Shenandoah Road
314.104

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

DATE: AUG 20 2004

SUBJECT: **DECISION DOCUMENT**: Selection of Alternative for a Comprehensive Environmental Response, Compensation, and Liability Act Non-Time Critical Removal Action at the Shenandoah Road Groundwater Contamination Superfund Site, Town of East Fishkill, Dutchess County, New York

FROM: John La Padula, P.E., Chief
New York Remediation Branch

TO: George Pavlou, Director
Emergency and Remedial Response Division

I. PURPOSE

The purpose of this Decision Document is to request authorization to implement a non-time critical removal action at the Shenandoah Road Groundwater Contamination Superfund Site (Site), Town of East Fishkill, Dutchess County, New York pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. Sections 9601-9675. This non-time critical removal action includes the installation of an alternate public water supply system. The primary contaminants of concern at the Site are tetrachloroethene (PCE) and trichloroethene (TCE). The Site poses a threat to public health and the environment due to the presence of PCE and TCE in numerous private residential drinking water wells. The Environmental Protection Agency (EPA) has determined that supplying the area residents with public water is necessary.

With this decision, EPA selects the preferred alternative identified in the November 2003 Proposed Response Action Document (PRAD), namely, Alternative No. 1 - The Town of Fishkill Municipal Water Supply.

It is anticipated that International Business Machines Corp. (IBM), a potentially responsible party (PRP) for the Site, will conduct this non-time critical removal action, pursuant to the EPA May 2001 Administrative Order on Consent for Removal (AOC-R), Index No. CERCLA-02-2001-2020. As part of this effort, IBM prepared an Alternate Water Supply Evaluation Report (AWSER) which presented a detailed analysis of all the proposed water supply alternatives. The AWSER, together with the PRAD (which provides detailed discussions of the proposed water supply alternatives as well as EPA's preferred alternative), represent the Engineering Evaluation/Cost Analysis (EE/CA), as required by 40 C.F.R. Section 300.415(b)(4)(i).

The objectives of this non-time critical removal action are as follows: 1) to implement an alternate water supply action within the Shenandoah Road Service Territory (SRST), which is

affected by groundwater contaminated with volatile organic compounds (VOCs), including PCE and TCE and 2) to prevent the threat of direct contact with hazardous substances, namely those contained in contaminated residential drinking water wells within the SRST.

The AWSER and the PRAD were made available for public comment from November 19, 2003 through December 20, 2003. On November 20, 2003, EPA conducted a public availability session and a public meeting in Hopewell Junction, Town of East Fishkill, New York to discuss the proposed response action and to receive public comments on the AWSER and the PRAD.

Conditions at the Site meet the criteria for a removal action under CERCLA and Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

It is estimated that activities under this removal action will be completed within two-and-a-half years of the commencement of the action. It is anticipated that this removal action, as described in this Decision Document, will be performed by IBM, as per the May 2001 AOC-R.

The overall present worth cost for completing the removal action is estimated to be approximately $10 million. The total estimated capital cost is $8,792,965 (see Table 1). The estimated capital cost for the installation of the SRST water distribution system is $4,632,845 (see Table 2). The estimated total of system service and repair is $68,685 per year with a present worth over 30 years of $1,187,701 (see Table 3).[1] The tables are presented in Appendix II.

The Site was listed on the National Priorities List (NPL) in June 2001. There are no nationally significant or precedent-setting issues associated with this removal action.

All figures are contained in Appendix I.

The Administrative Record (AR) index is contained in Appendix III. The AR Index identifies the documents that comprise the AR upon which the selection of the removal action is based.

The New York State Department of Environmental Conservation (NYSDEC) was consulted on the planned removal action and concurred with the selected response action (see Appendix IV).

The Responsiveness Summary, identifying comments received during the public comment period and EPA's response to those comments, is contained in Appendix V.

The PRAD, identifying the various alternate water supply alternatives, as well as the preferred alternative, is contained in Appendix A of the Responsiveness Summary.

---

[1] It is anticipated that the system will be operated by the Town of East Fishkill and that IBM will participate in system service and repair activities.

II. SITE CONDITIONS AND BACKGROUND

This Decision Document memorializes the proposed non-time critical action for the Site. The CERCLA Information System ID number for the Site is NYSFN0204269.

A. Site Description

1. Removal site evaluation

The Site is considered a facility as defined by Section 101(9) of CERCLA, 42 U.S.C. Section 9601(9). Past industrial operations at the Site have resulted in the release of hazardous substances, as defined by CERCLA, into the fractured bedrock aquifer below the Site. A VOC plume, emanating from a parcel of property (Facility) located at 7 East Hook Cross Road in Hopewell Junction, has migrated approximately one mile downgradient to the north, resulting in a substantial threat to both the public health and the environment. Residential wells downgradient of the Facility have been contaminated with VOCs above both the Federal Removal Action Levels (RALs) and Federal and State Maximum Contaminant Levels (MCLs). Based on the available information, a CERCLA removal action was warranted at the Site to provide treatment systems on residential wells and to identify and to remove sources of contamination.

The Site is located in a rural area, consisting of residential subdivisions and extensive farmland and woodlands, within the Town of East Fishkill, approximately one mile southwest of the intersection of Interstate 84 and the Taconic State Parkway (see Figure 1). Shenandoah Road is the central thoroughfare which runs through the SRST.

The affected properties at the Site use private wells for potable water supply and septic systems for sanitary wastewater disposal. Some of these private wells are contaminated with elevated levels of PCE and TCE.

Information obtained by EPA and NYSDEC indicates that the Facility was used between 1965 and 1975 by Jack Manne, Inc. to clean and repair microchip holders or "racks." Available information indicates that during these operations, waste solvents, including PCE, and metals, including lead, were disposed of in a septic tank and an in-ground pit, located outside the building at the Facility. Additionally, nitric and sulfuric acid wastes were reportedly disposed of in the pit at the Facility.

On June 2, 2000, EPA received a request from NYSDEC to "perform an appropriate CERCLA emergency response action" at the Site. On June 7, 2000, EPA began to supply bottled water to those residences with private wells with PCE and TCE contamination above maximum contaminant levels (MCLs). Subsequently, on June 19, 2000, EPA initiated the installation of point-of-entry treatment (POET) systems, which consist of a pre-treatment particulate filter for sediment control, a granular activated carbon (GAC) filtering system and a post-treatment UV

light to ensure removal of any potential biological contamination. At that time, of the 60 residences with wells that exceeded MCLs, 57 were initially provided POET systems. The other three residents installed GAC water treatment systems at their own expense, prior to EPA's involvement in the Site. One of these 57 homes was also fitted with a residential air stripper, because of particularly high levels of PCE found in the well. Subsequently, PCE levels were reduced to the point that the air stripper was no longer necessary, but the home remains fitted with a POET system. IBM installed additional POET systems at the Site and currently performs the maintenance on 103 POET systems and samples them on a quarterly basis to ensure their continued effectiveness.

On September 22, 2000, EPA issued an action memorandum documenting verbal authorization to initiate the removal action. In October 2000, EPA and NYSDEC conducted investigatory work at the Facility. A 1,200-gallon metal septic tank was discovered containing materials exhibiting extremely high concentrations of PCE. A buried waste pit, also on the property, had been used for nitric and sulfuric acid waste disposal. EPA and NYSDEC determined that the probable source of the VOC contamination in the nearby residential wells was linked to these historical operations at the Facility, particularly from the septic tank.

On October 27, 2000, EPA issued an action memorandum to continue removal activities at the Site. During November/December 2000, EPA 1) excavated the septic tank, removed its contents for transportation and off-site treatment and disposal and 2) further excavated and disposed of approximately 1,600 tons of contaminated soils around the tank and the associated piping materials.

In April 2001, EPA demolished the processing building at the Facility and excavated and stockpiled contaminated soils underlying it. In May 2001, IBM took over the Site removal action work, pursuant to the AOC-R, which included the removal of the remaining excavated soils, backfilling with clean soil, revegetation and disposal of excavated soils off-Site. Restoration was completed on April 26, 2002. The removal work, conducted at the Facility, is documented in the Final Report for Removal Action at 7 East Hook Cross Road Facility, dated July 18, 2002.

2. Physical location

The Site is located within the Town of East Fishkill, Dutchess County in an area known as Shenandoah. The affected residences at the Site are located on portions of Shenandoah Road, Old Shenandoah Road, Seymour Lane, Burbank Road, Jackson Road, Townsend Road, Old Townsend Road, Jaycox Lane, Stone Ridge Lane and East Hook Cross Road. The area impacted by the groundwater contamination is approximately one mile southwest of the intersection of

Interstate 84 and the Taconic State Parkway and one-and-one-half mile southeast of the Hudson Valley Research Park (see Figure 1).

3. Site characteristics

The Site is in a rural area consisting of residential subdivisions intermingled with extensive farmland and patches of woodlands. The topography is dominated by a northeast/southwest trending valley and ridge complex. The homes in the area use private wells for potable water supply and septic systems for sanitary waste water disposal. At this time, the SRST is not serviced by a public water supply nor are there water mains nearby.

The Site is underlain by unconsolidated Pleistocene glacial deposits that overlie complexly folded, highly fractured and weathered dolostone of the Lower Paleozoic Wappinger Group (valleys) and up thrusted fault blocks of the Precambrian gneissic basement rock (ridges). The heterogeneous glacial overburden deposits range from 0 to 100 feet thick and include tills, glacial fluvial deposits and glacial lacustrine deposits. The overburden and the bedrock aquifers represent two distinct aquifer systems in the East Fishkill area. On-going pumping of approximately one million gallons of water per day from the bedrock aquifer is occurring at the Hudson Valley Research Park to supply IBM's East Fishkill facility process needs and to contain groundwater contaminant plumes on that property. As a result of this pumping, natural groundwater flow patterns in the area have been drastically altered with the IBM facility pumping center serving as a local groundwater sink.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

Sampling conducted between April 2000 and January 2001 by the New York State Department of Health (NYSDOH) and EPA identified 60 private wells contaminated with VOCs, primarily PCE, up to 1,600 parts per billion (µg/l), above the Federal and New York State MCLs of 5 µg/l. Twenty of these wells were contaminated above EPA's RAL for PCE of 70 µg/l.

Laboratory analyses of samples of liquids and sludges from the septic tank at the Facility, collected by EPA on November 30, 2000, revealed high concentrations of VOCs and metals, including PCE at 40,940 parts per million (ppm), TCE at 1,067 ppm and lead at 6,740 ppm in the tank sludges. The poor condition of the tank and obvious contamination of the soils around the tank contributed to PCE and its breakdown products leaking from the tank into the surrounding soils. Once in the soils, the PCE migrated via percolation of rainwater into the underlying bedrock aquifer.

5. National Priorities List (NPL) status

The Site was listed on the National Priorities List (NPL) in June 2001.

6. Maps, pictures and other graphic representations

See Appendix I.

B. Other Actions To Date

1. Previous actions

EPA initiated removal activities at the Site in June 2000. Actions have included the delivery of bottled water to those affected residences and the installation of POET systems to remove the VOC contaminants of concern from the household water. Bottled water delivery for each affected residence began on June 7, 2000 and continued until the completion of POET system installation. GAC systems have been effectively reducing Site-related VOC concentrations to levels below MCLs. The GAC unit is supplemented with a pre-treatment particulate filter for sediment control and a post-treatment ultraviolet light to ensure the removal of any biological contamination. As additional contaminated wells were discovered, bottled water delivery and POET system installation was continued. IBM took over operating and maintaining the POET systems under EPA's May 2001 AOC-R. IBM also installed additional POET systems on homes deemed threatened by the migration of the contaminated groundwater plume. To date, 103 POET systems are in place and operating.

The septic system containing very high levels of PCE, discovered at the Facility, is believed to have been the main source of groundwater VOC contamination. In addition, the leaking of the septic tank caused extensive soil contamination at the Facility. In October 2000, the scope of the removal action was expanded to address the leaking tank and associated contaminated soil. In November 2000, removal activities to remove the septic system and contaminated soils were initiated.

On November 30, 2000, prior to pumping out the 1200-gallon septic tank at the Facility, EPA collected samples of the sludge, oil and water. Originally installed in 1959, the tank had badly deteriorated and had an open bung hole in its bottom, indicating that its structural integrity had been compromised. As a result, extensive soil contamination around the tank was evident. In addition, the pipe leading from the building to the tank was cracked in a number of places. At these locations, field instruments detected high levels of VOC vapors in the soils adjacent to the Site building.

On December 1, 2000, approximately 800 gallons of tank liquids were sent via tanker truck for treatment and disposal and approximately 250 gallons of grossly contaminated sludge from the tank was secured in drums. The tank was subsequently removed from the ground. On December 4, 2000, the tank was cleaned, dismantled and shipped for disposal. On January 24, 2001, the drums of hazardous waste were transported from the Site for incineration.

In an effort to remove contaminated soils, EPA's excavation activities continued through December 15, 2000, at which time approximately 1,600 tons of contaminated soils were removed from the area around the tank and piping and stockpiled on the southern portion of the property. These stockpiled soils were sampled for Resource Conservation and Recovery Act (RCRA) disposal characteristics and the results indicate the soil could be transported and disposed of as

nonhazardous waste. During the week of February 12, 2001, the soils were transported to an off-site RCRA Subtitle D facility.

During its excavation work, EPA determined that the piping from the tank to the leach field was plugged with soil. As a result, the leach field never received either septic or solvent waste. Field screening of the soils in the leach field and around the pipes indicated no VOCs present nor was any septic or solvent odor detected. The leach field was fully uncovered and then backfilled following the discovery of the nature of its construction.

The area of excavation was 30 feet deep and 35 feet wide, extending from the edge of the building to the edge of a driveway leading to East Hook Cross Road. Field screening during the December 14, 2000 excavation and post-excavation sampling in the pit adjacent to the Site building indicated that the soils on the western sidewall and in the bottom of the pit continued to be contaminated with high levels of PCE (above NYSDEC TAGM cleanup level of 1.4 ppm). In December 2000, a six-foot chain link fence was erected around the excavation preventing unauthorized access.

In May 2001, when EPA demobilized its operations at the Site, IBM took over removal activities. These included soil excavation, backfilling the various excavated area with clean fill, disposal of excavated soils and restoration work at the Facility. EPA approved a final report on these activities, on December 23, 2002. The source removal activities conducted at the Facility are believed to have eliminated any further source of groundwater contamination and should reduce the time necessary for remediation of the aquifer.

On August 6, 2001, EPA approved a scope of work, proposed by IBM, to evaluate and implement a permanent water supply for the affected residents under the existing AOC-R. On December 17, 2001, EPA approved IBM's Alternate Water Supply Response Action Work Plan. In November 2003, IBM presented to EPA the final report (AWSER), in accordance with the May 2001 AOC-R.

The AWSER and the PRAD were made available for public comment from November 19, 2003 through December 20, 2003. On November 20, 2003, EPA conducted a public availability session and a public meeting in at the Fire District Administration Building in Hopewell Junction, Town of East Fishkill, New York to discuss the proposed response action and to receive public comments on the AWSER and the PRAD.

2. Current action

Point-of-Entry Treatment (POET) Systems

A regular sampling and maintenance schedule has been arranged for each of the 103 residential POET systems. IBM performs ongoing quarterly sampling at three different stages of each POET system: 1) raw water, 2) between carbon vessels and 3) at the kitchen tap in each home.

In order to continue to protect public health during the implementation phases of the alternate water supply system, the POET systems will remain operational and be maintained until the alternate water supply is installed and operational. At that time, the POET systems will be dismantled and removed upon home hook-up to the public water supply system.

C. State and Local Authorities' Roles

1. State and local actions to date

Early in the process, NYSDOH took an active role at the Site, sampling over 150 private wells in the area at the request of the residents. This activity has lead to the previous removal activities described herein. In addition, NYSDOH serves as the lead agency in addressing health-related issues on the Site, including public outreach and education, health consultation for residents and the activation of the VOC Registry for potentially exposed residents.

NYSDEC has worked with EPA to investigate the source of the groundwater contamination through researching local industrial facilities and rumored disposal areas in the vicinity of the Site.

2. Potential for continued State/local response

New York State performs an oversight role in this current action and future remedial activities to be conducted at the Site.

III. THREATS TO PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

Conditions at the Site meet the criteria for a removal action under Section 40 C.F.R. 300.415(b)(2) of the NCP. Qualifying criteria under the NCP for the threats to the public health and welfare include the following:

> **i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants; and**
>
> **ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems.**

Between April and January 2001, the analytical results generated by the NYSDOH and EPA sampling identified 60 residential wells contaminated by PCE (or its breakdown product TCE) in excess of the Federal and State MCLs of 5 µg/l. EPA's RAL of 70 µg/l for PCE was exceeded in

20 of these wells. The affected residences are significantly impacted by contaminated groundwater, and are currently utilizing the POET systems to ensure a safe water supply. However, these POET systems are only an interim measure and are subject to potential failures such as: filter clogging and/or subsequent failure of the GAC filtering system. Since groundwater, a natural resource, has been determined to be contaminated with VOCs, the potential for further migration of groundwater contamination from the Site continues and may affect future residential development and associated future residents. In addition, the plume is not fully characterized and may migrate, impacting other residents in this area. However, numerous residents were exposed to PCE and other VOCs in their drinking water supplies for an undetermined period of time before EPA initiated the removal action at the Site.

The VOCs identified at the Site may present health risks to humans through ingestion, inhalation or dermal contact. According to available data, when inhaled in air at high concentrations, single exposures to PCE can affect the central nervous system leading to dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking or walking and can possibly lead to unconsciousness and/or death. PCE is also considered a possible human carcinogen by the United States Department of Health and Human Services. Human exposure can occur from ingestion of contaminated water, from food prepared with the water or from showering, bathing or washing. Exposure by inhalation alone during showering may exceed the exposure by direct ingestion.

VOC vapors of the contaminated groundwater can also enter residential air from other home activities through humidifiers, dishwashers, clothes washers and household cleaning apparatuses. These tend to increase the VOC concentration in the air inside the home and may result in exposure of the residents as significant as that from direct ingestion.

The associated health effects from exposure to elevated concentrations of PCE can include eye, skin, respiratory irritation, potential liver and/or kidney damage, toxic effect through inhalation, ingestion or dermal contact, carcinogenic and mutagenic effects and effect on the central nervous system.

(vii) The availability of other appropriate federal or state response mechanisms to respond to the release.

EPA uses its authority to issue orders to PRPs to perform response actions. IBM has assumed responsibility for a significant portion of the necessary work to be conducted at the Site and is expected to undertake the alternate water supply work. State and local authorities are not able to undertake timely response actions to eliminate the threats posed by the Site.

B. Threats to the Environment

Groundwater, a natural resource, has been determined to be contaminated with VOCs. The potential for further migration of groundwater contamination from the Site continues and may affect future residential development.

A remedial investigation and feasibility study (RI/FS) is being conducted by IBM under an Administrative Order on Consent (AOC-RI/FS) Index No. CERCLA-02-2002-2025 which was entered into between EPA and IBM in September 2002. The RI/FS will determine the full nature and extent of groundwater contamination.

IV. ENDANGERMENT DETERMINATION

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

V. EXEMPTION FROM STATUTORY LIMITS

12 Month/$2 Million Exemption

CERCLA and 40 C.F.R. § 300.415(b)(5) limit Federal removal responses to 12 months and $2 million in expenditures for Federal fund-financed removal actions unless the lead agency, here EPA, makes certain determinations regarding the risks posed by the site, the need for response actions and the unavailability of other response actions to address the risks. While the risks posed by the Site rise to the level required by 40 C.F.R. § 300.415(b)(5), this section does not apply because we anticipate that IBM will conduct the proposed removal action. In its letters of July 20 and 27, 2001, IBM proposed to perform the alternate water supply response action under the terms of the AOC-R, paragraph 41(f).

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

The water supply alternatives that were evaluated in the AWSER are as follows:

Alternative No. 1: The selected alternative described in Section A below.

Alternative No. 2: The Town and City of Poughkeepsie Hudson River Intake/Dutchess County Pipeline: This alternative included the purchase of water from the Town and City of Poughkeepsie to be transmitted through a 13-mile pipeline from Poughkeepsie to IBM's East Fishkill Plant. The water supply is drawn by the City and Town of Poughkeepsie primarily from

the Hudson River for the areas in southern Dutchess County. Two million gallons per day (MGD) of capacity would be initially purchased by IBM, with an option to purchase an additional two MGD. The water that would be supplied to the SRST would be a portion of an initial two-million gallon allocation to IBM from this pipeline.

Alternative No. 3: Route 376 Parcel A Property: This alternative is located on Route 376, north of NYS Roue 52, in Hopewell Junction and is adjacent to and south of the Alternative No.4 Parcel B property. In order to develop the property into a functional municipal well field, this alternative included the installation of two new production wells on Parcel A. Each of the two production wells would readily produce a sufficient yield to supply the needs of the SRST.

Alternative No. 4: Route 376 Parcel B Property: This alternative is located on Route 376, north of NYS Route 52, and is adjacent to and north of the Alternative No. 3 property. In order to develop the property into a functional municipal well field, this alternative included the installation of two new production wells on Parcel B. Each of the two production wells would readily produce a sufficient yield to supply the needs of the SRST.

A. Proposed Action

1. Description

There are two phases for the construction of this water supply project. The first phase involves the responsibility of the Town of Fishkill to finalize the water supply source implementation, namely the Snook Road Well Field and transmission line to NYS Route 52. The second phase of the project involves IBM's responsibility for the implementation of this non-time critical removal action, namely supplying public water to the SRST.

In the first phase, the Town of Fishkill and Toll Brothers, Inc., a private real estate developer and contractor, are undertaking a number of capital improvements in connection with the Snook Road Well Field, which is the water supply source for the SRST. These actions include the following:

- the development of the Snook Road Well Field, including the installation of a second supply well, which will be the primary source of water supply for the SRST;
- the creation of the Snook Road Water Improvement Area No.1; and,
- the installation of a 12" water transmission line from the Snook Road Well Field to a location on NYS Route 52 where IBM will assume responsibility for the project and connect the transmission line to the SRST.

