group, Inc. (August 1, 1990).
10. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (November 1, 1990). Concerning transmittal of the attached "Revised Draft of RI Section 3.2 - Surface Water Hydrology."
11. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (February 25, 1991). Concerning transmittal of the attached updated "Revised Draft of RI Section 3.2 - Surface Water Hydrology" and the Response to EPA's comments Dated December 12, 1990 on the November 1, 1990 "Revised Draft of RI Section 3.2 - Surface Water Hydrology."
12. "Baseline Health Risk Assessment," Environmental Science & Engineering, Inc. (March 20, 1991).
13. Cross-Reference: "Appendix I - Alternative Exposure Scenarios," Environmental Science & Engineering, Inc. (March 20, 1991) [Filed and cited as an attachment to entry number 12 in 3.1 Correspondence].
14. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (May 3, 1991). Concerning the transmittal and explanation of the attached final Remedial Investigation revisions.

3.4 Interim Deliverables (cont'd.)

Comments

15. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (March 7, 1990). Concerning the following attached comments on the October 31, 1989 "Draft Baseline Health Risk Assessment Report," Buonicore-Cashman Associates.
 - A. Comments Dated February 14, 1990 from Margaret McDonough, EPA Region I on the October 31, 1989 "Draft Baseline Health Risk Assessment Report," Buonicore-Cashman Associates.
 - B. Comments Dated December 19, 1989 from The Cadmus Group, Inc. on the October 31, 1989 "Draft Baseline Health Risk Assessment Report," Buonicore-Cashman Associates.
 - C. Comments from EPA Region I on the October 31, 1989 "Draft Baseline Health Risk Assessment Report," Buonicore-Cashman Associates.
16. Comments Dated April 16, 1990 from Thomas F. Speth, EPA Risk Reduction Engineering Laboratory on the October 1989 "Savage Well Treatability Study," HMM Associates, Inc.
17. Comments Dated April 16, 1990 from Jeffrey Q. Adams, EPA Risk Reduction Engineering Laboratory on the October 1989 "Savage Well Treatability Study," HMM Associates, Inc.
18. Letter from Mark C. Rouralis for Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) to Richard A. Goehlert, EPA Region I (January 18, 1991). Concerning notification that the PRP Group has no comments on the August 1, 1990 "Ecological Risk Assessment," The Cadmus Group, Inc.
19. Comments Dated March 29, 1991 from Richard A. Goehlert, EPA Region I on the March 20, 1991 "Baseline Health Risk Assessment," Environmental Science & Engineering, Inc.
20. Comments Dated May 14, 1991 from Richard A. Goehlert, EPA Region I on the May 3, 1991 final Remedial Investigation revisions from HMM Associates, Inc.

Responses to Comments

21. Response Dated March 20, 1991 from Environmental Science & Engineering, Inc. to the March 7, 1990 EPA Region I Comments on the October 31, 1989 "Draft Baseline Health Risk Assessment Report," Buonicore-Cashman Associates.
22. Cross-Reference: Response Dated February 25, 1991 from Mark O. Heuberger, HMM Associates, Inc. to the December 24, 1990 EPA Region I Comments on the November 1, 1990 "Revised Draft of RI Section 3.2 - Surface Water Hydrology" [Filed and cited as entry number 11 in 3.4 Interim Deliverables].

3.6 Remedial Investigation (RI) Reports

Report

1. Cross-Reference: Portions of the Draft Remedial Investigation Reports were submitted to EPA Region I in sections as Interim Deliverables and are filed and cited in 3.4 Interim Deliverables.

The maps associated with the record cited as entry number 2 are oversized and may be viewed, by appointment only, at EPA Region I in Boston, Massachusetts.

2. "Draft Remedial Investigation," HMM Associates, Inc. (November 14, 1989).
3. "Draft Remedial Investigation," HMM Associates, Inc. (February 5, 1991).
4. "Final Remedial Investigation - Volume 1," HMM Associates, Inc. (June 1991).
5. "Final Remedial Investigation - Volume 2 - Appendices 1-15," HMM Associates, Inc. (June 1991).
6. "Final Remedial Investigation - Volume 3 - Appendices 16-29," HMM Associates, Inc. (June 1991).
7. "Final Remedial Investigation - Volume 4 - Appendices 31-36," HMM Associates, Inc. (June 1991).
8. "Final Remedial Investigation - Volume 5 - Plates 1-6," HMM Associates, Inc. (June 1991).

Comments

9. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson, & Middleton (Attorney for the PRP Group) (April 11, 1990). Concerning explanation of the following attachments:
 - A. Comments Dated April 9, 1990 from Richard Willey, EPA Region I on the November 14, 1989 "Draft Remedial Investigation Report," HMM Associates, Inc.
 - B. Comments on the November 14, 1989 "Draft Remedial Investigation Report," HMM Associates, Inc.
10. Comments Dated August 9, 1991 from Mark C. Rouvalis, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) and Thomas S. Burack, Sheehan, Phinney, Bass & Green (Attorney for the PRP Group) on the changes that the PRP Group were required to make to the February 5, 1991 "Draft Remedial Investigation," HMM Associates, Inc.

Responses to Comments

11. Response Dated July 12, 1990 from Mark O. Heuberger, HMM Associates, Inc. to the April 11, 1990 Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson, & Middleton (Attorney for the PRP Group) transmitting comments on the November 14, 1989 "Draft Remedial Investigation Report," HMM Associates, Inc.

3.7 Work Plans and Progress Reports

1. Cross-Reference: "Work Plan for Remedial Investigation/Feasibility Study - Volume I: Technical Scope of Work," Camp Dresser & McKee Inc. (June 20, 1986) [Filed and cited as the attachment to the record cited as entry number 1 in 10.7 EPA Administrative Orders].
2. "Health and Safety Plan," HMM Associates, Inc. (April 24, 1987).

3.7 Work Plans and Progress Reports (cont'd.)

3. "State Oversight Support of Field Investigations for the Remedial Investigation/Feasibility Study - Project Operations Plan," State of New Hampshire Department of Environmental Services (August 1988).
4. "Project Operations Plan - Volume I," HMM Associates, Inc. (October 1988 - Updated November 23, 1988).
5. "Project Operations Plan - Volume II," HMM Associates, Inc. (October 1988).

The maps associated with the record cited as entry number 6 are oversized and may be viewed, by appointment only, at EPA Region I in Boston, Massachusetts.

6. "Project Operations Plan - Air Investigation - Subtask 2D," HMM Associates, Inc. (October 1988).
7. "Revised Work Plan - Ecological Risk Assessment," The Cadmus Group, Inc. for CDM Federal Programs Corporation (January 2, 1990).

The records cited as entries number 8 through 30 are modifications to the October 1988 "Project Operations Plan," HMM Associates, Inc.

8. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (July 26, 1989). Concerning an addendum to the Monitoring Well Installation Program section of the October 1988 "Project Operations Plan," HMM Associates, Inc.
9. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (August 14, 1989). Concerning an addendum to the Monitoring Well Installation Program section of the October 1988 "Project Operations Plan," HMM Associates, Inc.
10. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (August 31, 1989). Concerning the revised surface water and sediment sampling program of the October 1988 "Project Operations Plan," HMM Associates, Inc.
11. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (October 3, 1989). Concerning the revised locations for the deep bedrock wells.
12. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (October 3, 1989). Concerning an addendum to the Monitoring Well Installation Program section of the October 1988 "Project Operations Plan," HMM Associates, Inc.
13. Memorandum from Richard Willey, EPA Region I to Richard A. Goehlert, EPA Region I (October 16, 1989). Concerning comments on the proposed modifications to the October 1988 "Project Operations Plan," HMM Associates, Inc.
14. Memorandum from Richard A. Goehlert, EPA Region I to Richard C. Cote, HMM Associates, Inc. (October 18, 1989). Concerning comments on the proposed modifications to the October 1988 "Project Operations Plan," HMM Associates, Inc.
15. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (November 1, 1989). Concerning responses to the October 18, 1989 EPA comments on the proposed modifications to the October 1988 "Project Operations Plan," HMM Associates, Inc.
16. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (November 21, 1989). Concerning the wells denoted in the October 1988 "Project Operations Plan," HMM Associates, Inc. for quarterly sampling.

3.7 Work Plans and Progress Reports (cont'd.)

17. Letter from Richard A. Goehlert, EPA Region I to Richard C. Cote, HMM Associates, Inc. (December 7, 1989). Concerning review of the November 21, 1989 submittal regarding the first quarterly sampling round.
18. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (December 7, 1989). Concerning the submittal of the proposal for additional monitoring well locations.
19. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (December 11, 1989). Concerning the request that five house wells be sampled to determine whether or not drinking water has become contaminated.
20. Letter from Richard A. Goehlert, EPA Region I to Richard C. Cote, HMM Associates, Inc. (December 13, 1989). Concerning review of the December 7, 1989 letter detailing additional monitoring well locations.
21. Letter from Richard A. Goehlert, EPA Region I to Richard C. Cote, HMM Associates, Inc. (December 13, 1989). Concerning notification that several wells need to be sampled again for the first quarterly sampling round.
22. Memorandum from Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (December 21, 1989). Concerning the proposed aquifer pump test in conjunction with the shutdown and restart of the Hitchiner Manufacturing Company production well.
23. Letter from Richard A. Goehlert, EPA Region I to Richard C. Cote, HMM Associates, Inc. (January 3, 1990). Concerning clarification of the location of the additional monitoring wells.
24. Memorandum from Mark O. Heuberger for Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (January 23, 1990). Concerning the technical scope of work for the soil column flushing studies at the site.
25. Letter from Richard A. Goehlert, EPA Region I to Richard C. Cote, HMM Associates, Inc. (February 5, 1990). Concerning review of the January 23, 1990 technical scope of work for the soil column flushing studies at the site.
26. Memorandum from Mark O. Heuberger for Richard C. Cote, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (March 6, 1990). Concerning the proposed wells to be sampled in the second quarterly sampling round.
27. Letter from Richard A. Goehlert, EPA Region I to Richard C. Cote, HMM Associates, Inc. (March 22, 1990). Concerning review of the March 6, 1990 submittal concerning the second quarterly sampling round.
28. Memorandum from Mark Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (April 13, 1990). Concerning the acknowledgement of EPA's comments on the January 25, 1990 "Soil Column Flushing Study Scope of Work," HMM Associates, Inc.
29. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (May 17, 1990). Concerning the attached table summarizing the laboratory analytical results for the second quarterly sampling round.
30. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (January 22, 1991). Concerning the proposed approach for responding to EPA's request for reevaluation of the seismic refraction survey.

4.0 Feasibility Study (FS)

4.1 Correspondence

1. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (March 28, 1991). Concerning a partial summary of the March 26, 1991 meeting and the additional sampling that needs to be done at the site.
2. Letter from Charles M. Losinger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (April 10, 1991). Concerning preliminary analysis of MM-9A, MM-9B, and MM-10 as three additional cleanup alternatives.
3. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (April 22, 1991). Concerning the analysis of the extraction of contaminated water at three locations at the site as an alternative cleanup method.
4. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (April 26, 1991). Concerning confirmation that the PRP Group will be unable to meet the May 15, 1991 deadline for the Feasibility Study Report, that an extension until May 22, 1991 is acceptable, and that changes to the Remedial Investigation Report are minimal.
5. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (May 6, 1991). Concerning sampling information from the eastern portion of the study area and transmittal of the attached sampling map and April 29, 1991 Letter from James B. Zeppieri, State of New Hampshire Department of Environmental Services to Richard A. Goehlert, EPA Region I.
6. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (May 10, 1991). Concerning guidance regarding future changes to the remedy.
7. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) (May 15, 1991). Concerning the review of the cost estimate revisions for the treatment plant operators, long term monitoring, and the metals removal.
8. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (May 24, 1991). Concerning the response to the May 15, 1991 Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) and the attached revised cost estimates for the Feasibility Study.
9. Letter from Paul F. Killian, Kate Schweitzer, John J. Hagopian, Roy F. Weston to Scott Clifford, EPA Region I (June 4, 1991). Concerning the request for information in order to complete evaluation of chromium data.
10. Letter from Richard A. Goehlert, EPA Region I to Gregory H. Smith, McLane, Graf, Raulerson, & Middleton (Attorney for the PRP Group) (June 19, 1991). Concerning confirmation of the July 11, 1991 Public Meeting and the confirmation that the Feasibility Study is nearing completion.

4.2 Sampling and Analysis Data

1. Memorandum from Deborah A. Szaro, EPA Region I to Richard A. Goehlert, EPA Region I (May 23, 1991). Concerning the hexavalent chromium results for the soil samples taken from the site and the following attachments:
 - A. Letter from Paul F. Killian, Kate Schweitzer, John J. Hagopian, Roy F. Weston, Inc. to Dennis Gagne, EPA Region I (May 22, 1991).
 - B. Telephone Notes Between Paul Killian, Roy F. Weston, Inc. and Gary Haworth, State of New Hampshire Department of Environmental Services (May 21, 1991).
 - C. Telephone Notes Between Paul Killian, Roy F. Weston, Inc. and Gary Haworth, State of New Hampshire Department of Environmental Services (May 22, 1991).
 - D. Memorandum from Deborah A. Szaro, EPA Region I to Richard A. Goehlert, EPA Region I (April 25, 1991).
 - E. Letter from Gary Haworth, State of New Hampshire Department of Environmental Services to Deborah A. Szaro, EPA Region I (May 16, 1991).
2. Memorandum from Bradley W. Schwab, Environmental Science & Engineering, Inc. to Deborah A. Szaro, EPA Region I (June 11, 1991). Concerning the attached chain of custody forms and information regarding hexavalent chromium sampling.
3. Letter Report from Paul F. Killian, Kate Schweitzer, John J. Hagopian, Roy F. Weston, Inc. to Scott Clifford, EPA Region I (June 18, 1991). Concerning the comparison of hexavalent chromium soil sample results and the attached:
 - A. "Table I: Comparison of Cr (VI) Data."
 - B. Chain of Custody Forms.
 - C. Sampling Locations for Cr (VI) Sampling.
4. Letter Report from Paul F. Killian and John J. Hagopian, Roy F. Weston, Inc. to Scott Clifford, EPA Region I (Revised June 18, 1991). Concerning the revalidation of hexavalent chromium soil sample results and the attached:
 - A. Letter Report from Paul F. Killian, Kate Schweitzer, John J. Hagopian, Roy F. Weston, Inc. to Dennis Gagne, EPA Region I (Revised June 18, 1991).
 - B. "Chromium Data (VI) from AMRO Laboratory."
5. Memorandum from Deborah A. Szaro, EPA Region I to Richard A. Goehlert, EPA Region I (June 20, 1991). Concerning the review of the PRP's hexavalent chromium results for the soil samples taken from the site.
6. Letter from Richard A. Goehlert, EPA Region I to Maria N. Borduz, Amro Environmental Laboratories (June 25, 1991). Concerning questions on the analysis of soil samples tested for chromium VI.
7. Letter Report from Bradley W. Schwab, Environmental Science & Engineering, Inc. to Daniel Coolidge, Sheehan, Phinney, Bass, and Green (June 28, 1991). Concerning results of the chromium soil sample results.
8. Letter from Maria N. Borduz, Amro Environmental Laboratories to Richard A. Goehlert, EPA Region I (June 28, 1991). Concerning the reply to the June 25, 1991 questions on the analysis of soil samples tested for chromium VI.
9. Letter Report from Paul F. Killian, Kate Schweitzer, John J. Hagopian, Roy F. Weston, Inc. to Scott Clifford, EPA Region I (Revised July 3, 1991). Concerning the comparison of hexavalent chromium soil sample results and the attached:
 - A. Chain of Custody Forms.
 - B. Sampling Locations for Cr (VI) Sampling.
 - C. "Table I: Comparison of Cr (VI) Data."

4.2 Sampling and Analysis Data (cont'd.)

10. Letter Report from Paul F. Killian and John J. Hagopian, Roy F. Weston, Inc. to Scott Clifford, EPA Region I (Revised July 3, 1991). Concerning the revision of the validation of hexavalent chromium soil sample results and the attached:
 - A. Letter Report from Paul F. Killian, Kate Schweitzer, John J. Hagopian, Roy F. Weston, Inc. to Dennis Gagne, EPA Region I (Revised July 3, 1991).
 - B. "Hexavalent Chromium Results."
 - C. "Chromium Data (VI) from AMRO Laboratory."
11. Cross-Reference: Comments Dated July 3, 1991 from Richard A. Goehlert, EPA Region I on the hexavalent chromium soil sample results in the June 1991 "Final Feasibility Study," HMM Associates, Inc. [Filed and cited as entry number 14 in 4.6 Feasibility Study (FS) Reports].
12. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (July 10, 1991). Concerning analysis of contaminant levels within the capture zone and treatment time estimates for the concentrated plume.
13. Memorandum from Margaret McDonough, EPA Region I to Richard A. Goehlert, EPA Region I (September 12, 1991). Concerning the hexavalent chromium soil samples and the attached "Table 1 - Noncarcinogenic Risks from Potential Future Residential Exposure to Hexavalent Chromium at OK Tool."

4.4 Interim Deliverables

Reports

1. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (June 5, 1990). Concerning transmittal of the attached "Draft Feasibility Study - Section 1.0 - Introduction."
2. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (June 5, 1990). Concerning transmittal of the attached "Draft Feasibility Study - Section 2.0 - Identification and Screening of Technologies."
3. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (September 21, 1990). Concerning transmittal of the attached "Draft Feasibility Study - Section 3.0 - Development and Screening of Remedial Alternatives."
4. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (January 22, 1991). Concerning transmittal of the attached "Draft Feasibility Study - Section 4.0 - Detailed Analysis of Alternatives."
5. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (May 24, 1991). Concerning transmittal of the attached "Draft of Final Revisions for Feasibility Study - Section 1.0 - Introduction."
6. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (May 24, 1991). Concerning transmittal of the attached "Draft of Final Revisions for Feasibility Study - Section 2.0 - Identification and Screening of Technologies."
7. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (June 5, 1991). Concerning transmittal of the attached "Draft of Final Revisions for Feasibility Study - Section 3.0 - Development and Screening of Remedial Alternatives."

4.4 Interim Deliverables (cont'd.)

8. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (June 7, 1991). Concerning transmittal of the attached "Draft of Final Revisions for Feasibility Study - Section 4.0 - Detailed Analysis of Alternatives."

Comments

9. Comments Dated November 24, 1990 from Richard A. Goehlert, EPA Region I on the June 5, 1990 "Draft Feasibility Study - Sections 1 and 2," HMM Associates, Inc.
10. Comments Dated June 13, 1991 from Richard A. Goehlert, EPA Region I on the May 24, 1991 "Draft of Final Revisions for Feasibility Study - Sections 1 and 2," HMM Associates, Inc. and additional comments on Applicable or Relevant and Appropriate Requirements (ARARs)
11. Comments Dated June 18, 1991 from Richard A. Goehlert, EPA Region I on the June 7, 1991 "Draft of Final Revisions for Feasibility Study - Section 4," HMM Associates, Inc. with the attached Comments from Charles B. Holtman, State of New Hampshire Office of the Attorney General on the Applicable or Relevant and Appropriate Requirements (ARARs).
12. Comments Dated June 19, 1991 from Richard A. Goehlert, EPA Region I on the June 5, 1991 "Draft of Final Revisions for Feasibility Study - Section 3," HMM Associates, Inc.
13. Comments Dated June 23, 1991 from Richard A. Goehlert, EPA Region I on the June 7, 1991 "Draft of Final Revisions for Feasibility Study - Section 4," HMM Associates, Inc.