In the second phase of this project identified under this removal action, IBM will design, construct and install a public water supply system for the SRST. As stated above, the source of the potable water will be the Town of Fishkill Water Supply system. Figure 2 shows the

proposed route for the water supply transmission lines. Figure 3 shows the proposed distribution system area for the SRST.

The following tasks will be completed by IBM within the Town of East Fishkill, both within the SRST and outside the SRST:

- Formal surveying of the proposed route
- Excavation of trenches (rock, soils, *etc.*) in the rights-of-way
- Restoration of pavement in roads, streets and other rights-of-way
- Installation of highway crossing casings, transmission and distribution piping
- Backfilling of excavation tenches
- Traffic maintenance
- Installation of water booster station
- Installation of water holding tank
- Connection of system to homes
- Installation of fire hydrants, as necessary to meet local code

The project will also require system service and repair activities, including the purchase of chemicals, electricity, insurance, use of a part-time operator, maintenance and repair of transmission and distribution systems, analytical testing and various administrative activities.

A forty-year, three-party agreement is in place among the Town of East Fishkill, the Town of Fishkill and IBM to ensure that the alternate water supply project will be completed within the estimated time frame and that the amount of water necessary for the SRST will be supplied.

2. Contribution to remedial performance

The action proposed in this Decision Document will address the most immediate threats posed to public health by eliminating the contamination pathway and providing a public water supply. The recommended removal action will, to the extent practicable, contribute to the efficient performance of any long-term remedial action, as required by 40 C.F.R. 300.415.

3. Description of alternative technologies

No specific alternate treatment technologies are utilized under this action; therefore, no alternative treatment technologies were evaluated.

4. Engineering Evaluation/Cost Analysis (EE/CA)

The AWSER, together with the PRAD, represent the EE/CA. The AWSER is included in the Administrative Record for the Site, and the PRAD is included in Appendix A of the Responsiveness Summary.

5. Applicable or relevant and appropriate requirements (ARARs)

The ARARs are identified in Section 4 of the AWSER, *i.e.*, related to the provision of an alternate water supply and within the scope of this Decision Document, will be met to the extent practicable.

6. Project schedule

The overall project implementation schedule for the activities in this Decision Document is included in Table 4 in Appendix II.

B. Estimated Costs

The estimated present worth cost for completing the design, construction and installation of the alternate water supply system, including system service and repair activities, is approximately $10 million.

Costs that will be incurred by the Town of Fishkill and others related to the development of the Snook Road Well Field are not included here. These costs will be incurred irrespective of the action proposed herein.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

While the POET systems remain in operation, they are considered temporary and are subject to potential failures, such as filter clogging and/or subsequent failure of the GAC filtering system. Their operation is significantly more costly in the long term than conversion to a permanent water supply system. Since groundwater, a natural resource, has been determined to be contaminated with VOCs, the potential for further migration of groundwater contamination from the Site continues and may affect future residential development and associated future residents. In addition, the plume is not fully characterized and may migrate, impacting other residents in this area. The proposed action will protect the residents from exposure to contaminated groundwater until MCLs are achieved.

VIII. OUTSTANDING POLICY ISSUES

None.

IX. ENFORCEMENT

As set forth in the Site history section above, EPA has issued two AOCs to IBM, *i.e.*, the May 2001 AOC-R and the September 2002 AOC-RI/FS. IBM is expected to fund the entire design, construction and installation of the water supply system, including the respective transmission and distribution pipelines. IBM is also expected to participate in system service and repair activities.

IBM, pursuant to the AOC-RI/FS, is investigating the nature and extent of the groundwater contamination, concurrently with the implementation of the alternate water supply project.

X. RECOMMENDATIONS

This Decision Document represents the selected removal action for the Site, which is located within the Town of East Fishkill, Dutchess County, New York. This document was developed in accordance with CERCLA and is not inconsistent with the NCP. This decision is based on the Administrative Record which was created specifically for this removal action for the Site.

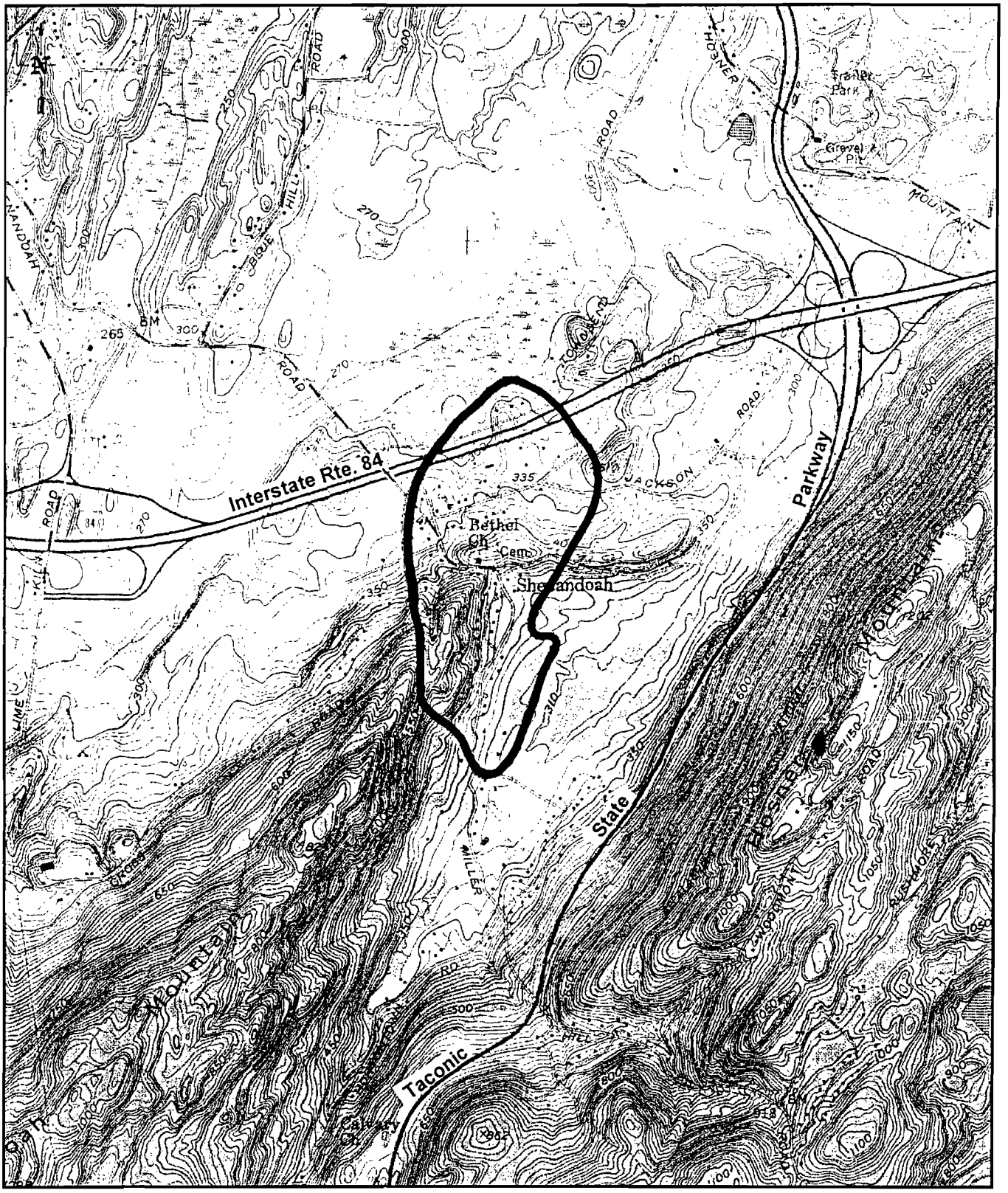
Please indicate your approval of the selected alternative for the non-time critical removal action, by signing below.

Approved: William McCabe **Date:** 8-23-04
George Pavlou
Division Director

Disapproved: _____ **Date:** _____
George Pavlou
Division Director

APPENDIX I

FIGURES



— Limit of Site Constituents Detected

Portion of the Hopewell Junction, NY
7.5-Minute NYSDOT Quadrangle

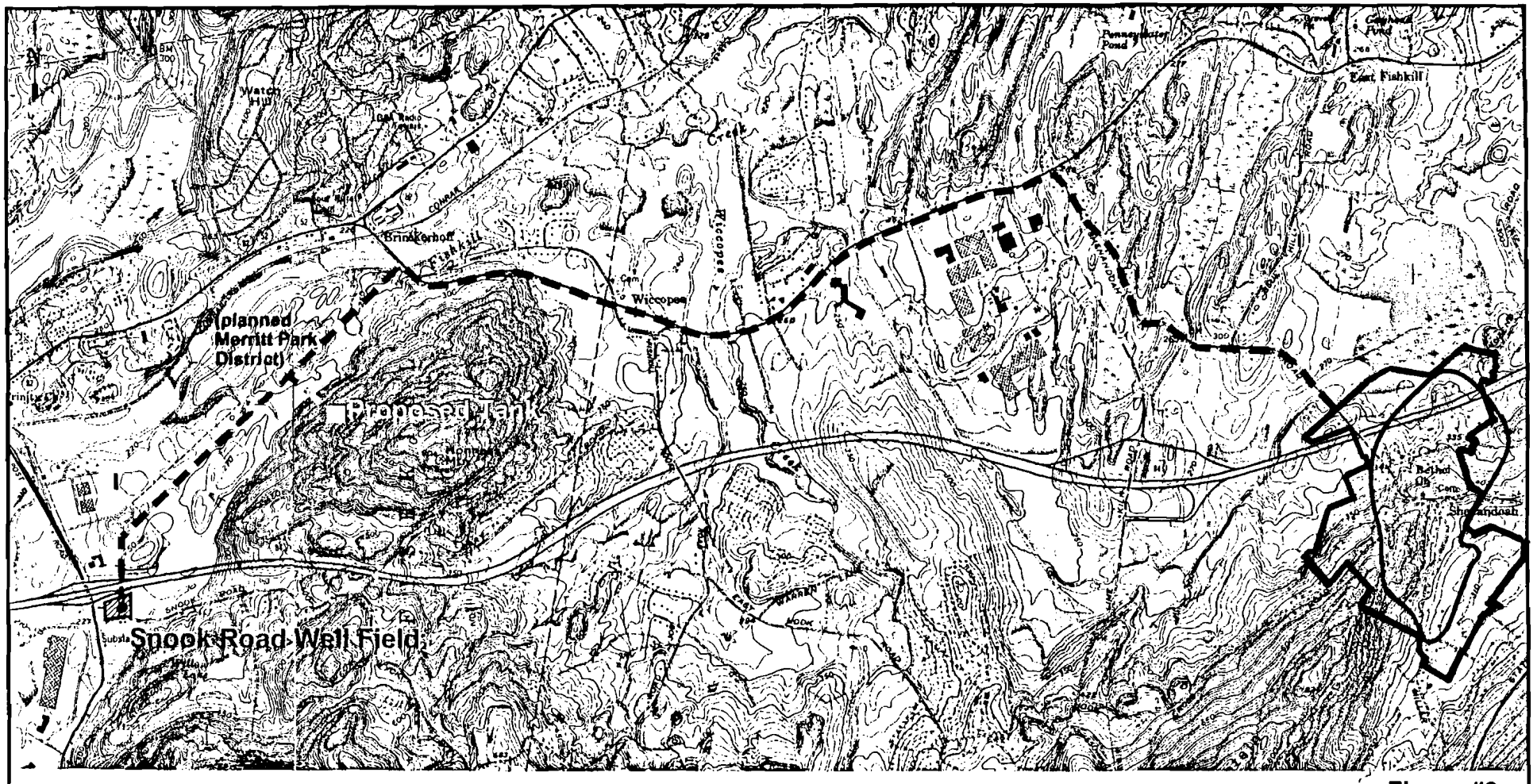
Figure #1

Shenandoah Road Groundwater Contamination Superfund Site

Scale
0 1000' 2000'

GROUNDWATER SCIENCES CORPORATION

21003-002-F4 / 07-28-03



– Transmission Piping Route
– Limit of Response Scope/Distribution System
– Limit of Site Constituents Detected
● – Water Supply Well

Approximate Scale
0 1000' 2000'

Figure #2

Shenandoah Road Groundwater Contamination Superfund Site
Potential Sources of Alternate Water Supply
Alternative 1: Town of Fishkill

GROUNDWATER SCIENCES CORPORATION

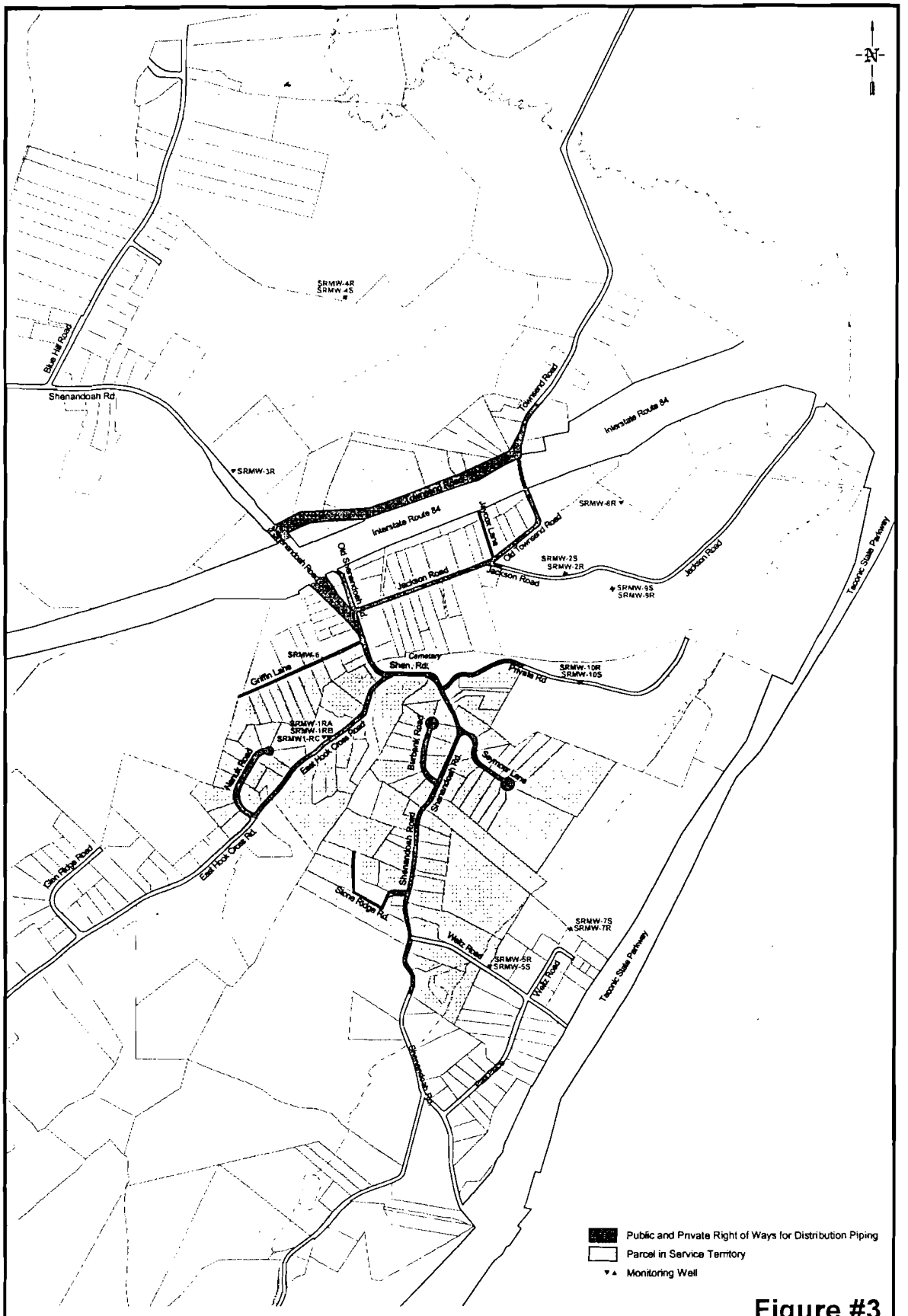


Figure #3

Shenandoah Road Groundwater Contamination Superfund Site
Potential Sources of Alternate Water Supply
Response Scope, Service Territory and Distribution System

Approximate Scale
0 500' 1000'

Parcels source: Geographic Information Systems Lab, Dutchess County Real Property Tax Service Agency, Poughkeepsie, NY; 5/98 (PROPERTIES NOT TO SCALE).

GROUNDWATER SCIENCES CORPORATION
21003-053-C8 / 07-31-03

APPENDIX II

TABLES

Table 1 Total Capital Cost - Town of Fishkill Alternative

Item	Description	Pay Unit	Unit Price	Est Qty	Total
1	8" Ductile Iron Pipe in Town or County Rd.	LF	$ 47.00	9,780.00	$ 459,660.00
2	8" Gate Valve in Town or County Rd.	Each	$ 1,100.00	12.00	$ 13,200.00
3	8" Ductile Iron Pipe in NYS Highway	LF	$ 62.00	10,800.00	$ 669,600.00
4	8" Gate Valve in NYS Highway	Each	$ 1,250.00	11.00	$ 13,750.00
5	Ductile Iron Specials	Ton	$ 3,000.00	7.00	$ 21,000.00
6	Pavement Restoration in Town or County Hwy.	SY	$ 20.00	7,855.00	$ 157,100.00
7	Pavement Restoration in NYS Highway	SY	$ 25.00	7,200.00	$ 180,000.00
8	Hydrant & Valve Assembly	Each	$ 2,900.00	30.00	$ 87,000.00
9	Rock Excavation	CY	$ 60.00	2,500.00	$ 150,000.00
10	Select Backfill	CY	$ 20.00	7,500.00	$ 150,000.00
11	Flowable Backfill	CY	$ 84.00	2,200.00	$ 184,800.00
12	NYS Highway Crossing in 24" Casing	Each	$ 60,000.00	2.00	$ 120,000.00
13	I-84 Highway Crossing in 24" Casing	Each	$ 90,000.00		$ 0
14	Air Release Valve & Chamber	Each	$ 7,000.00	2.00	$ 14,000.00
15	Major Creek Crossing	Each	$ 125,000.00	1.00	$ 125,000.00
16	Minor Creek or Stream Crossing	Each	$ 70,000.00	3.00	$ 210,000.00
17	Master Meter Chamber	Each	$ 85,000.00	1.00	$ 85,000.00
18	Maintenance & Protection of Traffic	Lump Sum			$ 110,000.00
19	Water Booster Station	Each	$ 210,000.00	1.00	$ 210,000.00
20	Capital Contr to Water System (1)	GPD	$ 5.32	80,000.00	$ 425,600.00
21	Water Supply Development				$ -
22	Land and Rights-of-Way				$ -
23	Sub-Total Construction				$ 3,385,710.00
24	Contingencies			5%	$ 170,000.00
	TOTAL CONSTRUCTION				$ 3,555,710.00
	All Indirect Costs -allowance			17%	$ 604,410.00
	Total Cost for Source & Transmission to SST				$ 4,160,120.00
	Water District Distribution - Table 2				$ 4,632,845.00
	TOTAL PROJECT COST				$ 8,792,965.00

(1) Reflects Contribution to Town of Fishkill for purchase of 80,000 gpd of capacity of Snook Road Well Supply

Table 2
Total Capital Cost
Water Distribution System - SRST

Item	Payment Unit	Unit Price	Estimated Quantity	Total
8 inch Ductile Iron Pipe	lin ft	$47.00	20000	$940,000.00
8 inch Gate Valve	each	$1,100.00	24	$26,400.00
D.I. Specials	tons	$3,000.00	6	$18,000.00
Hydrant & Valve Assbly	each	$2,900.00	40	$116,000.00
3/4 inch copper service	each	$1,400.00	150	$210,000.00
Pavement Restoration	sq. yds.	$20.00	13500	$270,000.00
Rock Excavation	cu. yds.	$60.00	2500	$150,000.00
Select Backfill	cu. yds.	$20.00	7500	$150,000.00
I-84 Crossing in Casing Pipe	each	$90,000.00	1	$90,000.00
150,000 gallon standpipe	each	$280,000.00	1	$280,000.00
Maintenance & Prot of Traffic	lump sum			$110,000.00
Individual Household Connections	each	$10,500.00	137	$1,438,500.00
Easements and Land	allowance			$80,000.00
Sub-Total Construction				$3,878,900.00
Contingencies			5%	$193,945.00
Total Construction				$4,072,845.00
Technical Services-Survey, Design	allowance		8%	$320,000.00
Construction Inspection	allowance		4%	$160,000.00
Permits and Admin	allowance		2%	$80,000.00
Total Cost				$4,632,845.00

Table 3

Operation and Maintenance Costs - Town of Fishkill Alternative

Item	Description	Costs
1	Bulk Water Purchase - 12 million gallons/year	$28,185.00
2	Electricity	$3,000.00
3	Insurance	$4,000.00
4	Part-Time Operator	$16,000.00
5	Benefits & Payroll Taxes	$8,000.00
6	Maintenance and Repair	$4,000.00
7	Analytical Testing	1,500.00
8	Bookkeeping & Administration	$4,000.00
	TOTAL ANNUAL COSTS	$68,685.00
	TOTAL PRESENT WORTH (30 years - O&M)	$1,187,701.00

Table 4

Implementation Schedule - Town of Fishkill Alternative

Tasks	Schedule of Completion
Survey and Base Mapping	4th Quarter - 2004
Preliminary Design	1st Quarter - 2005
Permit Applications/ARARs	1st Quarter - 2005
Final Design	2nd Quarter - 2005
Regulatory Approvals	2nd Quarter - 2005
Bidding and Contract Procurement	3rd Quarter - 2005
Construction	2nd Quarter - 2006
System Testing and operations	3rd Quarter - 2006
FINAL COMPLETION	3rd Quarter - 2006
Completion of Source Delivery	September - 2004

APPENDIX III

ADMINISTRATIVE RECORD INDEX

SHENANDOAH ROAD SITE
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

Document #: SR2.4001-2.4108
Title: Shenandoah Road Groundwater Contamination Superfund Site Alternate Water Supply Response Action Work Plan, Town of East Fishkill, Dutchess County, New York (Index Number CERCLA-02-2001-2020)
Category: Removal Response
Author: Groundwater Sciences Corporation, 2 Summit Court, Suite 204, Fishkill, New York 12525
Recipient: IBM Corporation, Corporate Environmental Affairs
Date: December 13, 2001

Document #: SR2.4109-2.4226
Title: Quality Assurance Project Plan
Category: Removal Response
Author: STL Newburgh, 315 Fullerton Avenue, Newburgh, NY 12550
Recipient: Groundwater Sciences Corporation, 2 Summit Court, Suite 204, Fishkill, New York 12525
Date: April 2, 2003

Document #: SR2.4227-2.4880
Title: Shenandoah Road Groundwater Contamination Superfund Site Alternate Water Supply Evaluation, Final Report
Category: Removal Response
Author: Groundwater Sciences Corporation, 2 Summit Court, Suite 204, Fishkill, New York 12525
Recipient: IBM Corporation; Corporate Environmental Affairs, Somers, New York 10589
Date: September 19, 2003

Document #: SR6.1001-6.1002
Title: State Concurrence with Potable Water Supply Alternative Recommended by EPA, Shenandoah Road Groundwater Contamination, Superfund Site, NYSDEC Site No. 3-14-104
Category: State Coordination
Author: Dale A. Desnoyers, Director, Division of Environmental Remediation, New York State Department of Environmental Conservation, Albany, New York 12233
Recipient: George Pavlou, Director, Emergency & Remedial Response Division, U. S. Environmental Protection Agency, Region II
Date: November 17, 2003

Document#: SR7.3001-7.3036
Title: Administrative Order on Consent For Removal Action, Index Number CERCLA-02-2001-2020
Category: Enforcement
Author: U.S. Environmental Protection Agency, Region II., New York, New York 10007
Recipient: Wayne S. Balta, Director of Corporate Environmental Affairs, International Business Machines Corporation
Date: May 10, 2001

Document #: SR7.3037-7.3040
Title: Re: Shenandoah Road Groundwater Contamination Site, East Fishkill, Dutchess County NY, Administrative Order on Consent, Index Number CERCLA-02-2001-2020, EPA letter of July 6, 2001
Category: Enforcement
Author: David J. Cartenuto, Office of the Associate General Counsel, IBM, Somers, New York 10589
Recipient: Virginia Capon, Esq., Chief: New York /Caribbean Superfund Section, Office of Regional Counsel, US Environmental Protection Agency, Region II, 290 Broadway, New York, NY 10007-1866
Date: July 20, 2001

Document #: SR7.3041-7.3044
Title: Re: Shenandoah Road Groundwater Contamination Superfund Site, East Fishkill, Dutchess County, NY, Administrative Order of Consent, Index Number CERCLA 02-2001-2020, IBM letter of July 20, 2001, Statement of Work, Alternate Supply Response Action.
Category: Enforcement
Author: David J. Cartenuto, Office of the Associate General Counsel, IBM, Somers, New York 10589
Recipient: Virginia Capon, Esq., Chief: New York /Caribbean Superfund Section, Office of Regional Counsel, US Environmental Protection Agency, Region II, 290 Broadway, New York, NY 10007-1866
Date: July 27, 2001

Document #: SR7.3045-7.3046
Title: Re: EPA approval of the Alternate Water Supply Response Action Statement of Work for the Shenandoah Road Groundwater Contamination Site, East Fishkill, NY, Administrative Order on Consent, Index Number CERCLA-02-2001-2020
Category: Enforcement
Author: John E. La Padula, P.E., Chief, New York Remediation Branch, Emergency and Remedial Response Division, U.S. Environmental Protection Agency, Region II, 290 Broadway, New York, NY 10007-1866
Recipient: Thomas D. Morris, SRGWCS Project Coordinator, International Business Machines Corp. Somers, NY 10589
Date: August 6, 2001

Document #: SR7.3047-7.3048
Title: Re: EPA Approval of the Alternate Water Response Action Work Plan for the Shenandoah Road Groundwater Contamination Site, East Fishkill, NY, Administrative Order on Consent, Index Number CERCLA-02-2001-2020
Category: Enforcement
Author: Doug Garbarini, Chief, Eastern New York Remediation Section, New York Remediation Branch, Emergency and Remedial Response Division, US EPA Region II, New York, New York 10007-1866
Recipient: Thomas D. Morris, SRGWCS Project Coordinator, International Business Machines Corp. Somers, NY 10589
Date: December 17, 2001

Document #: SR7.3049-7.3078
Title: Three-Party Agreement among IBM Corporation, Town of East Fishkill and Town of Fishkill
Category: Enforcement
Author: Edan Dionne, Director, Corporate Environmental Affairs, International Business Machines Corporation, Joan A. Pagones, Supervisor, Town of Fishkill, and Peter Idema, III, Supervisor, Town of East Fishkill
Recipient: None given
Date: January 2004

Document #: SR10.6001-10.6010
Title: Proposed Response Action, Shenandoah Road Groundwater Contamination Superfund Site, Town of East Fishkill, Dutchess County, New York, Superfund Program
Category: Public Participation
Author: US Environmental Protection Agency, Region II, New York, New York 10007-1866
Recipient: Public
Date: November 2003

Document #: SR11.2001-11.2002
Title: EPA Regional Guidance Document
Category: Technical Source and Guidance Documents
Author: US Environmental Protection Agency
Recipient: Public
Date: December 2003

APPENDIX IV

NYSDEC CONCURRENCE

New York State Department of Environmental Conservation
Division of Environmental Remediation, 12th Floor
625 Broadway, Albany, New York 12233-7011
Phone: (518) 402-9706 • **FAX:** (518) 402-9020
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

NOV 17 2003

Mr. George Pavlou, Director
Emergency & Remedial Response Division
U.S. Environmental Protection Agency
Region II
290 Broadway
New York, New York 10007-1866

Dear Mr. Pavlou:

RE: Shenandoah Road Groundwater Contamination
Superfund Site
NYSDEC Site No. 3-14-104

The New York State Department of Environmental Conservation (Department) has reviewed the Proposed Response Action Document for an Alternate Water Supply System prepared by the U.S. Environmental Protection Agency (EPA) for the Shenandoah Road Groundwater Contamination Superfund Site. Based on this review, all four alternatives considered by EPA are capable of providing a safe and dependable potable water supply to the residents of the Shenandoah Road area. Therefore, the Department concurs with the alternative recommended by EPA: Alternative 1, the Town of Fishkill Municipal Water Supply.

This concurrence is provided on a draft document and with short notice as we only received the Proposed Response Action Document on Thursday, November 6, 2003. In the future, please provide the Department sufficient time for review and response.

If you have any questions, you may contact Robert Schick, of my staff, at (518) 402-9662.

Sincerely,

Dale A. Desnoyers
Director
Division of Environmental Remediation

cc: G. Litwin, NYSDOH

APPENDIX V

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

Shenandoah Road Groundwater Contamination Superfund Site
Alternate Water Supply Preferred Alternative
Town of East Fishkill, Dutchess County, New York

INTRODUCTION

This responsiveness summary includes public comments and questions received during the public comment period (November 18, 2003 - December 18, 2003) for the United States Environmental Protection Agency's (EPA's) proposed non-time critical removal action at the Shenandoah Road Groundwater Contamination Superfund Site (Site), as well as EPA's responses to those comments and questions. Comments summarized in this document have been considered in EPA's final selection of the removal action at the Site.

As required under an Administrative Order, IBM, a potentially responsible party (PRP) for the Site, completed an Alternate Water Supply Evaluation Report (AWSER) for the Site. The AWSER discussed the various water supply alternatives that were considered. EPA, in conjunction with the New York State Department of Environmental Conservation (NYSDEC), subsequently issued a Proposed Response Action Document (PRAD) which identified its preferred alternative. The AWSER and the PRAD together are classified as the Engineering Evaluation/Cost Analysis (EE/CA) for this non-time critical removal action.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

Community involvement at the Site has been high. The key issues of concern centered around the contamination of private wells in the Shenandoah Road area.

On June 5, 2000, EPA received a request from the New York State Department of Environmental Conservation (NYSDEC) to perform an appropriate emergency response action at the Site under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. Sections 9601-9675. EPA determined that a sufficient planning period existed before Site activities for this portion of the response, *i.e.*, an alternate water supply source had to be initiated. Accordingly, as stated above, this action is being conducted as an non-time critical removal action.

On November 18, 2003, a public notice was published in the Poughkeepsie Journal. The public notice announced the release and availability of the AWSER and EPA's PRAD, as well as the holding of a public availability session and a public meeting.

On November 20, 2003, EPA participated in the public availability session in the afternoon. At this session, EPA, IBM and its technical consultants answered questions about the various water supply alternatives. In the evening, EPA conducted a public meeting with NYSDEC to further discuss the AWSER and the PRAD, which identified EPA's preferred water supply alternative. At this meeting, EPA also explained that the Agency would prepare a final response action document setting forth EPA's final water supply response action.

The repository for Site-related documents is established at the East Fishkill Community Library, 348 Route 376, Hopewell Junction, New York.

This responsiveness summary documents EPA's response to those comments and questions raised during the public comment period.

Attached to the Responsiveness Summary are the following Appendices:

Appendix A - Proposed Response Action Document
Appendix B - Public Notice, published in the Poughkeepsie Journal on November 18, 2003
Appendix C - November 20, 2003 Public Availability Session and Public Meeting Attendance Sheets
Appendix D - Letters and E-mails Submitted During the Public Comment Period

OVERVIEW OF PUBLIC'S REACTION TO EPA'S PREFERRED REMEDY

EPA received numerous comments on the PRAD and the AWSER during the public comment period. Public comments received generally supported the Agency's preferred alternative of the Town of Fishkill Water Supply although some concern was raised about the continued quality of the proposed supply.

SUMMARY OF COMMENTS AND EPA RESPONSES

Comments were expressed at the public meeting, and written comments were received during the public comment period.

The comments have been categorized as follows:

A. Response Action Issues (Water Supply and Water Consumption)
B. Technical Issues
C. Water Quality Issues

A summary of the comments and EPA's responses to the comments is provided below:

Response Action Issues

Comment #1: How much water is currently being consumed by the Shenandoah Road area residents?

Response #1: Based on the latest quarterly water consumption information gathered from quarterly monitoring and sampling conducted by IBM at those affected Shenandoah Road Service Territory (SRST) residences that are served by point-of-entry treatment (POET) systems, approximately 15,800 gallons of water are used per quarter per family. Adapting this figure to the existing SRST community of roughly 150 properties, the anticipated SRST water usage will be approximately 26,000 gallons per day.

Also, the AWSER presented that the average daily demand required for the SRST is approximately 80,000 gallons per day, which is the water quantity allocated to the Town of Fishkill for the SRST under the three-party agreement. The three-party agreement is further discussed in Comments/Responses #15, #22 and #28. The average per capita water usage can vary considerably from residence to residence. The national average per capita water usage rate is 80 gallons per day.

Comment #2: What will be the monthly cost of water?

Response #2: Using the anticipated water usage for the SRST of 26,000 gallons per day and the estimated water costs for the selected alternative of $5.70 per 1000 gallons used, the monthly water bill for the SRST residents can be approximated to be about $30 per residence. The average water costs for some of the water districts managed by the Town of East Fishkill range from approximately $1.80 to $4.45 per 1000 gallons used. Under the current water usage rates, the yearly water bills range from $150 to $370 per year. As further discussed below in Comments/Responses #4 and #8, it is likely that the actual cost of water to the SRST residents will be lower than estimated.

Comment #3: Who will set the water rates?

Response #3: The Town of East Fishkill will set the water rates for the SRST customers.

Comment #4: Why will the residents pay water bills?

Response #4: EPA does not pay residents' water bills. Also, EPA does not order PRPs to pay residents' water bills. EPA expects IBM to perform or provide for any necessary operations and maintenance (O&M) of the physical infrastructure associated with the provision of drinking water to the homes in the SRST until

the groundwater is safe to drink again. IBM's action with respect to the O&M of the project will not, however, eliminate the need for water bills. Water bills will still be issued to the residents.

The residents will receive certain other benefits from being on a public water supply system, including not having to pay for the testing and maintenance of their wells, the replacement of pumps and other appurtenances and the electricity usage associated with the operation of the pump. Also, water hydrants for fire protection will be installed at key locations throughout the SRST area.

Comment #5: What is the annual cost for the water supply system? What is the nature of the items in those costs?

Response #5: The detailed cost analysis for the selected alternative is contained in the AWSER. The estimated overall capital cost for the project is approximately $8.8 million; the O&M cost is approximately $69,000 per year; and the total present worth cost is approximately $10 million. The capital cost includes, but is not limited to, those costs associated with installing transmission and distributions lines, including rights-of-way for excavation. Various related expenditures are associated with the following: piping, valves, easements, excavation, paving, etc. The O&M costs include bulk water purchase, electricity, insurance, operators' salaries, maintenance and repair, testing, etc.

Comment #6: Why will the East Fishkill residents of the SRST have a higher water bill than the Town of Fishkill residents?

Response #6: Water rates in the various towns vary considerably, since each town may have different administrative and capital expenditures associated with the supply of public water. The Town of East Fishkill will determine the water rates to the residents of the SRST.

Comment #7: What is the cost of water to the residents of the Village of Fishkill and the Town of Fishkill?

Response #7: According to the information provided by the communities, water rates are determined by usage. In some instances, flat rates may be charged on a case-by-case basis. After reviewing some of the water rates in communities within Dutchess County, including the Village of Fishkill and the Town of Fishkill, water rates can vary from $20 to $50 per quarter per residence.

Comment #8: Who will pay for the O&M of the water supply system?

Response #8: EPA expects IBM to perform or provide for the O&M of the water supply system until the groundwater cleanup goals have been achieved. The exact arrangement of what O&M activities IBM will be responsible for has yet to be determined; these could include pump or valve repair or replacement or pipeline repair or replacement. EPA expects that this arrangement will be finalized before the water supply system installation has been completed. With the potential reduction in the O&M costs for the Town of East Fishkill, there may be some reduction in the overall cost of water supplied to the SRST consumer.

Technical Issues

Comment #9: Why was the Four Seasons water supply alterative eliminated?

Response #9: After further investigation of this alternative, it was determined that the existing capacity of the system would not have served the necessary water supply requirements of the SRST. Also, no future water well development information from the Four Seasons Corporation was available for further consideration as a viable water supply.

Comment #10: What will be the back-up source of water for the selected alternative?

Response #10: The Town of Fishkill selected alternative will include two separate drinking water wells, as part of its operations. Under municipal requirements, municipal water supplies are required to have two supply wells to ensure that a safe water will be distributed uninterrupted to the SRST community in case one well has to be taken out of service.

Comment #11: Will the residents be able to use their existing wells? Are there any restrictions or regulations through local ordinances to prevent the use of multiple water supplies at residences?

Response #11: The Town of East Fishkill does not require mandatory connection to an available public water supply system.

However, according to Section 186-21 of the Municipal Code of the Town of East Fishkill:

"A. If an owner has any source of water other than from the municipal public water system, such source will be considered nonpotable. Before making any service connection between the municipal public water supply and a consumer's premises, it is required that all connections between individual wells or other outside sources of water supply physically be disconnected from

the consumer's plumbing fixtures, which are connected to the municipal potable water supply."

"B. All owners of property within the confines of a municipal water district shall not use nonpotable water as a source of water supply for any purpose. Nonpotable water is defined as any source of water other than from a municipally owned water system."

Disconnecting the private residential wells within the SRST will be addressed during the development of the SRST water district by the Town of East Fishkill and the Dutchess County Department of Health.

Comment #12: What is the proposed conceptual route to bring water from New York State Route 52 to the SRST?

Response #12: As per the transmission route identified in the AWSER for the Town of Fishkill alternative, the transmission line would extend east from the Town of Fishkill border along the Route 52 right-of-way to a location where it would connect with Shenandoah Road. The line would then travel along the Shenandoah Road right-of-way to the SRST community. The distribution lines would then follow the various streets and roads within the SRST community, including Burbank Road, Seymour Lane and others. IBM will be responsible for the design and construction of the transmission pipeline along Route 52 from the location where it picks up the Town of Fishkill Snook Road Well Field water supply.

Comment #13: When will soil sampling occur?

Response #13: The original removal action, conducted at the former operating facility at 7 East Hook Cross Road, included confirmatory soil sampling which indicated that contaminated soils were remediated and removed off-site. Since the former operations building was removed and clean soils were used as fill in the excavated areas, there is no indication that further soil contamination has occurred at the East Hook Cross Road location.

During the remedial investigation/feasibility study (RI/FS) phase of the project (to be conducted over the next two years or so), there will be some soil sampling conducted during the drilling and installation of new monitoring wells in order to characterize the geologic formations in the area.

Comment #14: Will some of the compounds, *i.e.*, manganese and iron, that were shown to be in some of the water supply sources presented in the AWSER cause damage or leaching to galvanized piping?

Response #14: The preferred alternative does not show any issue with the compounds identified and, as such, should not affect piping and residential water piping in the SRST. If, at some time in the future, these compounds become an issue, appropriate actions would be taken by the water district to alleviate them.

Comment #15: Will we receive uninterrupted water during a blackout?

Response #15: The Town of Fishkill's production wells are serviced by emergency generators which would start up at any power shortage. Also, the storage holding tank has enough capacity to handle a limited period of daily demand. To date, the Town of Fishkill residents have not been without water during some of the recent blackouts.

Please note that a three-party agreement among the Town of East Fishkill, Town of Fishkill and IBM has been recently executed to ensure that sufficient capacity will be available to the SRST residents. This agreement contains a section on Water Emergency Procedures.

Comment #16: Can the SRST residents have multiple supplies in their homes?

Response #16: Each household is permitted only one connection to the new water supply system. As indicated in Response #11 above (Section 186-21 of East Fishkill's municipal code), before any service connection between the municipal public water supply and a consumer's premises can be made, it is required that all connections between individual wells or other outside sources of water supply physically be disconnected from the consumer's plumbing fixtures.

Comment #17: Are there any assurances to SRST homeowners that future properties will be prevented from using the public water supply?

Response #17: As water purveyors, the Town of East Fishkill is responsible for ensuring that sufficient water capacity is available for the SRST. Any additional capacity that it may need for future development must be above and beyond that dedicated to the SRST.

The SRST water supply capacity, as reserved by IBM from the Town of Fishkill, is to be used solely for the SRST residents. This reserved capacity cannot be used for future development outside of the affected SRST area unless those properties are found to be affected by Site-related contaminants.

Comment #18: What are the two alternative water supply sites located on Route 376? Who owns the property there? How were these locations selected?

Response #18: The two water supply alternatives on the large parcel of property on Route 376 are two separate and distinct potential production well fields. During the alternate water supply source investigation process, the Route 376 property was divided into two separate areas (one at the north end of the property and one at the south end). The two sites represent two unique water supply alternatives, as presented in the AWSER. The entire property is currently owned by the Proust family. These potential well development areas were identified, investigated and developed by IBM's contractor, Groundwater Sciences Corporation, in order to expand the AWSER water supply alternative list for the SRST area, as required in EPA's Administrative Order on Consent for Removal Action (CERCLA-022001-2020).

Comment #19: Can the community reject the four alternatives and demand a community water system from Honness Mountain Road?

Response #19: If the community, as a whole, provided a technical rationale as to why the preferred alternative was not suitable as a water supply, then there may be cause to pursue other potential water supply alternatives. The Honness Mountain area has not been investigated as a water source, hence, EPA does not have information about its viability as a water source.

The four alternatives presented in the AWSER represent the most feasible and available sources of safe public water supply for the SRST area. Also, a number of other alternatives were given a very thorough investigation. The final four, as presented in the AWSER, represent the best available alternate water sources, with respect to quality and quantity, for the SRST. These represent the only alternatives that were found to be viable as clean water sources for the SRST community. Since a preferred alternative was found to be suitable by EPA and NYSDEC for the SRST, there is no reason to pursue other water supply venues.

EPA has neither qualitative nor quantitative information that a water supply from the Honness Mountain region would be suitable as a water supply for the SRST.

Please note that, after EPA and New York State reviewed the water supply alternatives, the Town of Fishkill water supply source, *i.e.*, the Snook Road Well Field, is the most cost-effective for the SRST. As stated above, the quality of the water to be supplied by the Snook Road Well Field complies with Federal and State drinking water standards.

Comment #20: Why was the Dutchess County Pipeline Alternative not selected as the preferred alternative?

Response #20: While this project is in the engineering design phase, EPA did not choose this alternative, since it requires the construction of a 13-mile water transmission line before any water would be able to reach the Town of East Fishkill and the SRST community. Since this transmission line is a major component of this alternative, the sheer scope of the project may create additional uncertainty regarding the estimated time for completion of its construction, as compared to the selected alternative.

Comment #21: Would the Meadow Creek Corporate Park be able to connect into the SRST water supply?

Response #21: Under the 3-party agreement, the Town of East Fishkill must use the capacity reserved by IBM for the water supply needs of the SRST. The Town of East Fishkill may secure additional quantities of water, above and beyond the reserved capacity, to service other users such as the proposed the Meadow Creek Corporate Park or any other future development.

Comment #22: Do the existing well fields used by the IBM East Fishkill Facility have any effect on the Town of Fishkill alternative?

Response #22: The three existing production well fields (the Main Plant Well Field, the Railroad Spur Well Field and the Wiccopee Well Field) used by the IBM East Fishkill facility are separate and distinct from the Snook Road Well Field, the Town of Fishkill water supply alternative. These well fields are approximately two to three miles away and are located in two different towns. The water transmission line for the Town of Fishkill alternative will travel directly past these well fields but will not be connected to them.