4.6 Feasibility Study (FS) Reports

Reports

1. Cross-Reference: Portions of the Draft Feasibility Study Reports were submitted to EPA Region I in sections as Interim Deliverables and are filed and cited in 4.4 Interim Deliverables.
2. "Draft Feasibility Study," HMM Associates, Inc. (February 1991).
3. "Draft Feasibility Study Addendum," Haley & Aldrich, Inc. (May 24, 1991).
4. "Final Feasibility Study - Volume 1," HMM Associates, Inc. (June 1991).
5. "Final Feasibility Study - Volume 2 - Appendices," HMM Associates, Inc. (June 1991).
6. "Feasibility Study Addendum," Haley & Aldrich, Inc. (June 1991).

Comments

7. Comments Dated April 2, 1991 from Richard A. Goehlert, EPA Region I on the February 1991 "Draft Feasibility Study," HMM Associates, Inc.
8. Comments Dated April 21, 1991 from Richard A. Goehlert, EPA Region I on the February 1991 "Draft Feasibility Study," HMM Associates, Inc.
9. Comments Dated April 22, 1991 from Richard A. Goehlert, EPA Region I on the February 1991 "Draft Feasibility Study," HMM Associates, Inc.
10. Comments Dated April 29, 1991 from Richard A. Goehlert, EPA Region I on the February 1991 "Draft Feasibility Study," HMM Associates, Inc.
11. Comments Dated April 29, 1991 from Richard A. Goehlert, EPA Region I on the February 1991 "Draft Feasibility Study," HMM Associates, Inc.

4.6 Feasibility Study (FS) Reports (cont'd.)

12. Comments Dated May 17, 1991 from Richard A. Goehlert, EPA Region I on the Applicable or Relevant and Appropriate Requirements (ARARs) for the February 1991 "Draft Feasibility Study," HMM Associates, Inc.
13. Comments Dated June 21, 1991 from Richard A. Goehlert, EPA Region I on the May 24, 1991 "Draft Feasibility Study Addendum," Haley & Aldrich, Inc.
14. Comments Dated July 3, 1991 from Richard A. Goehlert, EPA Region I on the hexavalent chromium soil sample results in the June 1991 "Final Feasibility Study," HMM Associates, Inc.
15. Comments Dated August 9, 1991 from Mark C. Rouvalis, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) and Thomas S. Burack, Sheehan, Phinney, Bass & Green (Attorney for the PRP Group) on the changes that the PRP Group were required to make to the February 1991 "Draft Feasibility Study," HMM Associates, Inc. The following are attached:
 - A. Letter from Bradley Schwab, Environmental Science & Engineering, Inc. to Richard A. Goehlert, EPA Region I (March 20, 1991).
 - B. Letter from Daniel S. Coolidge, Sheehan, Phinney, Bass & Green (Attorney for the PRP Group) to Richard A. Goehlert, EPA Region I (April 27, 1991).
 - C. Letter from Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for the PRP Group) to Richard A. Goehlert, EPA Region I (June 4, 1991).
 - D. Letter from Timothy M. Cosgrave, Environmental Project Control to Richard A. Goehlert, EPA Region I (January 7, 1991).
 - E. Letter from Environmental Project Control to Richard A. Goehlert, EPA Region I (December 11, 1990).
 - F. Letter from Bradley W. Schwab, Environmental Science & Engineering, Inc. to Daniel S. Coolidge, Sheehan, Phinney, Bass & Green (Attorney for the PRP Group) (June 28, 1991).
 - G. Memorandum from Mark O. Heuberger, HMM Associates, Inc. to Richard A. Goehlert, EPA Region I (April 29, 1991).
 - H. Pages and Tables from the February 1991 "Draft Feasibility Study," HMM Associates, Inc.

4.9 Proposed Plans for Selected Remedial Action

1. "EPA Proposes Cleanup Plan for the Savage Municipal Water Supply Site," EPA Region I (July 1991).

5.0 Record of Decision (ROD)

5.3 Responsiveness Summary

1. Cross-Reference: Responsiveness Summary is an attachment to the September 27, 1991 "Record of Decision," EPA Region I [Filed and cited as entry number 1 in 5.4 Record of Decision (ROD)].

The following citations indicate documents received by EPA Region I during the formal public comment period.

2. Comments Dated July 12, 1991 from William B. Rotch, Milford Cabinet and Wilton Journal on the July 1991 Proposed Plan.
3. Comments Dated July 16, 1991 from A Milford Tax Payer on the July 1991 Proposed Plan.

5.3 Responsiveness Summary (cont'd.)

4. Comments Dated July 19, 1991 from Heidi Gramatikas on the July 1991 Proposed Plan.
5. Comments Dated July 20, 1991 from Gordon D. Estabrook, Jr. on the July 1991 Proposed Plan.
6. Comments Dated July 20, 1991 from Mary Roy on the July 1991 Proposed Plan.
7. Comments Dated July 23, 1991 from James T. Lawson on the July 1991 Proposed Plan.
8. Comments Dated July 25, 1991 from Frederick F. Marston, Jr. on the July 1991 Proposed Plan.
9. Comments Dated July 25, 1991 from Nancy E. Gersky on the July 1991 Proposed Plan.
10. Comments Dated July 26, 1991 from Bruce Bezanson on the July 1991 Proposed Plan.
11. Comments Dated July 26, 1991 from Richard Mace, Sr., Richard Medlyn, Peter Leishman, John Ruonala, and Rosario Ricciardi, Town of Milford on the July 1991 Proposed Plan.
12. Comments dated July 27, 1991 from William W. Cleaves on the July 1991 Proposed Plan.
13. Comments Dated July 27, 1991 from Ahma B. Estahook on the July 1991 Proposed Plan.
14. Comments Dated July 29, 1991 from Gary L. Daniels on the July 1991 Proposed Plan.
15. Comments Dated July 30, 1991 from William B. Rotch, The Milford Cabinet and Wilton Journal on the July 1991 Proposed Plan and the two attached editorials.
16. Comments Dated July 31, 1991 from Suzanne L. Fournier on the July 1991 Proposed Plan.
17. Comments Dated August 1, 1991 from Stephen H. Taylor, New Hampshire Department of Agriculture on the July 1991 Proposed Plan.
18. Comments Dated August 5, 1991 from Linda Mossey on the July 1991 Proposed Plan and the attached newspaper article.
19. Comments Dated August 5, 1991 from the Town of Milford Board of Selectmen on the July 1991 Proposed Plan and the attached site maps.
20. Comments Dated August 8, 1991 from David Godbout on the July 1991 Proposed Plan and the two attached articles.
21. Comments Dated August 8, 1991 from Arthur Duguay on the July 1991 Proposed Plan.
22. Comments Dated August 8, 1991 from Dana S. Wallace on the July 1991 Proposed Plan.
23. Comments Dated August 9, 1991 from Maureen E. Raiche, Devine & Nyquist (Attorney for OK Tool Company, Inc.) on the July 1991 Proposed Plan and the following attachments:
 - A. Letter from Peter J. McGlew, Aries Engineering to Maureen E. Raiche, Devine & Nyquist (Attorney for OK Tool Company, Inc.) (August 6, 1991).
 - B. Section 1, Page 1 of "Report of Findings - Hydrogeologic and Water Quality Investigations," Roy F. Weston, Inc. for Hitchiner Manufacturing Co. (March 16, 1984).

5.3 Responsiveness Summary (cont'd.)

24. Comments Dated August 9, 1991 from Richard C. Nelson, Merrill & Broderick (Attorney for Gary W. Frye) on the July 1991 Proposed Plan and the following attachments:
 - A. Letter from James R. Mitchell, University of New Hampshire Cooperative Extension to Gary W. Frye (August 8, 1991).
 - B. Letter from George W. Hamilton, University of New Hampshire Cooperative Extension to Gary W. Frye (August 8, 1991).
25. Comments Dated August 9, 1991 from Mark C. Rouvalis, McLane, Graf, Raulerson & Middleton (Attorney for Hitchiner Manufacturing Company, Inc.) on the July 1991 Proposed Plan and the following attached exhibits and documents supporting those comments:
 - A. Letter from Jeffrey S. Lawson for Timothy M. Cosgrave and John A. Cherry, Environmental Project Control to Richard A. Goehlert, EPA Region I (December 11, 1990).
 - B. Letter from Timothy M. Cosgrave, Environmental Project Control to Richard A. Goehlert, EPA Region I (January 7, 1991).
 - C. Letter from Gretchen R. Rich and Lawrence P. Smith, Haley & Aldrich to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for Hitchiner Manufacturing Company, Inc.) (August 9, 1991).
 - D. Letter from Jeffrey T. Dawson, Environmental Project Control to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for Hitchiner Manufacturing Company, Inc.) and Daniel S. Coolidge, Sheehan, Phinney, Bass, & Green (Attorney for Hendrix Wire and Cable Company) (August 6, 1991).
 - E. "Summary of Selected Publications on Groundwater Pump and Treat Remedies, Including DNAPL Issue."
 - F. "Evaluation of Groundwater Extraction Remedies - Volume 1 - Summary Report," EPA Headquarters (September 1989).
 - G. "Groundwater Issue," EPA Headquarters (October 1989).
 - H. "Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites - Interim Final," EPA Headquarters (December 1988).
 - I. "Basics of Pump-and-Treat Groundwater Remediation Technology," EPA Headquarters.
 - J. "Groundwater Contamination: Pump-and Treat Remediation," Environmental Science & Technology (June 1989).
 - K. "Pollutants in Porous Media," B. Yaron, G. Dagan, and J. Goldshid.
 - L. "The Trouble With DNAPLs," Roy F. Weston, Inc. (November 1990).
 - M. "Subsurface Contamination by Dense Non-Aqueous Phase Liquid (DNAPL) Chemicals," Stan Feenstra and John A. Cherry (May 1988).
 - N. Letter from Richard Mace, Sr., Richard Medlyn, Peter Leishman, John Ruonala, and Rosario Ricciardi, Town of Milford to Julie Belaga, EPA Region I (July 26, 1991).

5.3 Responsiveness Summary (cont'd.)

26. Comments Dated August 9, 1991 from Thomas S. Burack, Sheehan, Phinney, Bass, & Green (Attorney for Hendrix Wire and Cable Company) on the July 1991 Proposed Plan and the following attached exhibits and documents supporting those comments:
 - A. Letter from Jeffrey T. Dawson, Environmental Project Control to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for Hitchiner Manufacturing Company, Inc.) and Daniel S. Coolidge, Sheehan, Phinney, Bass, & Green (Attorney for Hendrix Wire and Cable Company) (August 6, 1991).
 - B. Letter from Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for Hitchiner Manufacturing Company, Inc.) and Daniel S. Coolidge, Sheehan, Phinney, Bass, & Green (Attorney for Hendrix Wire and Cable Company) to Richard A. Goehlert, EPA Region I (May 28, 1991).
 - C. "ROD Decision Summary - Sullivan's Ledge Superfund Site," EPA Region I (June 28, 1989).
 - D. "Superfund Record of Decision - Nyanza Chemical," EPA Region I (September 4, 1985).
 - E. "Declaration for the Record of Decision - Kysor of Cadillac, Inc.," EPA Region V (September 29, 1989).
25. Comments Dated August 9, 1991 from Kevin P. Cheever on the July 1991 Proposed Plan and the attached site map from "Hydrogeologic Study and Waste Evaluation," Normandeau Associates, Inc. for OK Tool Company, Inc. (December 1983).
26. Comments Dated August 9, 1991 from L. Richard Bickford on the July 1991 Proposed Plan.
27. Comments from Shawn F. Dean, Hitchiner Manufacturing Co., Inc. on the July 1991 Proposed Plan.
28. Comments from Bill D'Alessandro, Crossland's on the July 1991 Proposed Plan.
29. Comments from Jacqueline Allison on the July 1991 Proposed Plan and the attached Letter from Amy Juchatz, State of New Hampshire Department of Health and Human Services to Mrs. Maurice Larouche (October 2, 1987).
30. Comments from Steve Burtchell on the July 1991 Proposed Plan.
31. Comments from 66 Members of the Public on the July 1991 Proposed Plan.
32. Comments from Marylou Blaisdell, League of Women Voters on the July 1991 Proposed Plan.
33. Comments from Boyd Etheredge on the July 1991 Proposed Plan.

The following citations indicate documents received by EPA Region I after the formal public comment period.

34. Comments Dated August 10, 1991 from Attila P. Farkas on the July 1991 Proposed Plan.
35. Comments Dated August 13, 1991 from Marilyn Peterman, Town of Amherst on the July 1991 Proposed Plan.

5.4 Record of Decision (ROD)

1. "Record of Decision," EPA Region I (September 27, 1991).

9.0 State Coordination

9.1 Correspondence

1. Letter from Edward J. Schmidt, State of New Hampshire Department of Environmental Services to Town of Milford Board of Selectmen (July 11, 1991). Concerning state standards and policies for groundwater use applicable to the site.

10.0 Enforcement

10.3 State and Local Enforcement Records

1. Memorandum from Ken Marschner, State of New Hampshire Office of Solid Waste and Public Health to Tom Roy, State of New Hampshire (September 17, 1980) with attached sampling maps and sampling data. Concerning the September 15, 1980 collection of soil samples to be tested for chromium.
2. Petition for Temporary and Permanent Injunction and Assessment of Civil Penalties, *State of New Hampshire v. Hitchiner Manufacturing Co., Inc., Robert Savage and Margaret Savage, Robert E. Carter, Hendrix Wire & Cable Corporation, and G & T Construction Corporation*, State of New Hampshire Superior Court (September 30, 1980). The following exhibits are attached:
 - A. Letter from William A. Healy, State of New Hampshire Water Supply and Pollution Control Commission to Paul Mercier, Hitchiner Manufacturing Co., Inc. (June 27, 1980). Concerning violations of National Pollution Discharge Elimination System (NPDES) Permit No. 0001376.
 - B. Letter from Richard P. Grouman for William A. Healy, State of New Hampshire Water Supply and Pollution Control Commission to J.H. Morison, Hitchiner Manufacturing Co., Inc. (July 11, 1980). Concerning violations of National Pollution Discharge Elimination System (NPDES) Permit No. 0001376.
 - C. Letter from Thomas L. Sweeney, State of New Hampshire Water Supply and Pollution Control Commission to J.H. Morison, Hitchiner Manufacturing Co., Inc. (July 11, 1980). Concerning the illegal disposal of hazardous waste and the order to remove contaminated sludge and soil on or before August 15, 1980.
3. Stipulation, *State of New Hampshire v. Hitchiner Manufacturing Co., Inc., Robert Savage and Margaret Savage, Robert E. Carter, Hendrix Wire & Cable Corporation, and G & T Construction Corporation*, State of New Hampshire Superior Court (October 9, 1980) with attached Amendment to Stipulation, *State of New Hampshire v. Hitchiner Manufacturing Co., Inc., Robert Savage and Margaret Savage, Robert E. Carter, Hendrix Wire & Cable Corporation, and G & T Construction Corporation*, State of New Hampshire Superior Court.
4. "Hydrogeologic Study and Waste Evaluation - O.K. Tool Company," Normandeau Associates, Inc. for O.K. Tool Company, Inc. (December 1983).
5. "Report of Findings - Hydrogeologic and Water Quality Investigations - Hitchiner Manufacturing Co.," Roy F. Weston, Inc. (March 16, 1984).
6. "Water Quality Monitoring - O.K. Tool Company - May 11, 1984 Sampling," Normandeau Associates, Inc. for O.K. Tool Company, Inc. (August 1984).
7. "Phase II Site Investigation Summary Report - O.K. Tool Company, Inc.," Normandeau Associates, Inc. for O.K. Tool Company, Inc. (November 15, 1984).

10.3 State and Local Enforcement Records (cont'd.)

8. "Soil Removal From Beneath Indoor Degreasing Tank - O.K. Tool Company, Inc.," Normandeau Associates, Inc. for O.K. Tool Company, Inc. (January 3, 1985).
9. "Final Report - Environmental Actions With Regard to the Abandon Drywell Located at the Milford, New Hampshire Facility," Les A. Cartier and Associates, Inc. for Hitchiner Manufacturing Company, Inc. (January 7, 1986).
10. Letter from Maureen E. Raiche, Devine & Nyquist (Attorney for John F. Kick) to James B. Zeppieri, State of New Hampshire Department of Environmental Services (April 4, 1989). Concerning transmittal of the attached sampling maps and the October 1983 "Seismic Refraction and Gravity Investigation - O.K. Tool Company, Inc.," John F. Kick for Normandeau Associates, Inc.

10.5 General Negotiations

1. Letter from Gregory H. Smith and Daniel S. Coolidge, McLane, Graf, Raulerson, & Middleton (Attorney for the PRP Group) to Richard A. Goehlert, EPA Region I (May 28, 1991). Concerning the PRP Group's position on the site cleanup and notification that Hitchiner Manufacturing Company, Inc. and Hendrix Wire & Cable Corporation will bear the brunt of financial responsibility for the cleanup.

10.7 EPA Administrative Orders

1. Administrative Order By Consent, *In the Matter of Savage Municipal Water Supply Well Site, O.K. Tool Company, Inc., Hitchiner Manufacturing Company, Inc., New England Steel Fabricators, Inc., and Hendrix Wire and Cable Corporation*, Docket No. 1-87-1096 (August 10, 1987) with the attached "Attachment A: Work Plan for Remedial Investigation/Feasibility Study - Volume I: Technical Scope of Work," Camp Dresser & McKee Inc. (June 20, 1986).

11.0 Potentially Responsible Party (PRP)

11.7 PRP-Steering Committee Documents

1. Letter from Gregory H. Smith, McLane, Graf, Raulerson, & Middleton (Attorney for the PRP Group) to Richard A. Goehlert, EPA Region I (June 22, 1990). Concerning notification that the PRP Group would like to conduct the August 6, 1990 public meeting.

11.9 PRP-Specific Correspondence

1. Letter from Merrill S. Hohman, EPA Region I to William Paradise, Hendrix Wire and Cable Corporation (June 18, 1985). Concerning notification that Hendrix Wire and Cable Corporation is potentially responsible for the site cleanup.
2. Letter from Merrill S. Hohman, EPA Region I to Nicholas Babich, Hitchiner Manufacturing Company, Inc. (June 18, 1985). Concerning notification that Hitchiner Manufacturing Company, Inc. is potentially responsible for the site cleanup.
3. Letter from Merrill S. Hohman, EPA Region I to Richard Bucknam, New England Steel Fabricators, Inc. (June 18, 1985). Concerning notification that New England Steel Fabricators, Inc. is potentially responsible for the site cleanup.