There was also some public concern that water from these well fields may be commingled with the water that would be supplied to the SRST from the Town of Fishkill. This action is not included in the three-party agreement and will not occur. As stated in the AWSER, since the IBM well fields have insufficient capacity to handle the future needs of the IBM facility itself, they were ruled out as a potential alternate water supply source for the SRST. The Dutchess County Pipeline alternative is being developed specifically to handle the increased usage requirements for the IBM Facility.

Comment #23: Please expand on the risk assessment discussion.

Response #23: A baseline risk assessment, which will evaluate carcinogenic and noncarcinogenic risks of the various volatile organic compounds (VOCs) found in the soils and groundwater, will be performed during the remedial investigation phase of the project. This effort would include evaluating the

various exposure pathways considered during a risk assessment, including inhalation, ingestion and dermal exposure, for the VOC contaminants of concern at the Site.

Comment #24: Who pays for the 150,000-gallon water storage tank? Where will it be built? What will it look like?

Response #24: The water storage tank is a necessary part of the water supply system in that it will provide the water supply reserve during peak usage.

IBM will construct the water storage tank and connect it to the various transmission lines. The exact location of the tank remains to be determined. It will be a standard configuration, with estimated dimensions of 40 feet in height and 25 feet in diameter. The exact location of this tank will be determined during the design phase of the project. EPA will consider the SRST community's input to ensure that the tank is built in an acceptable location within the SRST.

Comment #25: Why is IBM not pursuing further investigation of the Shenandoah Road area?

Response #25: As stated above, IBM will continue to perform the RI/FS phase of the project, which will determine the full nature and extent of groundwater contamination at the Site. This process will include installing new monitoring wells, as well as sampling the soil gas, air, surface water and groundwater.

Comment #26: Will there be property tax increases?

Response #26: Since IBM is funding the entire construction and installation of the water supply system for the SRST, EPA does not believe that there would be any impacts to existing tax structures related to the installation of this water supply project.

Any property tax increase that may be directly related to the increase in value of a property after it is connected to a public water supply service would be better addressed by the Town of East Fishkill.

Comment #27: Will IBM maintain the POET systems that are currently installed at the affected SRST residences if any resident does not hook up to the new water supply system?

Response #27: Once the permanent water service is in place and supplying each home, the POET system for that home would be dismantled and removed. IBM would not be required to continue maintaining any remaining POET systems for those

homeowners who decide not to connect to the public water supply system. Any continued maintenance of remaining POET systems would be the responsibility of the homeowner. However, as stated in Response #11 above, the Town of East Fishkill Municipal Code states that if an owner has any source of water other than from the municipal public water system, such source will be considered nonpotable. Before making any service connection between the municipal public water supply and a consumer's premises, it is required that all connections between individual wells or other outside sources of water supply physically be disconnected from the consumer's plumbing fixtures, which are connected to the municipal potable water supply.

Comment #28: How long will the three-party agreement be in effect? Does this agreement require New York State approval?

Response #28: The Town of East Fishkill, the Town of Fishkill and IBM prepared the three-party agreement to remain in place for a period of forty years. According to the agreement, "the Town of East Fishkill shall have the right and option to extend the Agreement for successive 10-year terms..." This agreement does not require New York State approval prior to its implementation. The agreement has been executed and is in place. A copy of the agreement is included in the Administrative Record for the alternate water supply.

Comment #29: Who will pay for the installation of the water lines and the restoration of the streets and roads?

Response #29: IBM will be financially responsible for the completion of the water supply project, which would include the installation of water transmission lines from the boundary of the Town of Fishkill and the Town of East Fishkill and the distribution lines within the SRST, as well as the restoration to original or improved conditions of those rights-of-way, *i.e.*, street and roads, which will be used as the routes for the installation of the piping. EPA will ensure that IBM and its contractors comply with any local ordinances and communicate with local agencies to make sure that the construction and installation activities are conducted in a safe and reliable manner.

Water Quality Issues

Comment #30: Why is there no mention made about the expansion of the Southern Duchess Sand and Gravel Mining operations and the effect it would have on the underlying aquifer?

Response #30: The Town of Fishkill provided EPA with its technical evaluation of the effect that the mining operations may have on the Snook Road Well Field which is

located more than one-and-one-half miles from the mining operations. Data from extensive pumping tests of the proposed water supply wells at the Snook Road Well Field indicate that the zone of influence or recharge area to those proposed wells does not include the sand and gravel aquifer underlying Clove Creek in the vicinity of the mining operations. The Snook Road Well Field lies in the Sprout Creek-Fishkill Creek aquifer. Data also indicate that the discharge of storm water at the mining operations will not impact the quality of the proposed Snook Road Well Field. Based on a review of the information supplied by the Town of Fishkill, EPA concurs with this assessment and believes that the operation of the mining site would not have an effect on the Snook Road Well Field.

Comment #31: Is there any concern over high levels of manganese in the proposed water supply?

Response #31: No, the water quality of the Town of Fishkill alternative shows non-detectable levels of manganese. The Federal and State secondary standards for manganese are intended to prevent potential aesthetic problems, such as poor taste, odor and staining of plumbing fixtures, rather than adverse health impacts.

Comment #32: Will the Clove Creek Aquifer be protected?

Response #32: As stated above in Response #30 above, data from extensive pumping tests of the proposed water supply wells at the Snook Road Well Field indicate that the zone of influence or recharge area to those proposed wells does not include the sand and gravel aquifer underlying Clove Creek. The local water supply authorities drawing potable water from the Clove Creek aquifer would be responsible for ensuring that the source of that drinking water is protected.

Comment #33: Will the historical nature of the Snook Road Well Field area be preserved?

Response #33: Appropriate steps will be taken to ensure that actions taken during the construction of the water supply system comply with any historical preservation requirements, as identified in the National Historical Preservation Act.

Comment #34: What provisions have been established for compensation or treatment for future healthcare issues that may arise as a result of drinking contaminated water prior to the installation of the POET systems?

Response #34: At the present time, no health studies are proposed for the SRST. Any health concerns should be directed to the Duchess County Health Department, the

New York State Department of Health or the Federal Agency for Toxic Substances and Disease Registry. There are no provisions under the Superfund law to provide for any compensation resulting from potential past exposure to groundwater contamination.

Comment #35: Where are the results of the 1987 residential well testing?

Response #35: This residential well testing was performed in relation to IBM's East Fishkill facility and is not associated with the Site. Since these data were not Site-related, EPA did not use these data in its pre-remedial investigation and evaluation of the Site to develop the hazard ranking for proposed listing on the Superfund National Priorities List (NPL). The Site was listed on the NPL on June 14, 2001. EPA suggests contacting IBM for these historical data.

Comment #36: When the groundwater is fully restored, the public should be given a choice between a public supply and a private supply.

Response #36: The restoration of the groundwater to below Federal and State maximum contaminant levels will probably be a lengthy process. As such, it may take up to 30 or 40 years before any private well in the SRST area may produce safe drinking water without treatment. If and when that occurs, any connection to private wells or the installation of new private wells would have to be addressed at the local level with the Town of East Fishkill.

In order to provide the SRST residents with a safe drinking water supply, it is necessary to install a public water supply system now to ensure the protection of public health.

Comment #37: What is the quality of the water that will be supplied to the SRST residents? In particular, there are concerns about how chlorine may affect aquarium life.

Response #37: The water quality supplied to the SRST will comply with Federal and State drinking water standards. Chlorination is a necessary part of the public water supply process in order to ensure that bacterial contamination does not reach the consumer. With respect to the residual chlorine content of the water, EPA recommends that the homeowner secure technical advice from aquarium-life specialists on the best way to maintain a healthy aquatic environment for the various plant and animal species associated with an aquarium.

Comment #38: There was some public concern expressed about the commingling of drinking water from different well fields or other water supplies within the transmission lines that would supply water to the SRST.

Response #38: According to the Town of Fishkill, the water supply area associated with the Snook Road Well Field will be known as the Snook Road Water Improvement Area #1. The transmission line from this well field will be a newly constructed 12" water main. This line will be installed by the Toll Brothers, a private developer and contractor and will run along Merritt Boulevard to a location on NYS Route 52. At this location on NYS Route 52, IBM will pick up the construction work to install a transmission line from that point to the SRST. As stated previously, an allocation of 80,000 gal/day from this water supply has been assigned to the Town of East Fishkill to service the SRST.

With respect to additional potential water sources, the Town of Fishkill currently has no agreement nor any definitive plans to obtain water from the Village of Fishkill (within the Town of Fishkill) water supplies which draws water from the Clove-Creek Aquifer. The new Snook Road Well Field water supply facilities are being constructed in such a manner as to facilitate a potential connection at such time as an acceptable agreement may be reached between the two communities.

The Town of Fishkill does have definitive plans to ultimately interconnect the facilities of the Snook Road Water Improvement Area #1 with the facilities of the Town of Fishkill Brinkerhoff Water District. This interconnection would, thereby, allow a commingling of water from the Snook Road Well Field with that of the Brinkerhoff Well Field. This operation would permit better well field management, increase overall system efficiency and capacity and continue to provide a safe and sufficient water supply to the SRST.

All public water supplied to the SRST community would meet Federal and State drinking water standards.

Appendix A

Proposed Response Action Document

Shenandoah Road
314.104

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

DATE: AUG 20 2004

SUBJECT: **DECISION DOCUMENT**: Selection of Alternative for a Comprehensive Environmental Response, Compensation, and Liability Act Non-Time Critical Removal Action at the Shenandoah Road Groundwater Contamination Superfund Site, Town of East Fishkill, Dutchess County, New York

FROM: John La Padula, P.E., Chief
New York Remediation Branch

TO: George Pavlou, Director
Emergency and Remedial Response Division

I. PURPOSE

The purpose of this Decision Document is to request authorization to implement a non-time critical removal action at the Shenandoah Road Groundwater Contamination Superfund Site (Site), Town of East Fishkill, Dutchess County, New York pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. Sections 9601-9675. This non-time critical removal action includes the installation of an alternate public water supply system. The primary contaminants of concern at the Site are tetrachloroethene (PCE) and trichloroethene (TCE). The Site poses a threat to public health and the environment due to the presence of PCE and TCE in numerous private residential drinking water wells. The Environmental Protection Agency (EPA) has determined that supplying the area residents with public water is necessary.

With this decision, EPA selects the preferred alternative identified in the November 2003 Proposed Response Action Document (PRAD), namely, Alternative No. 1 - The Town of Fishkill Municipal Water Supply.

It is anticipated that International Business Machines Corp. (IBM), a potentially responsible party (PRP) for the Site, will conduct this non-time critical removal action, pursuant to the EPA May 2001 Administrative Order on Consent for Removal (AOC-R), Index No. CERCLA-02-2001-2020. As part of this effort, IBM prepared an Alternate Water Supply Evaluation Report (AWSER) which presented a detailed analysis of all the proposed water supply alternatives. The AWSER, together with the PRAD (which provides detailed discussions of the proposed water supply alternatives as well as EPA's preferred alternative), represent the Engineering Evaluation/Cost Analysis (EE/CA), as required by 40 C.F.R. Section 300.415(b)(4)(i).

The objectives of this non-time critical removal action are as follows: 1) to implement an alternate water supply action within the Shenandoah Road Service Territory (SRST), which is

affected by groundwater contaminated with volatile organic compounds (VOCs), including PCE and TCE and 2) to prevent the threat of direct contact with hazardous substances, namely those contained in contaminated residential drinking water wells within the SRST.

The AWSER and the PRAD were made available for public comment from November 19, 2003 through December 20, 2003. On November 20, 2003, EPA conducted a public availability session and a public meeting in Hopewell Junction, Town of East Fishkill, New York to discuss the proposed response action and to receive public comments on the AWSER and the PRAD.

Conditions at the Site meet the criteria for a removal action under CERCLA and Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

It is estimated that activities under this removal action will be completed within two-and-a-half years of the commencement of the action. It is anticipated that this removal action, as described in this Decision Document, will be performed by IBM, as per the May 2001 AOC-R.

The overall present worth cost for completing the removal action is estimated to be approximately $10 million. The total estimated capital cost is $8,792,965 (see Table 1). The estimated capital cost for the installation of the SRST water distribution system is $4,632,845 (see Table 2). The estimated total of system service and repair is $68,685 per year with a present worth over 30 years of $1,187,701 (see Table 3).[1] The tables are presented in Appendix II.

The Site was listed on the National Priorities List (NPL) in June 2001. There are no nationally significant or precedent-setting issues associated with this removal action.

All figures are contained in Appendix I.

The Administrative Record (AR) index is contained in Appendix III. The AR Index identifies the documents that comprise the AR upon which the selection of the removal action is based.

The New York State Department of Environmental Conservation (NYSDEC) was consulted on the planned removal action and concurred with the selected response action (see Appendix IV).

The Responsiveness Summary, identifying comments received during the public comment period and EPA's response to those comments, is contained in Appendix V.

The PRAD, identifying the various alternate water supply alternatives, as well as the preferred alternative, is contained in Appendix A of the Responsiveness Summary.

---

[1] It is anticipated that the system will be operated by the Town of East Fishkill and that IBM will participate in system service and repair activities.

II. SITE CONDITIONS AND BACKGROUND

This Decision Document memorializes the proposed non-time critical action for the Site. The CERCLA Information System ID number for the Site is NYSFN0204269.

A. Site Description

1. Removal site evaluation

The Site is considered a facility as defined by Section 101(9) of CERCLA, 42 U.S.C. Section 9601(9). Past industrial operations at the Site have resulted in the release of hazardous substances, as defined by CERCLA, into the fractured bedrock aquifer below the Site. A VOC plume, emanating from a parcel of property (Facility) located at 7 East Hook Cross Road in Hopewell Junction, has migrated approximately one mile downgradient to the north, resulting in a substantial threat to both the public health and the environment. Residential wells downgradient of the Facility have been contaminated with VOCs above both the Federal Removal Action Levels (RALs) and Federal and State Maximum Contaminant Levels (MCLs). Based on the available information, a CERCLA removal action was warranted at the Site to provide treatment systems on residential wells and to identify and to remove sources of contamination.

The Site is located in a rural area, consisting of residential subdivisions and extensive farmland and woodlands, within the Town of East Fishkill, approximately one mile southwest of the intersection of Interstate 84 and the Taconic State Parkway (see Figure 1). Shenandoah Road is the central thoroughfare which runs through the SRST.

The affected properties at the Site use private wells for potable water supply and septic systems for sanitary wastewater disposal. Some of these private wells are contaminated with elevated levels of PCE and TCE.

Information obtained by EPA and NYSDEC indicates that the Facility was used between 1965 and 1975 by Jack Manne, Inc. to clean and repair microchip holders or "racks." Available information indicates that during these operations, waste solvents, including PCE, and metals, including lead, were disposed of in a septic tank and an in-ground pit, located outside the building at the Facility. Additionally, nitric and sulfuric acid wastes were reportedly disposed of in the pit at the Facility.

On June 2, 2000, EPA received a request from NYSDEC to "perform an appropriate CERCLA emergency response action" at the Site. On June 7, 2000, EPA began to supply bottled water to those residences with private wells with PCE and TCE contamination above maximum contaminant levels (MCLs). Subsequently, on June 19, 2000, EPA initiated the installation of point-of-entry treatment (POET) systems, which consist of a pre-treatment particulate filter for sediment control, a granular activated carbon (GAC) filtering system and a post-treatment UV

light to ensure removal of any potential biological contamination. At that time, of the 60 residences with wells that exceeded MCLs, 57 were initially provided POET systems. The other three residents installed GAC water treatment systems at their own expense, prior to EPA's involvement in the Site. One of these 57 homes was also fitted with a residential air stripper, because of particularly high levels of PCE found in the well. Subsequently, PCE levels were reduced to the point that the air stripper was no longer necessary, but the home remains fitted with a POET system. IBM installed additional POET systems at the Site and currently performs the maintenance on 103 POET systems and samples them on a quarterly basis to ensure their continued effectiveness.

On September 22, 2000, EPA issued an action memorandum documenting verbal authorization to initiate the removal action. In October 2000, EPA and NYSDEC conducted investigatory work at the Facility. A 1,200-gallon metal septic tank was discovered containing materials exhibiting extremely high concentrations of PCE. A buried waste pit, also on the property, had been used for nitric and sulfuric acid waste disposal. EPA and NYSDEC determined that the probable source of the VOC contamination in the nearby residential wells was linked to these historical operations at the Facility, particularly from the septic tank.

On October 27, 2000, EPA issued an action memorandum to continue removal activities at the Site. During November/December 2000, EPA 1) excavated the septic tank, removed its contents for transportation and off-site treatment and disposal and 2) further excavated and disposed of approximately 1,600 tons of contaminated soils around the tank and the associated piping materials.

In April 2001, EPA demolished the processing building at the Facility and excavated and stockpiled contaminated soils underlying it. In May 2001, IBM took over the Site removal action work, pursuant to the AOC-R, which included the removal of the remaining excavated soils, backfilling with clean soil, revegetation and disposal of excavated soils off-Site. Restoration was completed on April 26, 2002. The removal work, conducted at the Facility, is documented in the Final Report for Removal Action at 7 East Hook Cross Road Facility, dated July 18, 2002.

2. Physical location

The Site is located within the Town of East Fishkill, Dutchess County in an area known as Shenandoah. The affected residences at the Site are located on portions of Shenandoah Road, Old Shenandoah Road, Seymour Lane, Burbank Road, Jackson Road, Townsend Road, Old Townsend Road, Jaycox Lane, Stone Ridge Lane and East Hook Cross Road. The area impacted by the groundwater contamination is approximately one mile southwest of the intersection of

Interstate 84 and the Taconic State Parkway and one-and-one-half mile southeast of the Hudson Valley Research Park (see Figure 1).

3. Site characteristics

The Site is in a rural area consisting of residential subdivisions intermingled with extensive farmland and patches of woodlands. The topography is dominated by a northeast/southwest trending valley and ridge complex. The homes in the area use private wells for potable water supply and septic systems for sanitary waste water disposal. At this time, the SRST is not serviced by a public water supply nor are there water mains nearby.

The Site is underlain by unconsolidated Pleistocene glacial deposits that overlie complexly folded, highly fractured and weathered dolostone of the Lower Paleozoic Wappinger Group (valleys) and up thrusted fault blocks of the Precambrian gneissic basement rock (ridges). The heterogeneous glacial overburden deposits range from 0 to 100 feet thick and include tills, glacial fluvial deposits and glacial lacustrine deposits. The overburden and the bedrock aquifers represent two distinct aquifer systems in the East Fishkill area. On-going pumping of approximately one million gallons of water per day from the bedrock aquifer is occurring at the Hudson Valley Research Park to supply IBM's East Fishkill facility process needs and to contain groundwater contaminant plumes on that property. As a result of this pumping, natural groundwater flow patterns in the area have been drastically altered with the IBM facility pumping center serving as a local groundwater sink.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

Sampling conducted between April 2000 and January 2001 by the New York State Department of Health (NYSDOH) and EPA identified 60 private wells contaminated with VOCs, primarily PCE, up to 1,600 parts per billion (µg/l), above the Federal and New York State MCLs of 5 µg/l. Twenty of these wells were contaminated above EPA's RAL for PCE of 70 µg/l.

Laboratory analyses of samples of liquids and sludges from the septic tank at the Facility, collected by EPA on November 30, 2000, revealed high concentrations of VOCs and metals, including PCE at 40,940 parts per million (ppm), TCE at 1,067 ppm and lead at 6,740 ppm in the tank sludges. The poor condition of the tank and obvious contamination of the soils around the tank contributed to PCE and its breakdown products leaking from the tank into the surrounding soils. Once in the soils, the PCE migrated via percolation of rainwater into the underlying bedrock aquifer.

5. National Priorities List (NPL) status

The Site was listed on the National Priorities List (NPL) in June 2001.

6. Maps, pictures and other graphic representations

See Appendix I.

B. Other Actions To Date

1. Previous actions

EPA initiated removal activities at the Site in June 2000. Actions have included the delivery of bottled water to those affected residences and the installation of POET systems to remove the VOC contaminants of concern from the household water. Bottled water delivery for each affected residence began on June 7, 2000 and continued until the completion of POET system installation. GAC systems have been effectively reducing Site-related VOC concentrations to levels below MCLs. The GAC unit is supplemented with a pre-treatment particulate filter for sediment control and a post-treatment ultraviolet light to ensure the removal of any biological contamination. As additional contaminated wells were discovered, bottled water delivery and POET system installation was continued. IBM took over operating and maintaining the POET systems under EPA's May 2001 AOC-R. IBM also installed additional POET systems on homes deemed threatened by the migration of the contaminated groundwater plume. To date, 103 POET systems are in place and operating.

The septic system containing very high levels of PCE, discovered at the Facility, is believed to have been the main source of groundwater VOC contamination. In addition, the leaking of the septic tank caused extensive soil contamination at the Facility. In October 2000, the scope of the removal action was expanded to address the leaking tank and associated contaminated soil. In November 2000, removal activities to remove the septic system and contaminated soils were initiated.

On November 30, 2000, prior to pumping out the 1200-gallon septic tank at the Facility, EPA collected samples of the sludge, oil and water. Originally installed in 1959, the tank had badly deteriorated and had an open bung hole in its bottom, indicating that its structural integrity had been compromised. As a result, extensive soil contamination around the tank was evident. In addition, the pipe leading from the building to the tank was cracked in a number of places. At these locations, field instruments detected high levels of VOC vapors in the soils adjacent to the Site building.

On December 1, 2000, approximately 800 gallons of tank liquids were sent via tanker truck for treatment and disposal and approximately 250 gallons of grossly contaminated sludge from the tank was secured in drums. The tank was subsequently removed from the ground. On December 4, 2000, the tank was cleaned, dismantled and shipped for disposal. On January 24, 2001, the drums of hazardous waste were transported from the Site for incineration.