11.9 PRP-Specific Correspondence (cont'd.)

4. Letter from Merrill S. Hohman, EPA Region I to Thomas Hollis Jr., O.K. Tool Company, Inc. (June 18, 1985). Concerning notification that O.K. Tool Company, Inc. is potentially responsible for the site cleanup.
5. Letter from Merrill S. Hohman, EPA Region I to Nicholas Babich, Hitchiner Manufacturing Company, Inc. (January 13, 1987). Concerning the invitation for Hitchiner Manufacturing Company, Inc. and other potentially responsible parties to voluntarily perform the Remedial Investigation and Feasibility Study.
6. Letter from Merrill S. Hohman, EPA Region I to Richard Bucknam, New England Steel Fabricators, Inc. (January 13, 1987). Concerning the invitation for New England Steel Fabricators, Inc. and other potentially responsible parties to voluntarily perform the Remedial Investigation and Feasibility Study.
7. Letter from Merrill S. Hohman, EPA Region I to Thomas Hollis Jr., O.K. Tool Company, Inc. (January 13, 1987). Concerning the invitation for O.K. Tool Company, Inc. and other potentially responsible parties to voluntarily perform the Remedial Investigation and Feasibility Study.
8. Letter from Merrill S. Hohman, EPA Region I to William Paradise, Hendrix Wire and Cable Corporation (January 13, 1987). Concerning the invitation for Hendrix Wire and Cable Corporation and other potentially responsible parties to voluntarily perform the Remedial Investigation and Feasibility Study.
9. Cross-Reference: Comments Dated August 9, 1991 from Maureen E. Raiche, Devine & Nyquist (Attorney for OK Tool Company, Inc.) on the July 1991 Proposed Plan and with the following attachments [Filed and cited as entry number 23 in 5.3 Responsiveness Summary]:
 - A. Letter from Peter J. McGlew, Aries Engineering to Maureen E. Raiche, Devine & Nyquist (Attorney for OK Tool Company, Inc.) (August 6, 1991).
 - B. Section 1, Page 1 of "Report of Findings - Hydrogeologic and Water Quality Investigations," Roy F. Weston, Inc. for Hitchiner Manufacturing Co. (March 16, 1984).
10. Cross-Reference: Comments Dated August 9, 1991 from Mark C. Rouvalis, McLane, Graf, Raulerson & Middleton (Attorney for Hitchiner Manufacturing Company, Inc.) on the July 1991 Proposed Plan and the following attached exhibits and documents supporting those comments [Filed and cited as entry number 25 in 5.3 Responsiveness Summary]:
 - A. Letter from Jeffrey S. Lawson for Timothy M. Cosgrave and John A. Cherry, Environmental Project Control to Richard A. Goehlert, EPA Region I (December 11, 1990).
 - B. Letter from Timothy M. Cosgrave, Environmental Project Control to Richard A. Goehlert, EPA Region I (January 7, 1991).
 - C. Letter from Gretchen R. Rich and Lawrence P. Smith, Haley & Aldrich to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for Hitchiner Manufacturing Company, Inc.) (August 9, 1991).
 - D. Letter from Jeffrey T. Dawson, Environmental Project Control to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for Hitchiner Manufacturing Company, Inc.) and Daniel S. Coolidge, Sheehan, Phinney, Bass, & Green (Attorney for Hendrix Wire and Cable Company) (August 6, 1991).
 - E. "Summary of Selected Publications on Groundwater Pump and Treat Remedies, Including DNAPL Issue."
 - F. "Evaluation of Groundwater Extraction Remedies - Volume 1 - Summary Report," EPA Headquarters (September 1989).
 - G. "Groundwater Issue," EPA Headquarters (October 1989).
 - H. "Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites - Interim Final," EPA Headquarters (December 1988).

11.9 PRP-Specific Correspondence (cont'd.)

- I. "Basics of Pump-and-Treat Groundwater Remediation Technology," EPA Headquarters.
 - J. "Groundwater Contamination: Pump-and Treat Remediation," Environmental Science & Technology (June 1989).
 - K. "Pollutants in Porous Media," B. Yaron, G. Dagan, and J. Goldshid.
 - L. "The Trouble With DNAPLs," Roy F. Weston, Inc. (November 1990).
 - M. "Subsurface Contamination by Dense Non-Aqueous Phase Liquid (DNAPL) Chemicals," Stan Feenstra and John A. Cherry (May 1988).
 - N. Letter from Richard Mace, Sr., Richard Medlyn, Peter Leishman, John Ruonala, and Rosario Ricciardi, Town of Milford to Julie Belaga, EPA Region I (July 26, 1991).
11. Cross-Reference: Comments Dated August 9, 1991 from Thomas S. Burack, Sheehan, Phinney, Bass, & Green (Attorney for Hendrix Wire and Cable Company) on the July 1991 Proposed Plan and the following attached exhibits and documents supporting those comments [Filed and cited as entry number 26 in 5.3 Responsiveness Summary]:
- A. Letter from Jeffrey T. Dawson, Environmental Project Control to Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for Hitchiner Manufacturing Company, Inc.) and Daniel S. Coolidge, Sheehan, Phinney, Bass, & Green (Attorney for Hendrix Wire and Cable Company) (August 6, 1991).
 - B. Letter from Gregory H. Smith, McLane, Graf, Raulerson & Middleton (Attorney for Hitchiner Manufacturing Company, Inc.) and Daniel S. Coolidge, Sheehan, Phinney, Bass, & Green (Attorney for Hendrix Wire and Cable Company) to Richard A. Goehlert, EPA Region I (May 28, 1991).
 - C. "ROD Decision Summary - Sullivan's Ledge Superfund Site," EPA Region I (June 28, 1989).
 - D. "Superfund Record of Decision - Nyanza Chemical," EPA Region I (September 4, 1985).
 - E. "Declaration for the Record of Decision - Kysor of Cadillac, Inc.," EPA Region V (September 29, 1989).

13.0 Community Relations

13.1 Correspondence

- 1. Letter from Lee F. Mayhew, Town of Milford to Dennis Huebner, EPA Region I (August 10, 1989). Concerning the provisions of the transfer of the Savage Well property from the Town of Milford to Hitchiner Manufacturing Company.
- 2. Letter from Dennis Huebner, EPA Region I to Lee F. Mayhew, Town of Milford (September 28, 1989). Concerning the response to the August 10, 1989 letter and information on aquifers.
- 3. Letter from Richard Mace Sr., Richard Medlyn, Peter Leishman, John Ruonala, Rosario Ricciardi, Town of Milford to Julie Belaga, EPA Region I (May 28, 1991). Concerning position the Town of Milford on the selection of a remedy at the site.
- 4. Letter from Julie Belaga, EPA Region I to Richard Mace Sr., Town of Milford (June 20, 1991). Concerning the response to the May 28, 1991 letter and the explanation of the public comment period.

13.1 Correspondence (cont'd.)

5. Letter from David E. Harris, Earl J. Ellingwood, and George Hicks, Town of Littleton to Julie Belaga, EPA Region I (July 3, 1991). Concerning the importance of Hitchiner Manufacturing Co. to the Town of Littleton and the Town of Littleton's position on the site cleanup.
6. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Mr. and Mrs. Leonard Cushing (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
7. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to William Furguson (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
8. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Mr. and Mrs. Steven H. Foskett (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
9. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to John S. Kopka, JK Realty Trust (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
10. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Edith I. Graves and Phylis M. Tagg (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
11. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Edward Medlyn, Medlyn Motors (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
12. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Steven Talarico, Talarico Chevrolet/Pontiac (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
13. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Steven Talarico, Body Magic Autobody Shop (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
14. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Mr. and Mrs. Ralph Talarico (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
15. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Richard Prunier, Souhegan Valley Aquaculture (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
16. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Stanley Trombley (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
17. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Suburban Propane Gas Company (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.

13.1 Correspondence (cont'd.)

18. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Robert Scharnett, Milford Drive-In (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
19. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Richard Fisk, Nashua Trust Company (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
20. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Stephen Faccidomo, Souhegan Investment Corporation (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
21. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Edward F. Hutchinson, Hutchinson and Hutchinson (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
22. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Celia F. Melendy (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
23. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Mr. and Mrs. Charles P. Hayward (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
24. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Robert Savage (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
25. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Gary Frye, Frye Farm (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
26. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Robert Fawcett, State of New Hampshire Fish and Game Department (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
27. Letter from Frank Ciavattieri for Merrill S. Hohman, EPA Region I to Karen Emery, Public Service Company (July 5, 1991). Concerning transmittal of the Proposed Plan for review and notification that the process for selecting a cleanup remedy has commenced.
28. Letter from Julie Belaga, EPA Region I to David E. Harris, Town of Littleton (July 23, 1991). Concerning the response to the July 3, 1991 Letter from David E. Harris, Earl J. Ellingwood, and George Hicks, Town of Littleton to Julie Belaga, EPA Region I and transmittal of the July 1991 Proposed Plan.
29. Letter from Julie Belaga, EPA Region I to Richard Mace, Sr., Town of Milford (September 26, 1991). Concerning the response to the Town of Milford's Comments Dated July 26, 1991 and August 5, 1991 on the July 1991 Proposed Plan.

13.2 Community Relations Plans

1. "Updated Community Relations Plan," Booz Allen & Hamilton, Inc. (July 18, 1988).
2. "Final Report - Revised Community Relations Plan," Camp Dresser & McKee (October 4, 1988).