In an effort to remove contaminated soils, EPA's excavation activities continued through December 15, 2000, at which time approximately 1,600 tons of contaminated soils were removed from the area around the tank and piping and stockpiled on the southern portion of the property. These stockpiled soils were sampled for Resource Conservation and Recovery Act (RCRA) disposal characteristics and the results indicate the soil could be transported and disposed of as

nonhazardous waste. During the week of February 12, 2001, the soils were transported to an off-site RCRA Subtitle D facility.

During its excavation work, EPA determined that the piping from the tank to the leach field was plugged with soil. As a result, the leach field never received either septic or solvent waste. Field screening of the soils in the leach field and around the pipes indicated no VOCs present nor was any septic or solvent odor detected. The leach field was fully uncovered and then backfilled following the discovery of the nature of its construction.

The area of excavation was 30 feet deep and 35 feet wide, extending from the edge of the building to the edge of a driveway leading to East Hook Cross Road. Field screening during the December 14, 2000 excavation and post-excavation sampling in the pit adjacent to the Site building indicated that the soils on the western sidewall and in the bottom of the pit continued to be contaminated with high levels of PCE (above NYSDEC TAGM cleanup level of 1.4 ppm). In December 2000, a six-foot chain link fence was erected around the excavation preventing unauthorized access.

In May 2001, when EPA demobilized its operations at the Site, IBM took over removal activities. These included soil excavation, backfilling the various excavated area with clean fill, disposal of excavated soils and restoration work at the Facility. EPA approved a final report on these activities, on December 23, 2002. The source removal activities conducted at the Facility are believed to have eliminated any further source of groundwater contamination and should reduce the time necessary for remediation of the aquifer.

On August 6, 2001, EPA approved a scope of work, proposed by IBM, to evaluate and implement a permanent water supply for the affected residents under the existing AOC-R. On December 17, 2001, EPA approved IBM's Alternate Water Supply Response Action Work Plan. In November 2003, IBM presented to EPA the final report (AWSER), in accordance with the May 2001 AOC-R.

The AWSER and the PRAD were made available for public comment from November 19, 2003 through December 20, 2003. On November 20, 2003, EPA conducted a public availability session and a public meeting in at the Fire District Administration Building in Hopewell Junction, Town of East Fishkill, New York to discuss the proposed response action and to receive public comments on the AWSER and the PRAD.

2. Current action

Point-of-Entry Treatment (POET) Systems

A regular sampling and maintenance schedule has been arranged for each of the 103 residential POET systems. IBM performs ongoing quarterly sampling at three different stages of each POET system: 1) raw water, 2) between carbon vessels and 3) at the kitchen tap in each home.

In order to continue to protect public health during the implementation phases of the alternate water supply system, the POET systems will remain operational and be maintained until the alternate water supply is installed and operational. At that time, the POET systems will be dismantled and removed upon home hook-up to the public water supply system.

C. State and Local Authorities' Roles

1. State and local actions to date

Early in the process, NYSDOH took an active role at the Site, sampling over 150 private wells in the area at the request of the residents. This activity has lead to the previous removal activities described herein. In addition, NYSDOH serves as the lead agency in addressing health-related issues on the Site, including public outreach and education, health consultation for residents and the activation of the VOC Registry for potentially exposed residents.

NYSDEC has worked with EPA to investigate the source of the groundwater contamination through researching local industrial facilities and rumored disposal areas in the vicinity of the Site.

2. Potential for continued State/local response

New York State performs an oversight role in this current action and future remedial activities to be conducted at the Site.

III. THREATS TO PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

Conditions at the Site meet the criteria for a removal action under Section 40 C.F.R. 300.415(b)(2) of the NCP. Qualifying criteria under the NCP for the threats to the public health and welfare include the following:

> **i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants; and**
>
> **ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems.**

Between April and January 2001, the analytical results generated by the NYSDOH and EPA sampling identified 60 residential wells contaminated by PCE (or its breakdown product TCE) in excess of the Federal and State MCLs of 5 µg/l. EPA's RAL of 70 µg/l for PCE was exceeded in

20 of these wells. The affected residences are significantly impacted by contaminated groundwater, and are currently utilizing the POET systems to ensure a safe water supply. However, these POET systems are only an interim measure and are subject to potential failures such as: filter clogging and/or subsequent failure of the GAC filtering system. Since groundwater, a natural resource, has been determined to be contaminated with VOCs, the potential for further migration of groundwater contamination from the Site continues and may affect future residential development and associated future residents. In addition, the plume is not fully characterized and may migrate, impacting other residents in this area. However, numerous residents were exposed to PCE and other VOCs in their drinking water supplies for an undetermined period of time before EPA initiated the removal action at the Site.

The VOCs identified at the Site may present health risks to humans through ingestion, inhalation or dermal contact. According to available data, when inhaled in air at high concentrations, single exposures to PCE can affect the central nervous system leading to dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking or walking and can possibly lead to unconsciousness and/or death. PCE is also considered a possible human carcinogen by the United States Department of Health and Human Services. Human exposure can occur from ingestion of contaminated water, from food prepared with the water or from showering, bathing or washing. Exposure by inhalation alone during showering may exceed the exposure by direct ingestion.

VOC vapors of the contaminated groundwater can also enter residential air from other home activities through humidifiers, dishwashers, clothes washers and household cleaning apparatuses. These tend to increase the VOC concentration in the air inside the home and may result in exposure of the residents as significant as that from direct ingestion.

The associated health effects from exposure to elevated concentrations of PCE can include eye, skin, respiratory irritation, potential liver and/or kidney damage, toxic effect through inhalation, ingestion or dermal contact, carcinogenic and mutagenic effects and effect on the central nervous system.

(vii) The availability of other appropriate federal or state response mechanisms to respond to the release.

EPA uses its authority to issue orders to PRPs to perform response actions. IBM has assumed responsibility for a significant portion of the necessary work to be conducted at the Site and is expected to undertake the alternate water supply work. State and local authorities are not able to undertake timely response actions to eliminate the threats posed by the Site.

B. Threats to the Environment

Groundwater, a natural resource, has been determined to be contaminated with VOCs. The potential for further migration of groundwater contamination from the Site continues and may affect future residential development.

A remedial investigation and feasibility study (RI/FS) is being conducted by IBM under an Administrative Order on Consent (AOC-RI/FS) Index No. CERCLA-02-2002-2025 which was entered into between EPA and IBM in September 2002. The RI/FS will determine the full nature and extent of groundwater contamination.

IV. ENDANGERMENT DETERMINATION

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

V. EXEMPTION FROM STATUTORY LIMITS

12 Month/$2 Million Exemption

CERCLA and 40 C.F.R. § 300.415(b)(5) limit Federal removal responses to 12 months and $2 million in expenditures for Federal fund-financed removal actions unless the lead agency, here EPA, makes certain determinations regarding the risks posed by the site, the need for response actions and the unavailability of other response actions to address the risks. While the risks posed by the Site rise to the level required by 40 C.F.R. § 300.415(b)(5), this section does not apply because we anticipate that IBM will conduct the proposed removal action. In its letters of July 20 and 27, 2001, IBM proposed to perform the alternate water supply response action under the terms of the AOC-R, paragraph 41(f).

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

The water supply alternatives that were evaluated in the AWSER are as follows:

Alternative No. 1: The selected alternative described in Section A below.

Alternative No. 2: The Town and City of Poughkeepsie Hudson River Intake/Dutchess County Pipeline: This alternative included the purchase of water from the Town and City of Poughkeepsie to be transmitted through a 13-mile pipeline from Poughkeepsie to IBM's East Fishkill Plant. The water supply is drawn by the City and Town of Poughkeepsie primarily from

the Hudson River for the areas in southern Dutchess County. Two million gallons per day (MGD) of capacity would be initially purchased by IBM, with an option to purchase an additional two MGD. The water that would be supplied to the SRST would be a portion of an initial two-million gallon allocation to IBM from this pipeline.

Alternative No. 3: Route 376 Parcel A Property: This alternative is located on Route 376, north of NYS Roue 52, in Hopewell Junction and is adjacent to and south of the Alternative No.4 Parcel B property. In order to develop the property into a functional municipal well field, this alternative included the installation of two new production wells on Parcel A. Each of the two production wells would readily produce a sufficient yield to supply the needs of the SRST.

Alternative No. 4: Route 376 Parcel B Property: This alternative is located on Route 376, north of NYS Route 52, and is adjacent to and north of the Alternative No. 3 property. In order to develop the property into a functional municipal well field, this alternative included the installation of two new production wells on Parcel B. Each of the two production wells would readily produce a sufficient yield to supply the needs of the SRST.

A. Proposed Action

1. Description

There are two phases for the construction of this water supply project. The first phase involves the responsibility of the Town of Fishkill to finalize the water supply source implementation, namely the Snook Road Well Field and transmission line to NYS Route 52. The second phase of the project involves IBM's responsibility for the implementation of this non-time critical removal action, namely supplying public water to the SRST.

In the first phase, the Town of Fishkill and Toll Brothers, Inc., a private real estate developer and contractor, are undertaking a number of capital improvements in connection with the Snook Road Well Field, which is the water supply source for the SRST. These actions include the following:

- the development of the Snook Road Well Field, including the installation of a second supply well, which will be the primary source of water supply for the SRST;
- the creation of the Snook Road Water Improvement Area No.1; and,
- the installation of a 12" water transmission line from the Snook Road Well Field to a location on NYS Route 52 where IBM will assume responsibility for the project and connect the transmission line to the SRST.

In the second phase of this project identified under this removal action, IBM will design, construct and install a public water supply system for the SRST. As stated above, the source of the potable water will be the Town of Fishkill Water Supply system. Figure 2 shows the

proposed route for the water supply transmission lines. Figure 3 shows the proposed distribution system area for the SRST.

The following tasks will be completed by IBM within the Town of East Fishkill, both within the SRST and outside the SRST:

- Formal surveying of the proposed route
- Excavation of trenches (rock, soils, *etc.*) in the rights-of-way
- Restoration of pavement in roads, streets and other rights-of-way
- Installation of highway crossing casings, transmission and distribution piping
- Backfilling of excavation tenches
- Traffic maintenance
- Installation of water booster station
- Installation of water holding tank
- Connection of system to homes
- Installation of fire hydrants, as necessary to meet local code

The project will also require system service and repair activities, including the purchase of chemicals, electricity, insurance, use of a part-time operator, maintenance and repair of transmission and distribution systems, analytical testing and various administrative activities.

A forty-year, three-party agreement is in place among the Town of East Fishkill, the Town of Fishkill and IBM to ensure that the alternate water supply project will be completed within the estimated time frame and that the amount of water necessary for the SRST will be supplied.

2. Contribution to remedial performance

The action proposed in this Decision Document will address the most immediate threats posed to public health by eliminating the contamination pathway and providing a public water supply. The recommended removal action will, to the extent practicable, contribute to the efficient performance of any long-term remedial action, as required by 40 C.F.R. 300.415.

3. Description of alternative technologies

No specific alternate treatment technologies are utilized under this action; therefore, no alternative treatment technologies were evaluated.

4. Engineering Evaluation/Cost Analysis (EE/CA)

The AWSER, together with the PRAD, represent the EE/CA. The AWSER is included in the Administrative Record for the Site, and the PRAD is included in Appendix A of the Responsiveness Summary.

5. Applicable or relevant and appropriate requirements (ARARs)

The ARARs are identified in Section 4 of the AWSER, *i.e.*, related to the provision of an alternate water supply and within the scope of this Decision Document, will be met to the extent practicable.

6. Project schedule

The overall project implementation schedule for the activities in this Decision Document is included in Table 4 in Appendix II.

B. Estimated Costs

The estimated present worth cost for completing the design, construction and installation of the alternate water supply system, including system service and repair activities, is approximately $10 million.

Costs that will be incurred by the Town of Fishkill and others related to the development of the Snook Road Well Field are not included here. These costs will be incurred irrespective of the action proposed herein.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

While the POET systems remain in operation, they are considered temporary and are subject to potential failures, such as filter clogging and/or subsequent failure of the GAC filtering system. Their operation is significantly more costly in the long term than conversion to a permanent water supply system. Since groundwater, a natural resource, has been determined to be contaminated with VOCs, the potential for further migration of groundwater contamination from the Site continues and may affect future residential development and associated future residents. In addition, the plume is not fully characterized and may migrate, impacting other residents in this area. The proposed action will protect the residents from exposure to contaminated groundwater until MCLs are achieved.

VIII. OUTSTANDING POLICY ISSUES

None.

IX. ENFORCEMENT

As set forth in the Site history section above, EPA has issued two AOCs to IBM, *i.e.*, the May 2001 AOC-R and the September 2002 AOC-RI/FS. IBM is expected to fund the entire design, construction and installation of the water supply system, including the respective transmission and distribution pipelines. IBM is also expected to participate in system service and repair activities.

IBM, pursuant to the AOC-RI/FS, is investigating the nature and extent of the groundwater contamination, concurrently with the implementation of the alternate water supply project.

X. RECOMMENDATIONS

This Decision Document represents the selected removal action for the Site, which is located within the Town of East Fishkill, Dutchess County, New York. This document was developed in accordance with CERCLA and is not inconsistent with the NCP. This decision is based on the Administrative Record which was created specifically for this removal action for the Site.

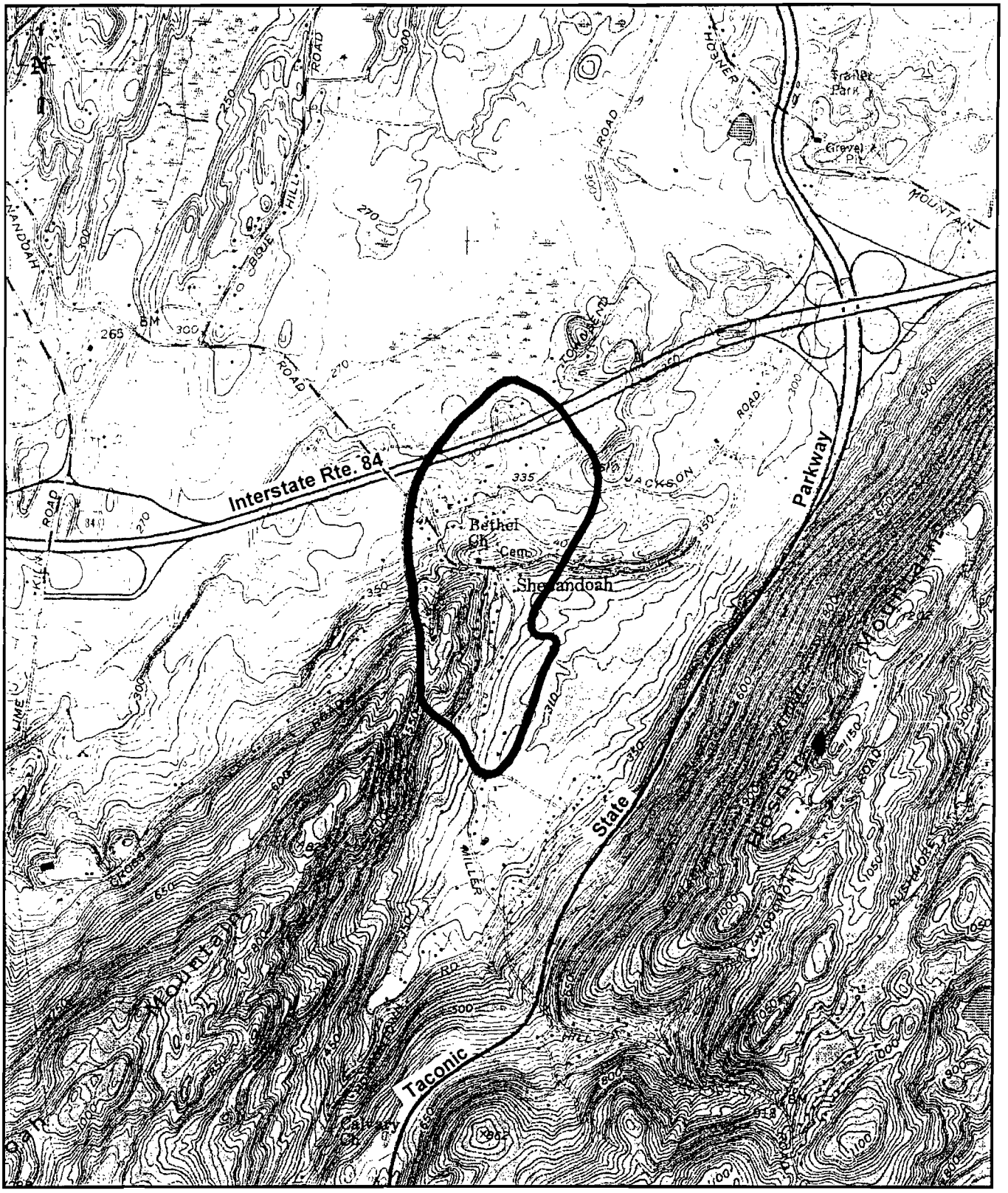
Please indicate your approval of the selected alternative for the non-time critical removal action, by signing below.

Approved: William McCabe **Date:** 8-23-04
George Pavlou
Division Director

Disapproved: _____ **Date:** _____
George Pavlou
Division Director

APPENDIX I

FIGURES



— Limit of Site Constituents Detected

Portion of the Hopewell Junction, NY
7.5-Minute NYSDOT Quadrangle

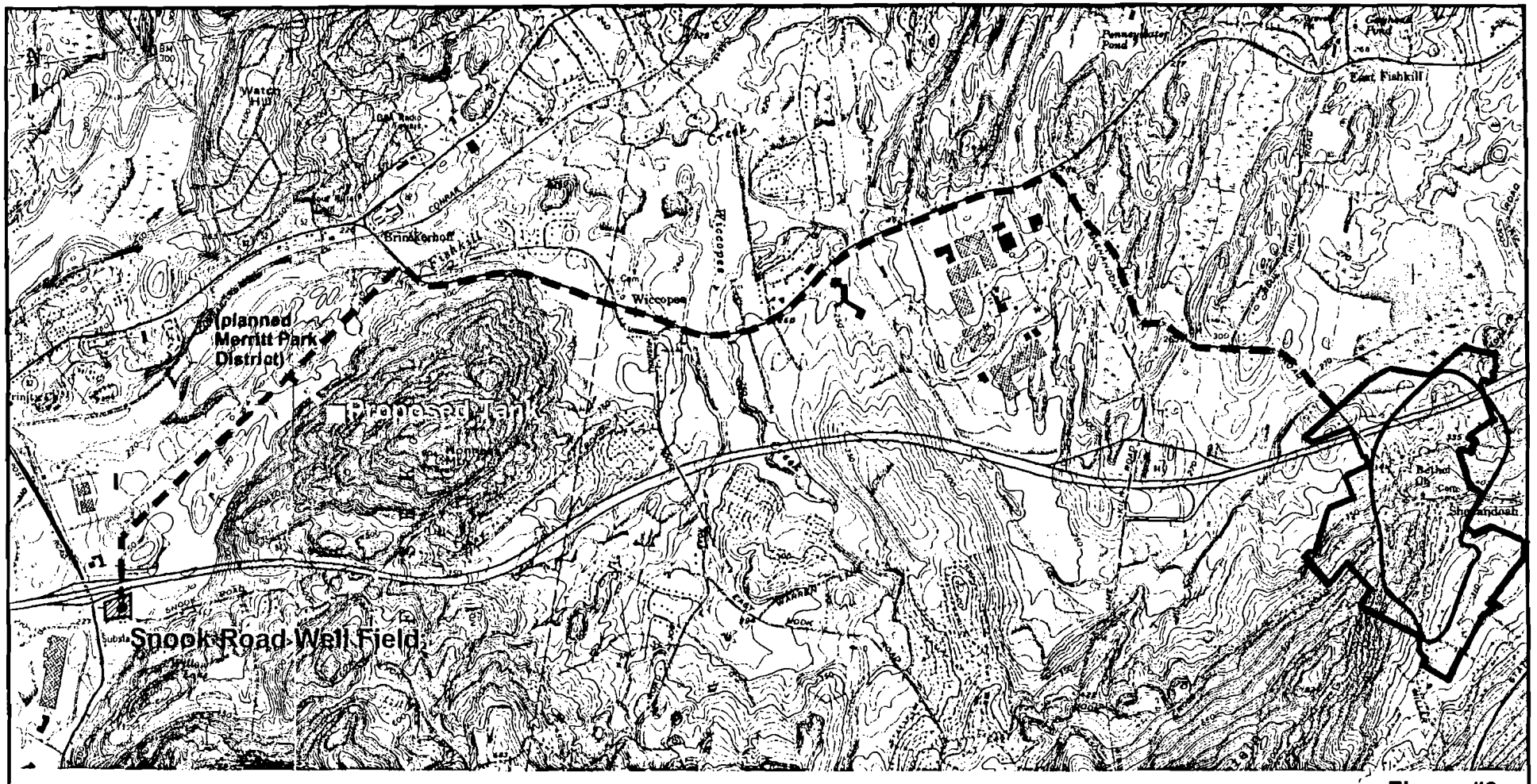
Figure #1

Shenandoah Road Groundwater Contamination Superfund Site

Scale
0 1000' 2000'

GROUNDWATER SCIENCES CORPORATION

21003-002-F4 / 07-28-03



– Transmission Piping Route
– Limit of Response Scope/Distribution System
– Limit of Site Constituents Detected
● – Water Supply Well

Approximate Scale
0 1000' 2000'

Figure #2

Shenandoah Road Groundwater Contamination Superfund Site
Potential Sources of Alternate Water Supply
Alternative 1: Town of Fishkill

GROUNDWATER SCIENCES CORPORATION

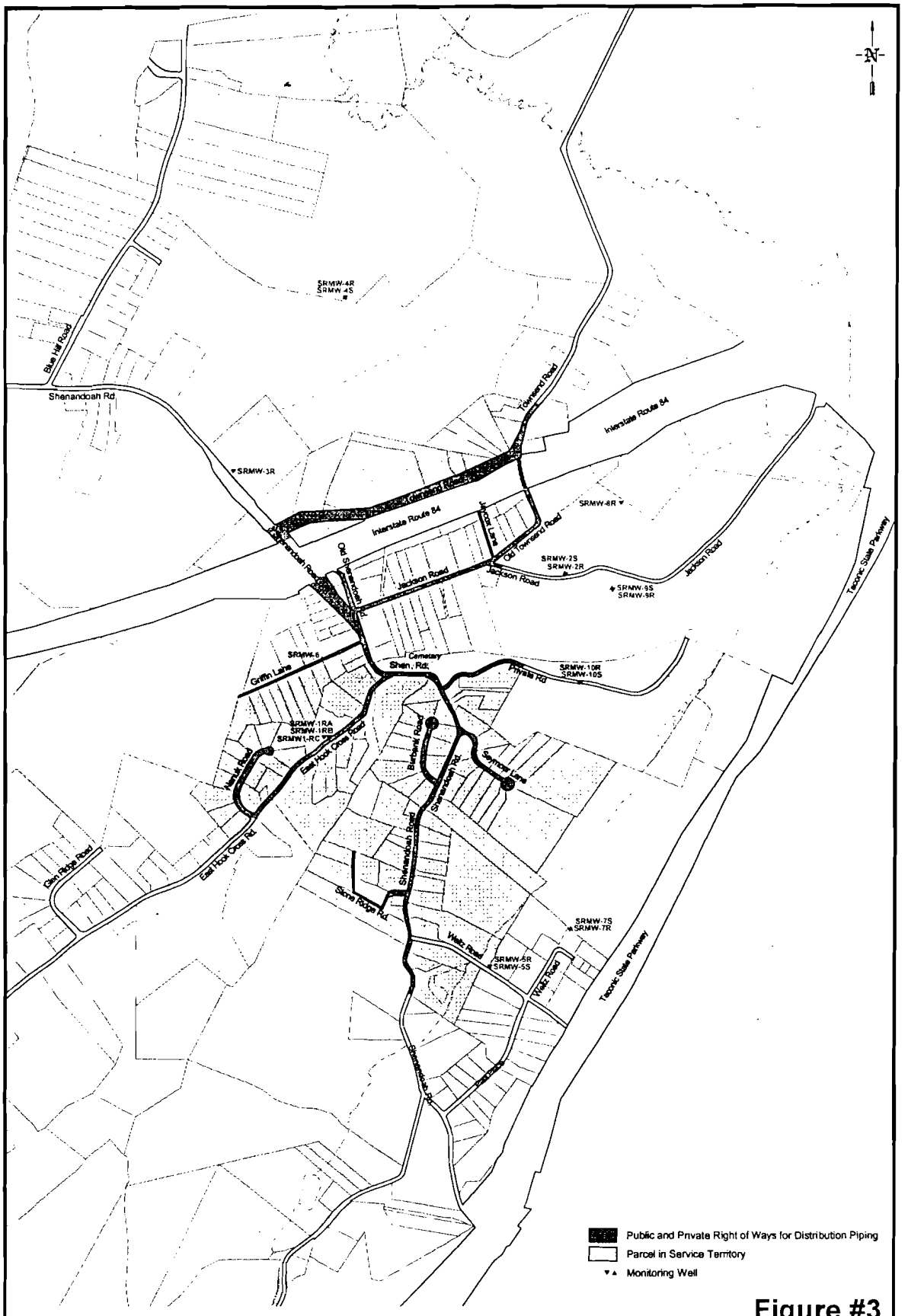


Figure #3

Shenandoah Road Groundwater Contamination Superfund Site
Potential Sources of Alternate Water Supply
Response Scope, Service Territory and Distribution System

Approximate Scale
0 500' 1000'

Parcels source: Geographic Information Systems Lab, Dutchess County Real Property Tax Service Agency, Poughkeepsie, NY; 5/98 (PROPERTIES NOT TO SCALE).

GROUNDWATER SCIENCES CORPORATION
21003-053-C8 / 07-31-03

APPENDIX II

TABLES

Table 1 Total Capital Cost - Town of Fishkill Alternative

Item	Description	Pay Unit	Unit Price	Est Qty	Total
1	8" Ductile Iron Pipe in Town or County Rd.	LF	$ 47.00	9,780.00	$ 459,660.00
2	8" Gate Valve in Town or County Rd.	Each	$ 1,100.00	12.00	$ 13,200.00
3	8" Ductile Iron Pipe in NYS Highway	LF	$ 62.00	10,800.00	$ 669,600.00
4	8" Gate Valve in NYS Highway	Each	$ 1,250.00	11.00	$ 13,750.00
5	Ductile Iron Specials	Ton	$ 3,000.00	7.00	$ 21,000.00
6	Pavement Restoration in Town or County Hwy.	SY	$ 20.00	7,855.00	$ 157,100.00
7	Pavement Restoration in NYS Highway	SY	$ 25.00	7,200.00	$ 180,000.00
8	Hydrant & Valve Assembly	Each	$ 2,900.00	30.00	$ 87,000.00
9	Rock Excavation	CY	$ 60.00	2,500.00	$ 150,000.00
10	Select Backfill	CY	$ 20.00	7,500.00	$ 150,000.00
11	Flowable Backfill	CY	$ 84.00	2,200.00	$ 184,800.00
12	NYS Highway Crossing in 24" Casing	Each	$ 60,000.00	2.00	$ 120,000.00
13	I-84 Highway Crossing in 24" Casing	Each	$ 90,000.00		$ 0
14	Air Release Valve & Chamber	Each	$ 7,000.00	2.00	$ 14,000.00
15	Major Creek Crossing	Each	$ 125,000.00	1.00	$ 125,000.00
16	Minor Creek or Stream Crossing	Each	$ 70,000.00	3.00	$ 210,000.00
17	Master Meter Chamber	Each	$ 85,000.00	1.00	$ 85,000.00
18	Maintenance & Protection of Traffic	Lump Sum			$ 110,000.00
19	Water Booster Station	Each	$ 210,000.00	1.00	$ 210,000.00
20	Capital Contr to Water System (1)	GPD	$ 5.32	80,000.00	$ 425,600.00
21	Water Supply Development				$ -
22	Land and Rights-of-Way				$ -
23	Sub-Total Construction				$ 3,385,710.00
24	Contingencies			5%	$ 170,000.00
	TOTAL CONSTRUCTION				$ 3,555,710.00
	All Indirect Costs -allowance			17%	$ 604,410.00
	Total Cost for Source & Transmission to SST				$ 4,160,120.00
	Water District Distribution - Table 2				$ 4,632,845.00
	TOTAL PROJECT COST				$ 8,792,965.00

(1) Reflects Contribution to Town of Fishkill for purchase of 80,000 gpd of capacity of Snook Road Well Supply

Table 2
Total Capital Cost
Water Distribution System - SRST

Item	Payment Unit	Unit Price	Estimated Quantity	Total
8 inch Ductile Iron Pipe	lin ft	$47.00	20000	$940,000.00
8 inch Gate Valve	each	$1,100.00	24	$26,400.00
D.I. Specials	tons	$3,000.00	6	$18,000.00
Hydrant & Valve Assbly	each	$2,900.00	40	$116,000.00
3/4 inch copper service	each	$1,400.00	150	$210,000.00
Pavement Restoration	sq. yds.	$20.00	13500	$270,000.00
Rock Excavation	cu. yds.	$60.00	2500	$150,000.00
Select Backfill	cu. yds.	$20.00	7500	$150,000.00
I-84 Crossing in Casing Pipe	each	$90,000.00	1	$90,000.00
150,000 gallon standpipe	each	$280,000.00	1	$280,000.00
Maintenance & Prot of Traffic	lump sum			$110,000.00
Individual Household Connections	each	$10,500.00	137	$1,438,500.00
Easements and Land	allowance			$80,000.00
Sub-Total Construction				$3,878,900.00
Contingencies			5%	$193,945.00
Total Construction				$4,072,845.00
Technical Services-Survey, Design	allowance		8%	$320,000.00
Construction Inspection	allowance		4%	$160,000.00
Permits and Admin	allowance		2%	$80,000.00
Total Cost				$4,632,845.00

Table 3

Operation and Maintenance Costs - Town of Fishkill Alternative

Item	Description	Costs
1	Bulk Water Purchase - 12 million gallons/year	$28,185.00
2	Electricity	$3,000.00
3	Insurance	$4,000.00
4	Part-Time Operator	$16,000.00
5	Benefits & Payroll Taxes	$8,000.00
6	Maintenance and Repair	$4,000.00
7	Analytical Testing	1,500.00
8	Bookkeeping & Administration	$4,000.00
	TOTAL ANNUAL COSTS	$68,685.00
	TOTAL PRESENT WORTH (30 years - O&M)	$1,187,701.00

Table 4

Implementation Schedule - Town of Fishkill Alternative

Tasks	Schedule of Completion
Survey and Base Mapping	4th Quarter - 2004
Preliminary Design	1st Quarter - 2005
Permit Applications/ARARs	1st Quarter - 2005
Final Design	2nd Quarter - 2005
Regulatory Approvals	2nd Quarter - 2005
Bidding and Contract Procurement	3rd Quarter - 2005
Construction	2nd Quarter - 2006
System Testing and operations	3rd Quarter - 2006
FINAL COMPLETION	3rd Quarter - 2006
Completion of Source Delivery	September - 2004

APPENDIX III

ADMINISTRATIVE RECORD INDEX

SHENANDOAH ROAD SITE
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

Document #: SR2.4001-2.4108
Title: Shenandoah Road Groundwater Contamination Superfund Site Alternate Water Supply Response Action Work Plan, Town of East Fishkill, Dutchess County, New York (Index Number CERCLA-02-2001-2020)
Category: Removal Response
Author: Groundwater Sciences Corporation, 2 Summit Court, Suite 204, Fishkill, New York 12525
Recipient: IBM Corporation, Corporate Environmental Affairs
Date: December 13, 2001

Document #: SR2.4109-2.4226
Title: Quality Assurance Project Plan
Category: Removal Response
Author: STL Newburgh, 315 Fullerton Avenue, Newburgh, NY 12550
Recipient: Groundwater Sciences Corporation, 2 Summit Court, Suite 204, Fishkill, New York 12525
Date: April 2, 2003

Document #: SR2.4227-2.4880
Title: Shenandoah Road Groundwater Contamination Superfund Site Alternate Water Supply Evaluation, Final Report
Category: Removal Response
Author: Groundwater Sciences Corporation, 2 Summit Court, Suite 204, Fishkill, New York 12525
Recipient: IBM Corporation; Corporate Environmental Affairs, Somers, New York 10589
Date: September 19, 2003

Document #: SR6.1001-6.1002
Title: State Concurrence with Potable Water Supply Alternative Recommended by EPA, Shenandoah Road Groundwater Contamination, Superfund Site, NYSDEC Site No. 3-14-104
Category: State Coordination
Author: Dale A. Desnoyers, Director, Division of Environmental Remediation, New York State Department of Environmental Conservation, Albany, New York 12233
Recipient: George Pavlou, Director, Emergency & Remedial Response Division, U. S. Environmental Protection Agency, Region II
Date: November 17, 2003

Document#: SR7.3001-7.3036
Title: Administrative Order on Consent For Removal Action, Index Number CERCLA-02-2001-2020
Category: Enforcement
Author: U.S. Environmental Protection Agency, Region II., New York, New York 10007
Recipient: Wayne S. Balta, Director of Corporate Environmental Affairs, International Business Machines Corporation
Date: May 10, 2001

Document #: SR7.3037-7.3040
Title: Re: Shenandoah Road Groundwater Contamination Site, East Fishkill, Dutchess County NY, Administrative Order on Consent, Index Number CERCLA-02-2001-2020, EPA letter of July 6, 2001
Category: Enforcement
Author: David J. Cartenuto, Office of the Associate General Counsel, IBM, Somers, New York 10589
Recipient: Virginia Capon, Esq., Chief: New York /Caribbean Superfund Section, Office of Regional Counsel, US Environmental Protection Agency, Region II, 290 Broadway, New York, NY 10007-1866
Date: July 20, 2001

Document #: SR7.3041-7.3044
Title: Re: Shenandoah Road Groundwater Contamination Superfund Site, East Fishkill, Dutchess County, NY, Administrative Order of Consent, Index Number CERCLA 02-2001-2020, IBM letter of July 20, 2001, Statement of Work, Alternate Supply Response Action.
Category: Enforcement
Author: David J. Cartenuto, Office of the Associate General Counsel, IBM, Somers, New York 10589
Recipient: Virginia Capon, Esq., Chief: New York /Caribbean Superfund Section, Office of Regional Counsel, US Environmental Protection Agency, Region II, 290 Broadway, New York, NY 10007-1866
Date: July 27, 2001

Document #: SR7.3045-7.3046
Title: Re: EPA approval of the Alternate Water Supply Response Action Statement of Work for the Shenandoah Road Groundwater Contamination Site, East Fishkill, NY, Administrative Order on Consent, Index Number CERCLA-02-2001-2020
Category: Enforcement
Author: John E. La Padula, P.E., Chief, New York Remediation Branch, Emergency and Remedial Response Division, U.S. Environmental Protection Agency, Region II, 290 Broadway, New York, NY 10007-1866
Recipient: Thomas D. Morris, SRGWCS Project Coordinator, International Business Machines Corp. Somers, NY 10589
Date: August 6, 2001

Document #: SR7.3047-7.3048
Title: Re: EPA Approval of the Alternate Water Response Action Work Plan for the Shenandoah Road Groundwater Contamination Site, East Fishkill, NY, Administrative Order on Consent, Index Number CERCLA-02-2001-2020
Category: Enforcement
Author: Doug Garbarini, Chief, Eastern New York Remediation Section, New York Remediation Branch, Emergency and Remedial Response Division, US EPA Region II, New York, New York 10007-1866
Recipient: Thomas D. Morris, SRGWCS Project Coordinator, International Business Machines Corp. Somers, NY 10589
Date: December 17, 2001

Document #: SR7.3049-7.3078
Title: Three-Party Agreement among IBM Corporation, Town of East Fishkill and Town of Fishkill
Category: Enforcement
Author: Edan Dionne, Director, Corporate Environmental Affairs, International Business Machines Corporation, Joan A. Pagones, Supervisor, Town of Fishkill, and Peter Idema, III, Supervisor, Town of East Fishkill
Recipient: None given
Date: January 2004

Document #: SR10.6001-10.6010
Title: Proposed Response Action, Shenandoah Road Groundwater Contamination Superfund Site, Town of East Fishkill, Dutchess County, New York, Superfund Program
Category: Public Participation
Author: US Environmental Protection Agency, Region II, New York, New York 10007-1866
Recipient: Public
Date: November 2003

Document #: SR11.2001-11.2002
Title: EPA Regional Guidance Document
Category: Technical Source and Guidance Documents
Author: US Environmental Protection Agency
Recipient: Public
Date: December 2003

APPENDIX IV

NYSDEC CONCURRENCE

New York State Department of Environmental Conservation
Division of Environmental Remediation, 12th Floor
625 Broadway, Albany, New York 12233-7011
Phone: (518) 402-9706 • **FAX:** (518) 402-9020
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

NOV 17 2003

Mr. George Pavlou, Director
Emergency & Remedial Response Division
U.S. Environmental Protection Agency
Region II
290 Broadway
New York, New York 10007-1866

Dear Mr. Pavlou:

RE: Shenandoah Road Groundwater Contamination
Superfund Site
NYSDEC Site No. 3-14-104

The New York State Department of Environmental Conservation (Department) has reviewed the Proposed Response Action Document for an Alternate Water Supply System prepared by the U.S. Environmental Protection Agency (EPA) for the Shenandoah Road Groundwater Contamination Superfund Site. Based on this review, all four alternatives considered by EPA are capable of providing a safe and dependable potable water supply to the residents of the Shenandoah Road area. Therefore, the Department concurs with the alternative recommended by EPA: Alternative 1, the Town of Fishkill Municipal Water Supply.

This concurrence is provided on a draft document and with short notice as we only received the Proposed Response Action Document on Thursday, November 6, 2003. In the future, please provide the Department sufficient time for review and response.

If you have any questions, you may contact Robert Schick, of my staff, at (518) 402-9662.

Sincerely,

Dale A. Desnoyers
Director
Division of Environmental Remediation

cc: G. Litwin, NYSDOH

APPENDIX V

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

Shenandoah Road Groundwater Contamination Superfund Site
Alternate Water Supply Preferred Alternative
Town of East Fishkill, Dutchess County, New York

INTRODUCTION

This responsiveness summary includes public comments and questions received during the public comment period (November 18, 2003 - December 18, 2003) for the United States Environmental Protection Agency's (EPA's) proposed non-time critical removal action at the Shenandoah Road Groundwater Contamination Superfund Site (Site), as well as EPA's responses to those comments and questions. Comments summarized in this document have been considered in EPA's final selection of the removal action at the Site.

As required under an Administrative Order, IBM, a potentially responsible party (PRP) for the Site, completed an Alternate Water Supply Evaluation Report (AWSER) for the Site. The AWSER discussed the various water supply alternatives that were considered. EPA, in conjunction with the New York State Department of Environmental Conservation (NYSDEC), subsequently issued a Proposed Response Action Document (PRAD) which identified its preferred alternative. The AWSER and the PRAD together are classified as the Engineering Evaluation/Cost Analysis (EE/CA) for this non-time critical removal action.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

Community involvement at the Site has been high. The key issues of concern centered around the contamination of private wells in the Shenandoah Road area.

On June 5, 2000, EPA received a request from the New York State Department of Environmental Conservation (NYSDEC) to perform an appropriate emergency response action at the Site under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. Sections 9601-9675. EPA determined that a sufficient planning period existed before Site activities for this portion of the response, *i.e.*, an alternate water supply source had to be initiated. Accordingly, as stated above, this action is being conducted as an non-time critical removal action.

On November 18, 2003, a public notice was published in the Poughkeepsie Journal. The public notice announced the release and availability of the AWSER and EPA's PRAD, as well as the holding of a public availability session and a public meeting.

On November 20, 2003, EPA participated in the public availability session in the afternoon. At this session, EPA, IBM and its technical consultants answered questions about the various water supply alternatives. In the evening, EPA conducted a public meeting with NYSDEC to further discuss the AWSER and the PRAD, which identified EPA's preferred water supply alternative. At this meeting, EPA also explained that the Agency would prepare a final response action document setting forth EPA's final water supply response action.

The repository for Site-related documents is established at the East Fishkill Community Library, 348 Route 376, Hopewell Junction, New York.

This responsiveness summary documents EPA's response to those comments and questions raised during the public comment period.

Attached to the Responsiveness Summary are the following Appendices:

Appendix A - Proposed Response Action Document
Appendix B - Public Notice, published in the Poughkeepsie Journal on November 18, 2003
Appendix C - November 20, 2003 Public Availability Session and Public Meeting Attendance Sheets
Appendix D - Letters and E-mails Submitted During the Public Comment Period

OVERVIEW OF PUBLIC'S REACTION TO EPA'S PREFERRED REMEDY

EPA received numerous comments on the PRAD and the AWSER during the public comment period. Public comments received generally supported the Agency's preferred alternative of the Town of Fishkill Water Supply although some concern was raised about the continued quality of the proposed supply.

SUMMARY OF COMMENTS AND EPA RESPONSES

Comments were expressed at the public meeting, and written comments were received during the public comment period.

The comments have been categorized as follows:

A. Response Action Issues (Water Supply and Water Consumption)
B. Technical Issues
C. Water Quality Issues

A summary of the comments and EPA's responses to the comments is provided below:

Response Action Issues

Comment #1: How much water is currently being consumed by the Shenandoah Road area residents?

Response #1: Based on the latest quarterly water consumption information gathered from quarterly monitoring and sampling conducted by IBM at those affected Shenandoah Road Service Territory (SRST) residences that are served by point-of-entry treatment (POET) systems, approximately 15,800 gallons of water are used per quarter per family. Adapting this figure to the existing SRST community of roughly 150 properties, the anticipated SRST water usage will be approximately 26,000 gallons per day.

Also, the AWSER presented that the average daily demand required for the SRST is approximately 80,000 gallons per day, which is the water quantity allocated to the Town of Fishkill for the SRST under the three-party agreement. The three-party agreement is further discussed in Comments/Responses #15, #22 and #28. The average per capita water usage can vary considerably from residence to residence. The national average per capita water usage rate is 80 gallons per day.

Comment #2: What will be the monthly cost of water?

Response #2: Using the anticipated water usage for the SRST of 26,000 gallons per day and the estimated water costs for the selected alternative of $5.70 per 1000 gallons used, the monthly water bill for the SRST residents can be approximated to be about $30 per residence. The average water costs for some of the water districts managed by the Town of East Fishkill range from approximately $1.80 to $4.45 per 1000 gallons used. Under the current water usage rates, the yearly water bills range from $150 to $370 per year. As further discussed below in Comments/Responses #4 and #8, it is likely that the actual cost of water to the SRST residents will be lower than estimated.

Comment #3: Who will set the water rates?

Response #3: The Town of East Fishkill will set the water rates for the SRST customers.

Comment #4: Why will the residents pay water bills?

Response #4: EPA does not pay residents' water bills. Also, EPA does not order PRPs to pay residents' water bills. EPA expects IBM to perform or provide for any necessary operations and maintenance (O&M) of the physical infrastructure associated with the provision of drinking water to the homes in the SRST until

the groundwater is safe to drink again. IBM's action with respect to the O&M of the project will not, however, eliminate the need for water bills. Water bills will still be issued to the residents.

The residents will receive certain other benefits from being on a public water supply system, including not having to pay for the testing and maintenance of their wells, the replacement of pumps and other appurtenances and the electricity usage associated with the operation of the pump. Also, water hydrants for fire protection will be installed at key locations throughout the SRST area.

Comment #5: What is the annual cost for the water supply system? What is the nature of the items in those costs?