13.3 News Clippings/Press Release

1. "Environmental News," EPA Region I (July 22, 1985). Concerning the announcement that a public meeting will be held July 29, 1985 to discuss plans to cleanup the site.
2. "Environmental News," EPA Region I (August 12, 1987). Concerning the announcement that O.K. Tool Company, Hitchiner Manufacturing Company Inc., Hendrix Wire and Cable Corporation, and New England Steel Fabricators Inc. have entered into a Consent Order with EPA.
3. "Environmental News," EPA Region I (July 17, 1991). Concerning the announcement that the public hearing date and location has been changed to July 29, 1991 at the Hampshire Hills Sports and Fitness Club.
4. "Environmental News," EPA Region I (September 27, 1991). Concerning the announcement that the Record of Decision (ROD) for the site has been signed.

13.4 Public Meetings

1. "Summary of Public Meeting on Savage Municipal Well Superfund Site," EPA Region I (July 29, 1985).
2. EPA Region I Meeting Agenda, Public Meeting for the Savage Municipal Well Superfund Site (July 25, 1988).
3. Cross-Reference: Letter from Gregory H. Smith, McLane, Graf, Raulerson, & Middleton (Attorney for the PRP Group) to Richard A. Goehlert, EPA Region I (June 22, 1990). Concerning notification that the PRP Group would like to conduct the August 6, 1990 public meeting [Filed and cited as entry number 1 in 11.7 PRP Steering Committee Documents].
4. "Meeting Summary: Preliminary Results of the Remedial Investigation & Risk Assessment," EPA Region I (August 1990).
5. EPA Region I Meeting Agenda, Public Meeting for the Savage Municipal Well Superfund Site (July 11, 1991). Concerning the Feasibility Study, Addendum, and Proposed Plan.
6. "Meeting Summary: Feasibility Study, Addendum, and Proposed Plan," EPA Region I (July 11, 1991).
7. "Statement of Hitchiner Manufacturing Co., Inc. - Savage Well Public Comment Meeting - July 29, 1991."

13.5 Fact Sheets

1. "Fact Sheet - Savage Municipal Well Site," EPA Region I (December 1988).
2. "Fact Sheet - EPA Announces the Preliminary Results of Remedial Investigation and Risk Assessment Studies," EPA Region I (July 1990).
3. "EPA National Priorities List Sites: New Hampshire - Savage Municipal Water Supply," EPA Headquarters (September 1990).

14.0 Congressional Relations

14.1 Correspondence

1. Letter from Gordon J. Humphrey, Member of the U.S. Senate to Michael R. Deland, EPA Region I (November 26, 1984). Concerning the request that EPA include the Keyes well field contamination in the scope of work for the site.
2. Statement, Attachment to Statement of Michael R. Deland, EPA Region I Before the Natural Resources, Agricultural Resources and Environmental Subcommittee of the Committee on Science Technology (October 18, 1985).

14.1 Correspondence (cont'd.)

3. Letter from Judd Gregg, Member of the U.S. House of Representatives to Michael R. Deland, EPA Region I (February 20, 1986). Concerning a request for EPA's position regarding the proposal in which the polluted well would be sold to a group of area companies.
4. Letter from Michael R. Deland, EPA Region I to Judd Gregg, Member of the U.S. House of Representatives (March 10, 1986). Concerning an update of site activities and the attached letter from Michael P. Donahue, State of New Hampshire Water Supply and Pollution Control Commission to Lee F. Mayhew, Town of Milford (December 20, 1985).
5. Letter from Bob Smith, Member of the U.S. Senate to Julie Belaga, EPA Region I (August 20, 1991). Concerning the importance of arriving at a fair settlement at the site.

16.0 Natural Resource Trustee

16.1 Correspondence

1. Letter from Kenneth Finkelstien, United States Department of Commerce National Oceanic and Atmospheric Administration to David J. Newton, EPA Region I (September 18, 1987). Concerning notification that United States Department of Commerce National Oceanic and Atmospheric Administration considers the site to be impacting natural resources under their trusteeship.

16.4 Trustee Notification Form and Selection Guide

1. Letter from Ira W. Leighton for Merrill S. Hohman, EPA Region I to William Patterson, United States Department of the Interior (June 8, 1987). Concerning notification of potential damages to natural resources and the following attachments:
 - A. "Trustee Notification Attachment."
 - B. "Guide to Trustee Selection."
2. Letter from Ira W. Leighton for Merrill S. Hohman, EPA Region I to Sharon Christopherson, United States Department of Commerce National Oceanic and Atmospheric Administration (June 8, 1987). Concerning notification of potential damages to natural resources and the attached "Trustee Notification Attachment."

17.0 Site Management Records

17.8 State and Local Technical Records

1. "Bedrock Fracture Fabric Analysis of the Savage Well, Grugnale Pit and Milford Landfill Hazardous Waste Study Areas," BCI Geonetics, Inc. for the State of New Hampshire Water Supply and Pollution Control Commission (August 24, 1984.)
2. "Commission Report #145 - Hydrogeological Investigation of the Savage Well Site - Volume I," State of New Hampshire Water Supply and Pollution Control Commission (June 1985).
3. "Commission Report #145 - Hydrogeological Investigation of the Savage Well Site - Volume II," State of New Hampshire Water Supply and Pollution Control Commission (June 1985).

Section II

Guidance Documents

GUIDANCE DOCUMENTS

EPA guidance documents may be reviewed at EPA Region I, Boston, Massachusetts.

General EPA Guidance Documents

1. "Protection of Wetlands (Executive Order 11990), Appendix D," Federal Register (Vol. 42), 1977.
2. U.S. Environmental Protection Agency. Guidance Manual for Minimizing Pollution from Waste Disposal Sites (EPA/600/2-78/142), August 1978.
3. U.S. Environmental Protection Agency. Municipal Environmental Research Laboratory. Carbon Adsorption Isotherms for Toxic Organics (EPA/600/8-80/023), April 1, 1980.
4. U.S. Environmental Protection Agency. Municipal Environmental Research Laboratory. Costs of Remedial Response Actions at Uncontrolled Hazardous Waste Sites, April 15, 1981.
5. U.S. Environmental Protection Agency. Municipal Environmental Research Laboratory. Handbook for Evaluating Remedial Action Technology Plans (EPA/600/2-83/076), August 1983.
6. "Final and Proposed Amendments to the National Oil and Hazardous Substances Pollution Contingency Plan," Code of Federal Regulations (Title 40, Part 300), September 8, 1983.
7. "National Oil and Hazardous Substances Pollution Contingency Plan," Code of Federal Regulations (Title 40, Part 300), 1985.
8. "National Oil and Hazardous Substances Pollution Contingency Plan," Federal Register (Vol. 55, No. 46), March 8, 1990.
9. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Community Relations in Superfund: A Handbook (Interim Version) (EPA/HW-6), September 1983.
10. U.S. Environmental Protection Agency. Environmental Monitoring Systems Laboratory. Soil Sampling Quality Assurance User's Guide (EPA/600/4-84/043), May 1984.
11. U.S. Environmental Protection Agency. Office of Ground-Water Protection. Ground-Water Protection Strategy (EPA/440/6-84/002), August 1984.
12. U.S. Environmental Protection Agency. Environmental Criteria and Assessment Office. Health Effects Assessment Documents (58 Chemical Profiles) (EPA/540/1-86/001-058), September 1, 1984.
13. "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act; Final Rule and Interim Final Rule and Proposed Rule," Federal Register (Vol. 49, No. 209), October 26, 1984.
14. U.S. Environmental Protection Agency. Environmental Criteria and Assessment Office. Health Effects Assessment for Asbestos, November 1984.
15. U.S. Environmental Protection Agency. Hazardous Response Support Division. Standard Operating Safety Guides, November 1984.

16. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Field Standard Operating Procedures Manual #4: Site Entry (OSWER Directive 9285.2-01), January 1, 1985.
17. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Field Standard Operating Procedures Manual #8: Air Surveillance (OSWER Directive 9285.2-03), January 1, 1985.
18. U.S. Environmental Protection Agency. Office of Health and Environmental Assessment. Development of Statistical Distribution or Ranges Standard Factors Used in Exposure Assessments (EPA OHEA-E-16), March 1985.
19. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Field Standard Operating Procedures Manual #6: Work Zones (OSWER Directive 9285.2-04), April 1, 1985.
20. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Field Standard Operating Procedures Manual #9: Site Safety Plan (OSWER Directive 9285.2-05), April 1, 1985.
21. U.S. Environmental Protection Agency. Environmental Research Laboratory. EPA Guide for Minimizing the Adverse Environmental Effects of Cleanup of Uncontrolled Hazardous-Waste Sites (EPA/600/8-85/008), June 1985.
22. U.S. Environmental Protection Agency. Environmental Monitoring Systems Laboratory. Sediment Sampling Quality Assurance User's Guide (EPA/600/4-85/048), July 1985.
23. Memorandum from William N. Hedeman, Director, U.S. Environmental Protection Agency Office of Emergency and Remedial Response to Toxic and Waste Management Division Directors, Regions I-X (OSWER Directive 9280.0-02), August 1, 1985 (discussing policy on flood plains and wetland assessments for CERCLA Actions).
24. U.S. Environmental Protection Agency. Office of Waste Programs Enforcement. Toxicology Handbook (OSWER Directive 9850.2), August 1, 1985.
25. Memorandum from Gene Lucero, U.S. Environmental Protection Agency Office of Waste Programs Enforcement to Addressees ("Director, Waste Management Division, Regions I, IV, V, VII, and VIII; Director, Emergency and Remedial Response Division, Region II; Director, Hazardous Waste Management Division, Region III; Director, Air and Waste Management Division, Region VI; Director, Toxics and Waste Management Division, Region IX; Director, Hazardous and Waste Division, Region X"), August 28, 1985 (discussing community relations activities at Superfund Enforcement sites).
26. U.S. Environmental Protection Agency. Office of Waste Programs Enforcement. Endangerment Assessment Handbook, August 1985.
27. U.S. Environmental Protection Agency. Chemical, Physical, and Biological Properties of Compounds Present at Hazardous Waste Sites (OSWER Directive 9850.3), September 27, 1985.