Response #5: The detailed cost analysis for the selected alternative is contained in the AWSER. The estimated overall capital cost for the project is approximately $8.8 million; the O&M cost is approximately $69,000 per year; and the total present worth cost is approximately $10 million. The capital cost includes, but is not limited to, those costs associated with installing transmission and distributions lines, including rights-of-way for excavation. Various related expenditures are associated with the following: piping, valves, easements, excavation, paving, etc. The O&M costs include bulk water purchase, electricity, insurance, operators' salaries, maintenance and repair, testing, etc.

Comment #6: Why will the East Fishkill residents of the SRST have a higher water bill than the Town of Fishkill residents?

Response #6: Water rates in the various towns vary considerably, since each town may have different administrative and capital expenditures associated with the supply of public water. The Town of East Fishkill will determine the water rates to the residents of the SRST.

Comment #7: What is the cost of water to the residents of the Village of Fishkill and the Town of Fishkill?

Response #7: According to the information provided by the communities, water rates are determined by usage. In some instances, flat rates may be charged on a case-by-case basis. After reviewing some of the water rates in communities within Dutchess County, including the Village of Fishkill and the Town of Fishkill, water rates can vary from $20 to $50 per quarter per residence.

Comment #8: Who will pay for the O&M of the water supply system?

Response #8: EPA expects IBM to perform or provide for the O&M of the water supply system until the groundwater cleanup goals have been achieved. The exact arrangement of what O&M activities IBM will be responsible for has yet to be determined; these could include pump or valve repair or replacement or pipeline repair or replacement. EPA expects that this arrangement will be finalized before the water supply system installation has been completed. With the potential reduction in the O&M costs for the Town of East Fishkill, there may be some reduction in the overall cost of water supplied to the SRST consumer.

Technical Issues

Comment #9: Why was the Four Seasons water supply alterative eliminated?

Response #9: After further investigation of this alternative, it was determined that the existing capacity of the system would not have served the necessary water supply requirements of the SRST. Also, no future water well development information from the Four Seasons Corporation was available for further consideration as a viable water supply.

Comment #10: What will be the back-up source of water for the selected alternative?

Response #10: The Town of Fishkill selected alternative will include two separate drinking water wells, as part of its operations. Under municipal requirements, municipal water supplies are required to have two supply wells to ensure that a safe water will be distributed uninterrupted to the SRST community in case one well has to be taken out of service.

Comment #11: Will the residents be able to use their existing wells? Are there any restrictions or regulations through local ordinances to prevent the use of multiple water supplies at residences?

Response #11: The Town of East Fishkill does not require mandatory connection to an available public water supply system.

However, according to Section 186-21 of the Municipal Code of the Town of East Fishkill:

"A. If an owner has any source of water other than from the municipal public water system, such source will be considered nonpotable. Before making any service connection between the municipal public water supply and a consumer's premises, it is required that all connections between individual wells or other outside sources of water supply physically be disconnected from

the consumer's plumbing fixtures, which are connected to the municipal potable water supply."

"B. All owners of property within the confines of a municipal water district shall not use nonpotable water as a source of water supply for any purpose. Nonpotable water is defined as any source of water other than from a municipally owned water system."

Disconnecting the private residential wells within the SRST will be addressed during the development of the SRST water district by the Town of East Fishkill and the Dutchess County Department of Health.

Comment #12: What is the proposed conceptual route to bring water from New York State Route 52 to the SRST?

Response #12: As per the transmission route identified in the AWSER for the Town of Fishkill alternative, the transmission line would extend east from the Town of Fishkill border along the Route 52 right-of-way to a location where it would connect with Shenandoah Road. The line would then travel along the Shenandoah Road right-of-way to the SRST community. The distribution lines would then follow the various streets and roads within the SRST community, including Burbank Road, Seymour Lane and others. IBM will be responsible for the design and construction of the transmission pipeline along Route 52 from the location where it picks up the Town of Fishkill Snook Road Well Field water supply.

Comment #13: When will soil sampling occur?

Response #13: The original removal action, conducted at the former operating facility at 7 East Hook Cross Road, included confirmatory soil sampling which indicated that contaminated soils were remediated and removed off-site. Since the former operations building was removed and clean soils were used as fill in the excavated areas, there is no indication that further soil contamination has occurred at the East Hook Cross Road location.

During the remedial investigation/feasibility study (RI/FS) phase of the project (to be conducted over the next two years or so), there will be some soil sampling conducted during the drilling and installation of new monitoring wells in order to characterize the geologic formations in the area.

Comment #14: Will some of the compounds, *i.e.*, manganese and iron, that were shown to be in some of the water supply sources presented in the AWSER cause damage or leaching to galvanized piping?

Response #14: The preferred alternative does not show any issue with the compounds identified and, as such, should not affect piping and residential water piping in the SRST. If, at some time in the future, these compounds become an issue, appropriate actions would be taken by the water district to alleviate them.

Comment #15: Will we receive uninterrupted water during a blackout?

Response #15: The Town of Fishkill's production wells are serviced by emergency generators which would start up at any power shortage. Also, the storage holding tank has enough capacity to handle a limited period of daily demand. To date, the Town of Fishkill residents have not been without water during some of the recent blackouts.

Please note that a three-party agreement among the Town of East Fishkill, Town of Fishkill and IBM has been recently executed to ensure that sufficient capacity will be available to the SRST residents. This agreement contains a section on Water Emergency Procedures.

Comment #16: Can the SRST residents have multiple supplies in their homes?

Response #16: Each household is permitted only one connection to the new water supply system. As indicated in Response #11 above (Section 186-21 of East Fishkill's municipal code), before any service connection between the municipal public water supply and a consumer's premises can be made, it is required that all connections between individual wells or other outside sources of water supply physically be disconnected from the consumer's plumbing fixtures.

Comment #17: Are there any assurances to SRST homeowners that future properties will be prevented from using the public water supply?

Response #17: As water purveyors, the Town of East Fishkill is responsible for ensuring that sufficient water capacity is available for the SRST. Any additional capacity that it may need for future development must be above and beyond that dedicated to the SRST.

The SRST water supply capacity, as reserved by IBM from the Town of Fishkill, is to be used solely for the SRST residents. This reserved capacity cannot be used for future development outside of the affected SRST area unless those properties are found to be affected by Site-related contaminants.

Comment #18: What are the two alternative water supply sites located on Route 376? Who owns the property there? How were these locations selected?

Response #18: The two water supply alternatives on the large parcel of property on Route 376 are two separate and distinct potential production well fields. During the alternate water supply source investigation process, the Route 376 property was divided into two separate areas (one at the north end of the property and one at the south end). The two sites represent two unique water supply alternatives, as presented in the AWSER. The entire property is currently owned by the Proust family. These potential well development areas were identified, investigated and developed by IBM's contractor, Groundwater Sciences Corporation, in order to expand the AWSER water supply alternative list for the SRST area, as required in EPA's Administrative Order on Consent for Removal Action (CERCLA-022001-2020).

Comment #19: Can the community reject the four alternatives and demand a community water system from Honness Mountain Road?

Response #19: If the community, as a whole, provided a technical rationale as to why the preferred alternative was not suitable as a water supply, then there may be cause to pursue other potential water supply alternatives. The Honness Mountain area has not been investigated as a water source, hence, EPA does not have information about its viability as a water source.

The four alternatives presented in the AWSER represent the most feasible and available sources of safe public water supply for the SRST area. Also, a number of other alternatives were given a very thorough investigation. The final four, as presented in the AWSER, represent the best available alternate water sources, with respect to quality and quantity, for the SRST. These represent the only alternatives that were found to be viable as clean water sources for the SRST community. Since a preferred alternative was found to be suitable by EPA and NYSDEC for the SRST, there is no reason to pursue other water supply venues.

EPA has neither qualitative nor quantitative information that a water supply from the Honness Mountain region would be suitable as a water supply for the SRST.

Please note that, after EPA and New York State reviewed the water supply alternatives, the Town of Fishkill water supply source, *i.e.*, the Snook Road Well Field, is the most cost-effective for the SRST. As stated above, the quality of the water to be supplied by the Snook Road Well Field complies with Federal and State drinking water standards.

Comment #20: Why was the Dutchess County Pipeline Alternative not selected as the preferred alternative?

Response #20: While this project is in the engineering design phase, EPA did not choose this alternative, since it requires the construction of a 13-mile water transmission line before any water would be able to reach the Town of East Fishkill and the SRST community. Since this transmission line is a major component of this alternative, the sheer scope of the project may create additional uncertainty regarding the estimated time for completion of its construction, as compared to the selected alternative.

Comment #21: Would the Meadow Creek Corporate Park be able to connect into the SRST water supply?

Response #21: Under the 3-party agreement, the Town of East Fishkill must use the capacity reserved by IBM for the water supply needs of the SRST. The Town of East Fishkill may secure additional quantities of water, above and beyond the reserved capacity, to service other users such as the proposed the Meadow Creek Corporate Park or any other future development.

Comment #22: Do the existing well fields used by the IBM East Fishkill Facility have any effect on the Town of Fishkill alternative?

Response #22: The three existing production well fields (the Main Plant Well Field, the Railroad Spur Well Field and the Wiccopee Well Field) used by the IBM East Fishkill facility are separate and distinct from the Snook Road Well Field, the Town of Fishkill water supply alternative. These well fields are approximately two to three miles away and are located in two different towns. The water transmission line for the Town of Fishkill alternative will travel directly past these well fields but will not be connected to them.

There was also some public concern that water from these well fields may be commingled with the water that would be supplied to the SRST from the Town of Fishkill. This action is not included in the three-party agreement and will not occur. As stated in the AWSER, since the IBM well fields have insufficient capacity to handle the future needs of the IBM facility itself, they were ruled out as a potential alternate water supply source for the SRST. The Dutchess County Pipeline alternative is being developed specifically to handle the increased usage requirements for the IBM Facility.

Comment #23: Please expand on the risk assessment discussion.

Response #23: A baseline risk assessment, which will evaluate carcinogenic and noncarcinogenic risks of the various volatile organic compounds (VOCs) found in the soils and groundwater, will be performed during the remedial investigation phase of the project. This effort would include evaluating the

various exposure pathways considered during a risk assessment, including inhalation, ingestion and dermal exposure, for the VOC contaminants of concern at the Site.

Comment #24: Who pays for the 150,000-gallon water storage tank? Where will it be built? What will it look like?

Response #24: The water storage tank is a necessary part of the water supply system in that it will provide the water supply reserve during peak usage.

IBM will construct the water storage tank and connect it to the various transmission lines. The exact location of the tank remains to be determined. It will be a standard configuration, with estimated dimensions of 40 feet in height and 25 feet in diameter. The exact location of this tank will be determined during the design phase of the project. EPA will consider the SRST community's input to ensure that the tank is built in an acceptable location within the SRST.

Comment #25: Why is IBM not pursuing further investigation of the Shenandoah Road area?

Response #25: As stated above, IBM will continue to perform the RI/FS phase of the project, which will determine the full nature and extent of groundwater contamination at the Site. This process will include installing new monitoring wells, as well as sampling the soil gas, air, surface water and groundwater.

Comment #26: Will there be property tax increases?

Response #26: Since IBM is funding the entire construction and installation of the water supply system for the SRST, EPA does not believe that there would be any impacts to existing tax structures related to the installation of this water supply project.

Any property tax increase that may be directly related to the increase in value of a property after it is connected to a public water supply service would be better addressed by the Town of East Fishkill.

Comment #27: Will IBM maintain the POET systems that are currently installed at the affected SRST residences if any resident does not hook up to the new water supply system?

Response #27: Once the permanent water service is in place and supplying each home, the POET system for that home would be dismantled and removed. IBM would not be required to continue maintaining any remaining POET systems for those

homeowners who decide not to connect to the public water supply system. Any continued maintenance of remaining POET systems would be the responsibility of the homeowner. However, as stated in Response #11 above, the Town of East Fishkill Municipal Code states that if an owner has any source of water other than from the municipal public water system, such source will be considered nonpotable. Before making any service connection between the municipal public water supply and a consumer's premises, it is required that all connections between individual wells or other outside sources of water supply physically be disconnected from the consumer's plumbing fixtures, which are connected to the municipal potable water supply.

Comment #28: How long will the three-party agreement be in effect? Does this agreement require New York State approval?

Response #28: The Town of East Fishkill, the Town of Fishkill and IBM prepared the three-party agreement to remain in place for a period of forty years. According to the agreement, "the Town of East Fishkill shall have the right and option to extend the Agreement for successive 10-year terms..." This agreement does not require New York State approval prior to its implementation. The agreement has been executed and is in place. A copy of the agreement is included in the Administrative Record for the alternate water supply.

Comment #29: Who will pay for the installation of the water lines and the restoration of the streets and roads?

Response #29: IBM will be financially responsible for the completion of the water supply project, which would include the installation of water transmission lines from the boundary of the Town of Fishkill and the Town of East Fishkill and the distribution lines within the SRST, as well as the restoration to original or improved conditions of those rights-of-way, *i.e.*, street and roads, which will be used as the routes for the installation of the piping. EPA will ensure that IBM and its contractors comply with any local ordinances and communicate with local agencies to make sure that the construction and installation activities are conducted in a safe and reliable manner.

Water Quality Issues

Comment #30: Why is there no mention made about the expansion of the Southern Duchess Sand and Gravel Mining operations and the effect it would have on the underlying aquifer?

Response #30: The Town of Fishkill provided EPA with its technical evaluation of the effect that the mining operations may have on the Snook Road Well Field which is

located more than one-and-one-half miles from the mining operations. Data from extensive pumping tests of the proposed water supply wells at the Snook Road Well Field indicate that the zone of influence or recharge area to those proposed wells does not include the sand and gravel aquifer underlying Clove Creek in the vicinity of the mining operations. The Snook Road Well Field lies in the Sprout Creek-Fishkill Creek aquifer. Data also indicate that the discharge of storm water at the mining operations will not impact the quality of the proposed Snook Road Well Field. Based on a review of the information supplied by the Town of Fishkill, EPA concurs with this assessment and believes that the operation of the mining site would not have an effect on the Snook Road Well Field.

Comment #31: Is there any concern over high levels of manganese in the proposed water supply?

Response #31: No, the water quality of the Town of Fishkill alternative shows non-detectable levels of manganese. The Federal and State secondary standards for manganese are intended to prevent potential aesthetic problems, such as poor taste, odor and staining of plumbing fixtures, rather than adverse health impacts.

Comment #32: Will the Clove Creek Aquifer be protected?

Response #32: As stated above in Response #30 above, data from extensive pumping tests of the proposed water supply wells at the Snook Road Well Field indicate that the zone of influence or recharge area to those proposed wells does not include the sand and gravel aquifer underlying Clove Creek. The local water supply authorities drawing potable water from the Clove Creek aquifer would be responsible for ensuring that the source of that drinking water is protected.

Comment #33: Will the historical nature of the Snook Road Well Field area be preserved?

Response #33: Appropriate steps will be taken to ensure that actions taken during the construction of the water supply system comply with any historical preservation requirements, as identified in the National Historical Preservation Act.

Comment #34: What provisions have been established for compensation or treatment for future healthcare issues that may arise as a result of drinking contaminated water prior to the installation of the POET systems?

Response #34: At the present time, no health studies are proposed for the SRST. Any health concerns should be directed to the Duchess County Health Department, the

New York State Department of Health or the Federal Agency for Toxic Substances and Disease Registry. There are no provisions under the Superfund law to provide for any compensation resulting from potential past exposure to groundwater contamination.

Comment #35: Where are the results of the 1987 residential well testing?

Response #35: This residential well testing was performed in relation to IBM's East Fishkill facility and is not associated with the Site. Since these data were not Site-related, EPA did not use these data in its pre-remedial investigation and evaluation of the Site to develop the hazard ranking for proposed listing on the Superfund National Priorities List (NPL). The Site was listed on the NPL on June 14, 2001. EPA suggests contacting IBM for these historical data.

Comment #36: When the groundwater is fully restored, the public should be given a choice between a public supply and a private supply.

Response #36: The restoration of the groundwater to below Federal and State maximum contaminant levels will probably be a lengthy process. As such, it may take up to 30 or 40 years before any private well in the SRST area may produce safe drinking water without treatment. If and when that occurs, any connection to private wells or the installation of new private wells would have to be addressed at the local level with the Town of East Fishkill.

In order to provide the SRST residents with a safe drinking water supply, it is necessary to install a public water supply system now to ensure the protection of public health.

Comment #37: What is the quality of the water that will be supplied to the SRST residents? In particular, there are concerns about how chlorine may affect aquarium life.

Response #37: The water quality supplied to the SRST will comply with Federal and State drinking water standards. Chlorination is a necessary part of the public water supply process in order to ensure that bacterial contamination does not reach the consumer. With respect to the residual chlorine content of the water, EPA recommends that the homeowner secure technical advice from aquarium-life specialists on the best way to maintain a healthy aquatic environment for the various plant and animal species associated with an aquarium.

Comment #38: There was some public concern expressed about the commingling of drinking water from different well fields or other water supplies within the transmission lines that would supply water to the SRST.

Response #38: According to the Town of Fishkill, the water supply area associated with the Snook Road Well Field will be known as the Snook Road Water Improvement Area #1. The transmission line from this well field will be a newly constructed 12" water main. This line will be installed by the Toll Brothers, a private developer and contractor and will run along Merritt Boulevard to a location on NYS Route 52. At this location on NYS Route 52, IBM will pick up the construction work to install a transmission line from that point to the SRST. As stated previously, an allocation of 80,000 gal/day from this water supply has been assigned to the Town of East Fishkill to service the SRST.

With respect to additional potential water sources, the Town of Fishkill currently has no agreement nor any definitive plans to obtain water from the Village of Fishkill (within the Town of Fishkill) water supplies which draws water from the Clove-Creek Aquifer. The new Snook Road Well Field water supply facilities are being constructed in such a manner as to facilitate a potential connection at such time as an acceptable agreement may be reached between the two communities.

The Town of Fishkill does have definitive plans to ultimately interconnect the facilities of the Snook Road Water Improvement Area #1 with the facilities of the Town of Fishkill Brinkerhoff Water District. This interconnection would, thereby, allow a commingling of water from the Snook Road Well Field with that of the Brinkerhoff Well Field. This operation would permit better well field management, increase overall system efficiency and capacity and continue to provide a safe and sufficient water supply to the SRST.

All public water supplied to the SRST community would meet Federal and State drinking water standards.

Appendix A

Proposed Response Action Document

Shenandoah Road Groundwater Contamination Superfund Site

Town of East Fishkill, Dutchess County, New York

EPA
Region 2

November 2003

MARK YOUR CALENDAR

November 14 - December 15, 2003: Public comment period for the Alternate Water Supply Evaluation Report and this Proposed Response Action Document.

November 20, 2003
Public Information Session:
3:00-5:00 PM
Public Forum: **7:00-9:00 PM**
Location: Fire District Administration Building
2502 NYS Route #52
Hopewell Junction, NY 12533

COMMUNITY ROLE IN RESPONSE SELECTION PROCESS

EPA relies on public input to ensure that the concerns of the community are considered in selecting an effective response action for each Superfund site. To this end, the Alternate Water Supply Evaluation Report (AWSER) and this Proposed Response Action Document (PRAD) have been made available to the public for a 30-day public comment period, as described above.

At the above-referenced public forum, EPA will present the conclusions of the AWSER in order to further elaborate on the reasons for recommending the preferred response action and to receive public comments.

PURPOSE OF THIS DOCUMENT

This Proposed Response Action Document (PRAD) describes the water supply alternatives (response actions) that were considered for the Shenandoah Road Groundwater Contamination Superfund site (Site) and identifies the preferred response action with the rationale for this preference. The Site includes homes whose drinking water wells are contaminated with volatile organic compounds. The water supply alternatives describe different options for providing potable water by waterline to the affected homes. EPA's preferred response action is to use the Town of Fishkill Municipal Water Supply as the permanent potable water source for the homes impacted at the Site.

This document was developed by the United States Environmental Protection Agency (EPA), in consultation with the New York State Department of Environmental Conservation (NYSDEC). EPA is issuing this document as part of its public participation responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

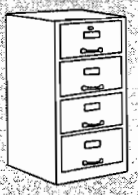
The water supply alternatives summarized here are described in more detail in the Alternate Water Supply Evaluation Report (AWSER). This report, together with this PRAD, represents the Engineering Evaluation/Cost Analysis which EPA has used to identify its preferred response action. EPA and NYSDEC encourage the public to review the AWSER to gain a more comprehensive understanding of the Site and EPA's preferred response action.

This PRAD is being provided as a supplement to the AWSER to inform the public of EPA and NYSDEC's preferred response action and to solicit public comments pertaining to all the alternatives evaluated, as well as the preferred response action. The proposed action is formally referred to as a non-time critical removal action.

Changes to the preferred response action or a change from the preferred response action to another response action may be made if public comments or additional data indicate that such a change will result in a more appropriate response action.

The final decision regarding the selected response action will be made after EPA has taken into consideration all public comments. EPA is soliciting public comment on all of the water supply alternatives considered in the detailed analysis of the AWSER, since EPA and NYSDEC may select a response action other than the preferred response action, based on overall public input.

The Administrative Record file, which contains the information upon which the selection of the response action will be based, is available at the following locations:



East Fishkill Community Library
348 Route 376
Hopewell Junction, NY 12533

Hours: Mon-Thurs: 10:00 AM - 8:00 PM
Fri: 10:00 AM - 6:00 PM
Sat: 10:00 - 5:00 PM

EPA-Region II
Superfund Records Center
290 Broadway, 18th Floor
New York, NY 10007-1866
(212) 637-4308

Hours: Mon-Fri: 9:00 AM - 5:00 PM

Comments received at the public meeting, including written comments and responses thereto, will be documented as part of EPA's decision document, which is identified as an Action Memorandum, and will formalize the selection of the response action.