28. Memorandum from J. Winston Porter, U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response to Addressees ("Regional Administrators, Regions I-X; Directors, Environmental Services Division, Regions I-X; Regional Counsels, Regions I-X, Director, Waste Management Division, Regions I, IV, V, VII, and VIII; Director, Emergency and Remedial Response Division, Region II; Director, Hazardous Waste Management Division, Region III; Director, Air and Waste Management Division, Regions II and VI; Director, Toxics and Waste Management Division, Region IX; Director, Hazardous and Waste Division, Region X") (OSWER Directive 9850.0-1), November 22, 1985 (discussing endangerment assessment guidance).
29. U.S. Environmental Protection Agency and Michigan Department of Natural Resources. Field Screening for Organic Contaminants in Samples from Hazardous Waste Sites, April 2, 1986.
30. U.S. Environmental Protection Agency. Office of Health and Environmental Assessment. Development of Advisory Levels for Polychlorinated Biphenyls (PCBs) Cleanup (EPA 600/8-86/002, OHEA-E-187), May 1986.
31. Memorandum from Barry L. Johnson, Associate Administrator, ATSDR to U.S. Environmental Protection Agency Regional Superfund Programs, June 16, 1986, (discussing ATSDR health assessments on NPL sites).
32. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites (OSWER Directive 9283.1-2), December 1988.
33. "Guidelines for the Health Risk Assessment of Chemical Mixtures," Federal Register (Vol. 51, No. 185), September 24, 1986.
34. U.S. Environmental Protection Agency. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended October 17, 1986.
35. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Superfund Public Health Evaluation Manual (EPA/540/1-86/060, OSWER Directive 9285.4-1), October 1986.
36. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Draft Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites (OSWER Directive 9283.1-2), October 1986.
37. "Hazardous Waste Management Systems; Land Disposal Restrictions; Final Rule," Federal Register (Vol. 51, No. 216), November 7, 1986.
38. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Test Methods for Evaluating Solid Waste: Laboratory Manual Physical/Chemical Methods, Third Edition (Volumes IA, IB, IC, and II) (SW-846), November 1986.
39. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Interim Guidance on Superfund Selection of Remedy (OSWER Directive 9355.0-19), December 24, 1986.

40. Memorandum from J. Winston Porter, U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response to Regional Administrators, Regions I-X; Regional Counsels, Regions I-X; Director, Waste Management Division, Regions I, IV, V, VII, and VIII; Director, Emergency and Remedial Response Division, Region II; Director, Hazardous Waste Management Division, Regions III and VI; Director, Toxics and Waste Management Division, Region IX; Director, Hazardous and Waste Division, Region X; Environmental Services Division Directors, Regions I, VI, and VII (OSWER Directive 9355.0-19), December 24, 1986 (discussing interim guidance on Superfund selection of remedy).
41. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Superfund Federal-Lead Remedial Project Management Handbook (EPA/540/G-87/001, OSWER Directive 9355.1-1), December 1986.
42. U.S. Environmental Protection Agency. Office of Ground-Water Protection. Guidelines for Ground-Water Classification under the EPA Ground-Water Protection Strategy, December 1986.
43. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Superfund Glossary (WH/FS-86-007), Winter 1986.
44. U.S. Environmental Protection Agency. Hazardous Waste Engineering Research Laboratory. Technology Briefs: Data Requirements for Selecting Remedial Action Technology (EPA/600/2-87/001), January 1987.
45. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Data Quality Objectives for Remedial Response Activities: Development Process (EPA/540/G-87/003, OSWER Directive 9355.0-7B), March 1987.
46. U.S. Environmental Protection Agency. Office of Waste Programs Enforcement. Data Quality Objectives for Remedial Response Activities - Example Scenario: RI/FS Activities at a Site with Contaminated Soils and Groundwater (EPA/540/G-87/004, OSWER Directive 9355.0-7B), March 1987.
47. U.S. Environmental Protection Agency. Office of Water Regulations and Standards. Quality Criteria for Water 1986 (EPA/440/5-86/001), May 1, 1987.
48. Memorandum from J. Winston Porter, Assistant Administrator, U.S. Environmental Protection Agency to Regional Administrators, Regions I-X (OSWER Directive 9285.4-02), May 14, 1987 (discussing final guidance for the coordination of ATSDR health assessment activities with the Superfund remedial process).
49. U.S. Environmental Protection Agency. Quality Assurance Management Staff. Guidelines and Specifications for Preparing Quality Assurance Program Documentation, June 1987.
50. Memorandum from J. Winston Porter, U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response to Addressees ("Regional Administrators, Regions I-X; Regional Counsel, Regions I-X; Director, Waste Management Division, Regions I, IV, V, VII, and VIII; Director, Emergency and Remedial Response Division, Region II; Director, Hazardous Waste Management Division, Regions III and VI; Director, Toxics and Waste Management Division, Region IX; Director, Hazardous Waste Division, Region X; Environmental Services Division Directors, Region I, VI, and VII") (OSWER Directive 9234.0-05), July 9, 1987 (discussing interim guidance on compliance with applicable or relevant and appropriate requirements).

51. Memorandum from David P. Ryan, EPA Headquarters to Addressees (Assistant Regional Administrators; Management Division Directors; Senior Budget Officers; Regional Comptrollers; Waste Management Division Directors; ESD Directors of Regions I, VI, and VII; Director, Office of Emergency and Remedial Response; Director, Office of Waste Programs Enforcement; Financial Management Officers), July 15, 1987 (Discussing determination of indirect costs in Superfund Removal project ceilings (Comptrollers Policy Announcement No. 87-15)).
52. Memorandum from Henry L. Longest, U.S. Environmental Protection Agency Office of Emergency and Remedial Response to Directors, Waste Management Division, Regions I, IV, V, VI, VII, and VIII; Director, Emergency and Remedial Response Division, Region II; Directors, Hazardous Waste Management Division, Regions III and X; Directors, Toxics and Waste Management Division, Region IX (OSWER Directive 9355.0-20), July 23, 1987 (discussing RI/FS improvements).
53. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Additional Interim Guidance for Fiscal Year 1987 Record of Decisions, (OSWER Directive 9355.0-21), July 24, 1987.
54. Memorandum from Francis S. Blake, General Counsel, to J. Winston Porter, Assistant Administrator for Solid Waste and Emergency Response, July 31, 1987 (discussing the scope of the CERCLA petroleum exclusion under sections 101 (14) and 104 (a) (2)).
55. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Alternate Concentration Limits Guidance (OSWER Directive 9481.00-6C, EPA/530-SW-87-017), July 1987.
56. U.S. Environmental Protection Agency. Environmental Research Laboratory. Role of Acute Toxicity Bioassays in the Remedial Action Process at Hazardous Waste Sites (EPA/600/8-87/044), August 1, 1987.
57. U.S. Environmental Protection Agency. Center for Environmental Research Information. A Compendium of Technologies Used in the Treatment of Hazardous Waste (EPA/625/8-87/014), September 1987.
58. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Office of Emergency and Remedial Response. Interim Final Guidance on Removal Action Levels at Contaminated Drinking Water Sites (OSWER Directive 9360.1-01), October 6, 1987.
59. U.S. Environmental Protection Agency. Office of Research and Development and Office of Solid Waste and Emergency Response. Remedial Action Costing Procedures Manual, October 1987.
60. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Public Involvement in the Superfund Program (WH/FS-87-004R), Fall 1987.
61. Memorandum from J. Winston Porter, U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response to Regional Administrators, Region I-X (OSWER Directive 9834.11), November 13, 1987 (discussing revised procedures for implementing off-site response actions) with attached "Revised Procedures for Implementing Off-Site Response Actions."
62. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Draft Guidance on CERCLA Compliance with Other Laws Manual (OSWER Directive 9234.1-01), August 8, 1988.

63. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. A Compendium of Superfund Field Operations Methods (OSWER Directive 9355.0-14), December 1987.
64. "Estimated Soil Ingestion Rates for Use in Risk Assessment," Risk Analysis (Vol. 7, No. 3), 1987.
65. U.S. Environmental Protection Agency. Hazardous Evaluation Division. Laboratory Data Validation Functional Guidelines for Evaluating Organics, February 1, 1988.
66. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Interim Final Guidance on Conducting Remedial Investigations and Feasibility Studies under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act), October 1988.
67. Memorandum from Timothy Fields, Jr., U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response to Superfund Branch Chiefs, Regions I-X and OHM Coordinators, Regions I-X, April 19, 1988 (discussing information on drinking water action levels).
68. Memorandum from Henry L. Longest, U.S. Environmental Protection Agency Office of Emergency and Remedial Response to Directors, Waste Management Division, Regions I, IV, V, and VI; Director, Emergency and Remedial Response Division, Region II; Directors, Hazardous Waste Management Division, Regions III and X; Directors, Toxics and Waste Management Division, Region IX; Director, Environmental Services Division, Regions I-X (OSWER Directive 9355.0-05), April 25, 1988 (discussing RI/FS improvements follow-up).
69. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Superfund Exposure Assessment Manual (EPA/540/1-88/001, OSWER Directive 9285.5-1), April 1988.
70. U.S. Environmental Protection Agency. Office of Research and Development and Office of Drinking Water. Drinking Water Criteria for Polychlorinated Biphenyls (PCBs) (Final) (ECAO-CIN-414), April 1988.
71. Memorandum from J. Winston Porter, U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response to Regional Administrators, Regions I-X; Regional Counsel, Regions I-X; Director, Waste Management Division, Regions I, IV, V, VII, and VIII; Director, Emergency and Remedial Response Division, Region II; Director, Hazardous Waste Management Division, Regions III and VI; Director, Toxics and Waste Management Division, Region IX; and Director, Hazardous and Waste Division, Region X (OSWER Directive 9835.1a), May 16, 1988 (discussing interim guidance of potentially responsible party participation in remedial investigations and feasibility studies).
72. U.S. Environmental Protection Agency. Office of Water. Interim Sediment Criteria Values for Nonpolar Hydrophobic Organic Contaminants (SCD #17), May 1988.
73. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Community Relations in Superfund: A Handbook (Interim Version) (EPA/540/G-88/002, OSWER Directive 9230.0-3A), June 1988.
74. U.S. Environmental Protection Agency. Hazardous Site Evaluation Division. Laboratory Data Validation Functional Guidelines for Evaluating Inorganics, July 1, 1988.

75. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) Compliance with Other Laws Manual (EPA/540/G-89/006, OSWER Directive 9234.1-01), August 1988.
76. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Technology Screening Guide for Treatment of CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) Soils and Sludges (EPA 540/2-88/004), September 1988.
77. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Field Screening Methods Catalog: User's Guide (EPA/540/2-88/005), September 1988.
78. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) (Interim Final) (EPA/540/G-89/004, OSWER Directive 9355.3-01), October 1988.
79. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Community Relations in Superfund: A Handbook (Interim Version), Chapter 6 (OSWER Directive 9230.0-3B), November 3, 1988.
80. Memorandum from Don. R. Clay, Assistant Administrator, U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response to Waste Management Division Directors, Regions I-X and Regional Counsel, Regions I-X (OSWER Directive 9234.1-06), December 27, 1988 (discussing applicability of land disposal restrictions to RCRA and CERCLA ground water treatment reinjection; Superfund management review: recommendation No. 26).
81. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites (EPA/540/G-88/003, OSWER Directive 9283.1-2), December 1988.
82. Interagency Cooperative Publication. Federal Manual for Identifying and Delineating Jurisdictional Wetlands, January 1989.
83. Memorandum from Bruce M. Diamond, U.S. Environmental Protection Agency Office of Waste Programs Enforcement et al. to Addressees ("Directors, Waste Management Division, Regions I, IV, VII, VIII; Director, Emergency and Remedial Response Division, Region II; Directors, Hazardous Waste Management Division, Regions III, VI; Director, Toxic and Waste Management Division, Region IX; Director, Hazardous Waste Division, Region X"), February 9, 1989 (discussing interim final guidance on soil ingestion rates).
84. Memorandum from Jonathan Z. Cannon to Regional Administrators, Regions I-X (OSWER Directive 9347.1-0), April 17, 1989 (discussing policy for Superfund compliance with the RCRA land disposal restrictions).
85. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. A Guide on Remedial Actions for Contaminated Ground Water (OSWER Directive 9283.1-2FS), April 1989.
86. U.S. Environmental Protection Agency. Office of Research and Development. Requirements for Hazardous Waste Landfill Design, Construction, and Closure (EPA/625/4-89/022), April 1989.

87. Memorandum from Henry L. Longest, U.S. Environmental Protection Agency Office of Emergency and Remedial Response to Directors, Waste Management Division, Regions I, IV, V, VII, VIII et al. (OSWER Directive 9347.2-01), June 5, 1989 (discussing land disposal restrictions as relevant and appropriate).
88. Memorandum from Henry L. Longest II and Gerald Emison, EPA Headquarters to Addressees ("Regional Waste Management Division Directors; Regional Superfund Branch Chiefs; Regional Air Division Directors; Regional Air Branch Chiefs; OERR Division Directors; OAQPS Division Directors"), June 15, 1989 (discussing control of air emissions from air strippers).
89. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Land Disposal Restrictions: Summary of Requirements, June 1989.
90. U.S. Environmental Protection Agency. Risk Assessment Work Group, Region I. Supplemental Risk Assessment Guidance for the Superfund Program (Draft Final) (EPA/901/5-89/001), June 1989.
91. "Protection of Environment," Code of Federal Regulations (Title 40, Parts 190-299), Revised as of July 1, 1989.
92. "Land Disposal Restrictions for Certain 'California List' Hazardous Wastes and Modifications to the Framework (Final Rule)," Federal Register (Vol. 52, No. 130), July 8, 1989.
93. Memorandum from Louis F. Gitto, U.S. Environmental Protection Agency Air, Pesticides, and Toxic Management Division, Region I to Merrill S. Hohman, Waste Management Division, Region I (OSWER Directive 9355.0-28), July 12, 1989 (discussing air stripper control guidance).
94. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Superfund LDR Guide #1. Overview of RCRA Land Disposal Restrictions (LDRs) (OSWER Directive 9347.3-01FS), July 1989.
95. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Superfund LDR Guide #2. Complying With the California List Restrictions Under Land Disposal Restrictions (LDRs) (OSWER Directive 9347.3-02FS), July 1989.
96. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Superfund LDR Guide #3. Treatment Standards and Minimum Technology Requirements Under Land Disposal Restrictions (LDRs) (OSWER Directive 9347.3-03FS), July 1989.
97. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Superfund LDR Guide #4. Complying With the Hammer Restrictions Under Land Disposal Restrictions (LDRs) (OSWER Directive: 9347.3-04FS), July 1989.
98. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Superfund LDR Guide #5. Determining When Land Disposal Restrictions (LDRs) Are Applicable to CERCLA Response Actions. (OSWER Directive: 9347.3-05FS), July 1989.
99. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Superfund LDR Guide #6A. Obtaining a Soil and Debris Treatability Variance for Remedial Actions. (OSWER Directive: 9347.3-06FS), July 1989.
100. U.S. Environmental Protection Agency. Science Advisory Board. Evaluation of the Apparent Effects Threshold (AET) Approach for Assessing Sediment Quality (SAB-EETFC-89-027), July 1989.

101. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Interim Final Guidance on Preparing Superfund Decision Documents (OSWER Directive 9355.3-02), July 1989.
102. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Risk Assessment Guidance for Superfund. Human Health Evaluation Manual Part A, July 1989.
103. "RCRA Regulations," Code of Federal Regulations (Title 40, Part 264), July 1989.
104. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) Compliance with Other Laws Manual - Part II: Clean Air Act and Other Environmental Statutes and State Requirements (EPA/540/G-89/009, OSWER Directive 9234.1-02), August 1989.
105. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Evaluation of Ground Water Extraction Remedies. Volume 1. Summary Report (EPA/540/2-89/054), September 1989.
106. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Discussing Considerations in Groundwater Remediation at Superfund Sites (OSWER Directive 9355.4-03), October 18, 1989.
107. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. CERCLA Compliance with Other Laws Manual - RCRA ARARs: Focus and Closure Requirements (OSWER Directive 9234.2-04), October 1989.
108. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Determining Soil Response Action Level Based on Potential Contaminant Migration to Ground Water: A Compendium of Examples (EPA/540/2-89/057), October 1989.
109. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Ground Water Issue - Performance Evaluation of Pump-and-Treat Remediations (EPA/540/4-89/005), October 1989.
110. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. The Feasibility Study: Development and Screening of Remedial Action Alternatives (OSWER Directive 9355.3-01FS3), November 1989.
111. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Getting Ready Scoping the RI/FS (OSWER Directive 9355.3-01FS1), November 1989.
112. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. The Remedial Investigation: Site Characterization and Treatability Studies (OSWER Directive 9355.3-01FS2), November 1989.
113. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. State and Local Involvement in the Superfund Program (9375.5-01/FS), Fall 1989.
114. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Risk Assessment Guidance for Superfund - Volume I: Human Health Evaluation Manual (Part A - Interim Final) (EPA/540/1-89/002), December 1989.

115. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Superfund LDR Guide #7. Determining When Land Disposal Restrictions (LDRs) are Relevant and Appropriate to CERCLA Response Actions. (OSWER Directive 9347.3-08FS), December 1989.
116. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. CERCLA Compliance with Other Laws Manual - CERCLA Compliance with State Requirements (OSWER Directive 9234.2-05/FS), December 1989.
117. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. CERCLA Compliance with Other Laws Manual - Overview of ARARs - Focus on ARAR Waivers (Publication 9234.2-03/FS), December 1989.
118. U.S. Environmental Protection Agency. Risk Reduction Engineering Laboratory. Technology Evaluation Report: SITE Program Demonstration of the Ultrox International Ultraviolet Radiation/Oxidation Technology (EPA/540/5-89/012), January 1990.
119. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. CERCLA Compliance with Other Laws Manual - CERCLA Compliance with the CWA and SDWA (OSWER Directive 9234.2-06/FS), February 1990.
120. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. The Feasibility Study: Detailed Analysis of Remedial Action Alternatives (OSWER Directive 9355.3-01FS4), March 1990.
121. "A Field Evaluation of the UV/Oxidation Technology to Treat Contaminated Groundwater," HMC, March/April 1990.
122. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. ROD Annual Report: FY 1989 (EPA/540/8-90/006), April 1990.
123. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. CERCLA Compliance with Other Laws Manual - Summary of Part II - CAA, TSCA, and Other Statutes (OSWER Directive 9234.2-07/FS), April 1990.
124. "Control Technology: A Field Demonstration of the UV/Oxidation Technology to Treat Groundwater Contaminated with VOCs," Journal of the Air & Waste Management Association (Vol. 40, No. 4), April 1990, pp. 540-47.
125. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. EPA Guide for Identifying Cleanup Alternatives at Hazardous Waste Sites and Spills: Biological Treatment (EPA/600/3-83/063).
126. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Personnel Protection and Safety.