Written comments on this document should be addressed to:

Damian Duda, Remedial Project Manager
United States Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866
Telephone: (212) 637-4269
Telefax: (212) 637-3966
E-mail: duda.damian@epa.gov

SITE BACKGROUND

Site Description

The Site (see Figure 1) is located within the Town of East Fishkill, Dutchess County in an area known as Shenandoah, approximately one mile southwest of the intersection of Interstate 84 and the Taconic State Parkway and one-and-one-half miles southeast of the Hudson Valley Research Park. The Site is in a rural area consisting of residential subdivisions intermingled with extensive farmland and patches of woodlands. The topography is dominated by a northeast/southwest trending valley and ridge complex. The homes in the area use private wells for potable water supply and septic systems for sanitary wastewater disposal. There are currently no water mains in the vicinity of the Site.

Residential well sampling conducted at the Site by the New York State Department of Health (NYSDOH) in April and May of 2000 indicated that a number of residential wells were contaminated with the volatile organic compound (VOC) tetrachloroethene (PCE) above the Federal and New York State Maximum Contaminant Level (MCL) of 5 parts per billion (ppb). One well was also found to be contaminated with trichloroethene (TCE) above the MCL of 5 ppb. PCE is the main contaminant of concern at the Site. Contaminated residential wells are located on Shenandoah Road, Old Shenandoah Road, Seymour Lane, Burbank Road, Jackson Road, Townsend Road, Old Townsend Road, Jaycox Lane, Stone Ridge Lane and East Hook Cross Road. Groundwater is the primary source of drinking water in the area.

Site History

Information obtained by EPA and NYSDEC indicates that, between approximately 1965 and 1975, a parcel of property (the Facility), located at 7 East Hook Cross Road in East Fishkill, was used by Jack Manne, Inc. to clean and repair computer chip racks. Available information indicates that during these operations, solvents, including PCE, and metals, including lead, were disposed of in a septic tank and an in-ground pit located at the Facility. Additionally, nitric and sulfuric acid wastes were reportedly disposed of in the pit at the Facility.

In the Fall of 2000, EPA and NYSDEC determined that the probable source of the PCE contamination in the nearby residential wells was linked to historical operations at the Facility. As described later in this PRAD, the processing building at the Facility was demolished and underlying contaminated soil was removed. After completion of the excavation activities, the property was restored to grade with clean fill and was vegetated.

Site Geology/Hydrogeology

The hydrogeology underlying the Site is quite complex, including unconsolidated glacial deposits that overlie complexly folded, highly fractured and weathered dolostones (valleys) and up-thrusted fault blocks of the gneissic basement rock (ridges). The heterogeneous glacial overburden deposits range from zero to 100 feet thick and include tills, glacial fluvial deposits and glacial lacustrine deposits. The overburden and the bedrock aquifers represent two distinct aquifer systems in the East Fishkill area. The valley is underlain by as much as 30 to 40 feet of glacial till with frequently encountered dolostone. A local groundwater flow zone underlying the Site most likely extends northward from the Facility in the direction of East Hook Cross Road. Groundwater elevations measured in the water supply well for the Facility suggest that the groundwater elevation in the underlying bedrock is lower than the groundwater

elevation in the saturated till zone, surrounding the Facility, indicates a downward gradient beneath the Facility. Based on the pattern of PCE occurrences and the magnitude of those occurrences, the preferred direction of groundwater flow away from the Facility has been to the north in the direction of a large wetland north of Townsend Road and east of Shenandoah Road. The highest concentrations in residential wells due east of the Facility suggest that the groundwater flow through the ridge system has also been significant. Detection of PCE in residential wells south of the Facility suggests that groundwater flows southward towards the unnamed stream between Shenandoah and Hosner mountains.

Site Characterization and Response

In June 2000, following the discovery of the contaminated residential wells, EPA initiated an emergency response action at the Site and began delivery of bottled water to the affected residences. Of the then 60 known contaminated residential wells, 20 had contamination exceeding the removal action level (RAL) for PCE. Under the Superfund Program, if any contaminant concentration exceeds its RAL, EPA is authorized to take immediate, short-term action to address that contamination. As a result, point of entry treatment (POET) systems were installed by EPA in those homes with contaminated wells at or above RALs to ensure a safe supply of water. POET systems include a cartridge particulate filter, two granular activated carbon tanks and an ultraviolet light. These actions were taken to protect the health of the public until a more permanent solution could be implemented. To date, 105 POET systems are operating in the Site community.

In November and early December 2000, EPA excavated the septic tank associated with the Facility at 7 East Hook Cross Road and removed its contents for transportation and off-site treatment and disposal. At this time, EPA also excavated contaminated soils associated with the septic tank and temporarily stockpiled the soils on Site. Based on field screening results and post-excavation soil sampling results collected by EPA, it was evident that high levels of PCE still remained in the soil beneath the Facility. As a result, it was necessary for EPA to demolish the process building at the Facility prior to excavation of the underlying contaminated soil. During excavation of the contaminated soil associated with the former septic tank, two additional PCE disposal areas were discovered. Approximately 4,800 tons of contaminated soil associated with the former septic tank and the two PCE disposal areas were staged at the Site until August 2001.

In May 2001, an Administrative Order on Consent (AOC) for Removal Action was executed between IBM and EPA. Under the removal AOC, IBM, a potentially responsible party (PRP) for the Site, assumed responsibility for the completion of the soil removal action started by EPA and maintenance of the POET systems. Additional response actions by IBM under the terms of the AOC include evaluation of alternate water supply sources, construction of the EPA-selected response action and initial groundwater investigations to enhance the understanding of groundwater conditions in and around the Site.

In August 2001, IBM removed the stockpiled PCE contaminated soil from the Site and transported it for appropriate off-site treatment and disposal. In August 2001, EPA discovered a buried "acid pit" directly south of the former operations building. Field sampling results revealed high concentrations of PCE in the soil surrounding the acid pit. IBM, under EPA supervision, completed the excavation of the contaminated soil in January 2002 and sent approximately 2,000 tons of contaminated soil off-site for disposal.

In an EPA-approved Statement of Work, IBM agreed to evaluate various alternatives in order to provide a safe, alternate drinking water supply to the Site. In December 2001, EPA approved the final Alternate Water Supply Response Action Work Plan which called for the evaluation of six different water supply alternatives. An examination of these and other alternatives were included in the AWSER. This PRAD addresses the four alternatives which were deemed implementable in the AWSER.

Currently, IBM, with EPA oversight, samples, monitors and maintains the POET systems at the Site on a quarterly basis.

SUMMARY OF SITE RISKS

The levels of PCE found in numerous residential drinking water wells at the Site exceed EPA's MCL and RAL for PCE. This presents an unacceptable risk to the users of those wells. There is also a potential risk that additional residential wells in this area may be impacted above the MCL and/or RAL for PCE as the groundwater contaminant plume migrates.

The installation of an alternate water supply will eliminate the potential for ingestion exposure from hazardous substances in the private water supply wells on the Site.

A risk assessment will be conducted as part of the remedial investigation and feasibility study (RI/FS) phase of this project, since the levels of PCE found in the private water supply wells on the Site exceeded Federal and State drinking water standards and represent a substantial risk to public health through ingestion. The RI/FS phase of the project is being performed by IBM under a separate AOC with EPA that was executed in September 2002.

REMOVAL ACTION OBJECTIVES

The following removal action objectives have been established for this response action:

- to provide a safe and reliable supply of potable water
- to minimize exposure to contaminants found in the drinking water

The proposed response action is considered non-time critical because, although there is a significant threat to public health and the environment, the affected residential wells have been temporarily fitted with POET systems in order to provide safe and potable drinking water until such time as a permanent response action can be implemented.

The calculation of the water supply needs of the community affected by the Site's contamination, also known as the Shenandoah Road Service Territory (SRST), is based on the provision of a full-service community water supply and distribution system for the Site. In accordance with NYSDOH water supply calculation guidelines, it is estimated that an average daily demand for the Site will be 80,000 gallons per day (gpd).

The extent of the SRST for this AWSER was determined based on the extent of the existing groundwater contamination plume, as determined by monitoring and sentinel well data, and the knowledge of the hydrogeology of the Site. Figure 2 shows the extent of the Site plume and the proposed SRST of 154 properties, which includes all 102 residences currently fitted with operating POET systems. The public roads and rights-of-way along which the distribution mains will be constructed are also shown on Figure 2.

The SRST water distribution and storage system would have the same design parameters irrespective of which water supply alternative is selected. In order to expedite the project, IBM has begun the preliminary design work on these common components under EPA's and NYSDEC's technical direction and review. The SRST distribution system includes 20,000 linear feet of 12-inch diameter piping to be installed along the public and private rights-of-way, 40 hydrants, 24 gate valves, house services, house connections, a 150,000-gallon storage tank and numerous appurtenances and incidentals required to complete the installation of the water supply system. This system also includes an elevated storage tank needing less than one-eighth of an acre of land and will be sized to meet fire protection standards and to provide emergency storage. The location of this tank will be determined in the near future.

SUMMARY OF PROPOSED RESPONSE ACTIONS

Four water supply alternatives or response actions were developed in the AWSER and are described below.

The construction time for each response action reflects the time required to design, construct and implement the response action. The present worth operation and maintenance (O&M) costs for the response actions discussed below are calculated using a 30-year time interval and a discount rate of 4%. The actual time period for O&M will depend on the ultimate decision made with regard to the restoration of the Site groundwater.

All of the alternatives include the basic SRST distribution system.

The response actions are as follows:

Alternative No. 1: Town of Fishkill Municipal Water Supply

Capital Cost	$8,792,965.00
Annual O&M Cost	$68,685.00
Present Worth O&M Cost for 30 years	$1,187,701.00
Total Present Worth Cost	$9,980,666.00
Construction Time:	2 years, 2 months

Alternative #1 would involve the purchase of up to 80,000 gpd of potable water by the Town of East Fishkill from the Town of Fishkill under a 40-year agreement. This agreement entered into by both towns and IBM requires that IBM construct all capital facilities and convey ownership of the same to each town, as appropriate.

Alternative #1 would include the Snook Road Well Field (SRWF), proposed transmission piping from the SRWF to NYS Route #52 and a planned water supply storage tank anticipated to be constructed on the adjacent Hosner Mountain; these parts of Alternative #1 would be completed by the Town of Fishkill. Alternative #1 would also include the transmission piping from the Town of Fishkill border with East Fishkill to the SRST; this part of Alternative #1 would be completed by IBM for the SRST.

The SRWF is situated on 5.5 acres of land bounded to north by I-84, to the south by Snook Road, to the west by an area maintained by the Fishkill Historical Society and to the east by private residential development and undeveloped private property. The SRWF has the potential to produce up to 3.0 million gallons a day (MGD) of potable water. Related to the SRWF, the Town of Fishkill would create the Merritt Park Water District (MPWD), which lies within the Town of Fishkill, as the main recipient of the water produced from the SRWF.

East Fishkill would also be a recipient of the water produced from the SRWF.

The Town of Fishkill has indicated the transmission piping (12-inch ductile iron) would be extended to NYS Route #52 as part of the MPWD project. The Town of Fishkill water project would also include the construction of a one- million gallon water storage tank. The transmission piping involves the installation of a water main from the existing Town of Fishkill Municipal Water System to the Site. Alternative #1 would require the installation of approximately 20,000 feet of transmission pipeline in order to reach the SRST.

Alternative No. 2: Town and City of Poughkeepsie Hudson River Intake/Dutchess County Pipeline

Capital Cost:	$7,107,080.00
Annual O&M Cost:	$70,974.00
Present Worth of O&M Cost for 30 years	$1,227,282.00
Total Present Worth Cost:	$8,334,362.00
Construction Time:	2 years

Alternative #2 would involve the purchase of water from the Town and City of Poughkeepsie that will be transmitted through a 13-mile pipeline from Poughkeepsie to IBM's East Fishkill Plant. The water that would be supplied to the SRST would be a portion of an initial two million gallon allocation to IBM from this pipeline. This allocation and IBM's participation in the construction of the pipeline are covered by a binding Memorandum of Understanding to be replaced by a contract currently under negotiation. Design has been completed for the pipeline and permit applications have been submitted for its construction.

Under Alternative #2, the water supply is drawn by the City and Town of Poughkeepsie primarily from the Hudson River for the areas in southern Dutchess County. Two (2) MGD of capacity would be initially purchased by IBM, with an option to purchase an additional 2.0 MGD.

Alternative #2 would include the Hudson River Surface Water Intake, the Water Filtration Plant jointly owned by the City and Town of Poughkeepsie, transmission mains, the Fairview Pump Station, backup supplies from the Frank Well Field and a proposed 13-mile pipeline to be constructed by the Dutchess County Water and Wastewater Authority to the IBM East Fishkill Plant site.

Water supply for this alternative would consist of treated surface waters of the Hudson River filtered at the Poughkeepsie Water Filtration Plant, which include an intake system, rapid mix coagulant basin, solids contact clarifier, sedimentation basins, aeration basins, sand filtration and a clearwell. The capacity of the plant is 16 MGD, and the combined peak daily demand for the City and town is 9.35 MGD. Upon completion of upgrades in 2005, the plant will be expanded to between 19.3 and 21.33 MGD. Alternative #2 would require the installation of approximately 13,000 feet of transmission pipeline to reach the SRST.

Alternative No. 3: Route 376 Parcel A Property

Capital Cost:	$8,347,190.00
Annual O&M Cost:	$82,000.00
Present Worth O&M Cost for 30 years:	$1,417,944.00
Total Present Worth:	$9,765,134.00
Construction Time:	2 years, 4 months

The Alternative #3 Parcel A property is located approximately 1500 feet north of NYS Route #52 on Route 376 and is adjacent to and south of the Alternative #4 Parcel B property. In order to develop the property into a municipal well field, Alternative #3 would involve the installation of two new production wells on Parcel A. Testing indicates that each of the two production wells would readily produce sufficient yield to supply the needs of the SRST. The wells would be located at a minimum of 200 feet from the property line of the parcel on which they would be constructed and at least 200 feet from Gayhead Creek. Initial groundwater sampling results show that the water meets Federal and State drinking water standards. These results also indicate that some elevated concentrations of manganese in the groundwater. These parameters may require additional treatment and maintenance requirements in the water system but do not have any health-related implications. The results of aquifer testing indicate that the two production wells would be able to provide the necessary capacity for the normal and peak water demands for the Site; these results also suggest that significantly higher yields than are necessary would be sustainable from each of the wells tested. Some groundwater contamination sources were identified in the vicinity of the proposed well field; however, it has been determined that this contamination will not threaten the potential groundwater supplies. Various permits would be necessary in order to implement this alternative, including a floodplain permit and a State construction permit. At the present time, it is anticipated that the necessary permits would be issued to allow the project to proceed. Alternative #3 would include pre-treatment for manganese. Alternative #3 would require the installation of approximately 12,000 feet of transmission pipeline to reach the SRST.

Alternative No. 4: Route 376 Parcel B Property

Capital Cost:	$8,615,545.00
Annual O&M Cost:	$76,000.00
Present Worth O&M Cost for 30years:	$1,314,192.00
Total Present Worth:	$9,929,737.00
Construction Time:	2 years, 4 months

The Alternative #4 Parcel B property is located roughly three-quarters mile north of NYS Route 52 on Route 376 and is adjacent to and north of the Alternative #3 Parcel A property. In order to develop the property into a municipal well field, Alternative #4 would involve the installation of two new production wells on Parcel B. Testing indicates that each of the two production wells would readily produce sufficient yield to supply the needs of the SRST. All wells would be located at a minimum of 200 feet from the property line of the parcel on which they would be constructed and at least 200 feet from Gayhead Creek. Initial groundwater sampling results show that the water meets Federal and State drinking water standards. The results of aquifer testing indicate that the two production wells would be able to provide the necessary capacity for the normal and peak water demands for the Site. These results also suggest that significantly higher yields than necessary would be sustainable from each of the wells tested. Some groundwater contamination sources were identified in the vicinity of the proposed well field; however, it has been determined that this contamination will not threaten the potential groundwater supplies. Various permits would be necessary in order to implement this alternative, including a floodplain permit and a State construction permit. At the present time, it is anticipated that the necessary permits would be issued to proceed with the project. Alternative #4 would require the installation of approximately 15,000 feet of transmission pipeline to reach the SRST.

EVALUATION OF RESPONSE ACTIONS

To select a preferred alternative or response action for a site, EPA conducted a detailed analysis of the viable response actions. The detailed analysis consists of an assessment of the individual response actions against each of three evaluation criteria: 1) effectiveness, 2) implementability and 3) cost, as well as a comparative analysis focusing upon the relative performance of each response action against those criteria.

Effectiveness

The effectiveness criterion refers to a response action's ability to meet the removal action objectives. The overall assessment of effectiveness is based on a composite of more specific criteria: 1) overall protection of public health and the environment; 2) compliance with applicable or relevant and appropriate requirements (ARARs); 3) long-term effectiveness and permanence; 4) reduction of toxicity, mobility and volume through treatment; and, 4) short-term effectiveness.

Implementability

The implementability criterion deals with the assessment of implementing the response actions by considering the following factors: constructability, reliability, expandability and administrative feasibility. This criterion will also assess State and community acceptance.

Cost

The costs to be assessed are as follows: capital costs, including both indirect and direct costs; annual O&M costs; and, present worth costs, which include the present value of 30 years of O&M costs, using a 4 % discount rate.

COMPARATIVE ANALYSIS OF RESPONSE ACTIONS

A comparative analysis of the alternatives, based upon the evaluation criteria noted above, follows.

Effectiveness

Overall Protection of Public Health and the Environment

All alternatives equally protect public health and the environment by providing a safe, reliable, sufficient and uncontaminated source of potable water to the Site community within the SRST.

Compliance with ARARs

All Federal and State drinking water ARARs will be achieved under all of the alternatives. All alternatives would be regulated under the Federal Safe Drinking Water Act requirements. Transmission and distribution pipelines will comply with locally specific ARARs for all alternatives. Applicable permit approvals will be achieved prior to construction for all alternatives. For Alternatives #3 and #4, development of the source water supply may require additional approval levels and/or requirements.

Long-Term Effectiveness and Permanence

All alternatives are equally effective in providing a long-term, reliable source of potable water that meets Federal and State drinking water standards. For Alternative #1, the permanence of the water supply would be guaranteed through a contract between the Town of Fishkill and the Town of East Fishkill. The Town of Fishkill has a long history of supplying quality drinking water through a well-managed complex water distribution system. Alternative #2 is effective in terms of multi-governmental ownership

[Town and City of Poughkeepsie and Dutchess County Water Authority] of source and distribution works to the point of connection on NYS Route #52. Water source upgrades are currently being constructed to expand capacity, improve filtration efficiency and eliminate any residual contaminants. The City of Poughkeepsie and the Town of Poughkeepsie have a long history of providing a quality drinking water supply through a complex distribution system. For Alternatives #3 and #4, there is a strong likelihood of ongoing well redevelopment costs. Alternative #3 will require treatment for manganese. Alternative #4 has high chloride concentrations, but no pre-treatment is necessary.

Reduction of Toxicity, Mobility, or Volume through Treatment

None of the alternatives reduce the toxicity, mobility or volume of the contamination at the Site. This evaluation criteria in not wholly applicable to this proposed response action. However, all alternatives protect the public health and the environment by providing a safe and reliable drinking water source, thereby reducing the potential impact of the groundwater contamination at the Site.

Short-Term Effectiveness

Alternative #1 has an estimated completion time of 26 months and requires extensive work in the boundaries of NYS Route #52 which may lead to significant short-term traffic safety and delay issues. There is one major creek crossing and three minor creek crossings associated with the transmission route of this alternative. Alternative #2 has an estimated completion time of 24 months and also requires substantial work in the boundaries of NYS Route #52, which may lead to moderate short-term traffic safety and delay issues. There are three minor creek crossings associated with the route of this alternative. Alternative #3 has an estimated completion time of 28 months and requires minor work in the boundaries of NYS Route #52, which may lead to some short-term traffic safety and delay issues. There are three minor creek crossings associated with the route of the alternative. Alternatives #3 and #4 require additional water supply source design and approvals. Wetlands permitting issues may be involved with the source development for Alternatives #3 and #4.

Implementability

Constructability

All alternatives are deemed constructable. Each alternative requires some work along the boundaries of NYS Route #52; Alternative #1 requires the most work along NYS Route #52. Alternative #1 requires the installation of approximately 20,000 feet of pipeline to the SRST, a pump station, a meter pit and other appurtenances in the Town of East Fishkill and the construction of a one-million gallon water storage tank in the Town of Fishkill. Alternative #2 requires the installation of approximately 13,000 feet of transmission pipeline, a pump station, a meter pit, other appurtenances. Alternative #2 also includes the construction of the 13-mile Dutchess County pipeline. Alternative #3 requires the installation of approximately 12,000 feet of transmission pipeline, development of the well field and pump station with chlorination and manganese treatment and other appurtenances. Alternative #3 will also require significant work on the boundaries of Route 376. Alternative #4 requires the installation of approximately 15,000 feet of transmission pipeline, including development of the well field, construction of the pump house and installation of chlorination system and other appurtenances.

Reliability

Alternatives #1 and #2 require the establishment of a water district in the Town of East Fishkill to identify the area served, namely the SRST. Alternative #1 is highly reliable as a result of the pending inter-municipal agreement between the Town of Fishkill and the Town of East Fishkill, the experience the Town of Fishkill has in the distribution and regulation of potable water supplies and the guarantee from the Town of Fishkill of supplying sufficient potable water to the Town of East Fishkill. Alternative #2 is similarly highly reliable as a result of the multiple municipal ownership of the water supply sources, including viable surface and groundwater supplies. Alternative #2 is also reliable as a result of the involvement of the Dutchess County Water and Wastewater Authority in the design and construction of the proposed transmission line and related improvements from the Town of Poughkeepsie to East Fishkill. Alternatives #3 and #4 are deemed reliable with municipal ownership and control of the water supply sources and distribution system improvements. If Alternative #3 or Alternative #4 were selected and the Town of East Fishkill did not establish a water district, then the reliability using of a private water purveyor would be less certain.

Expandability

The proposed distribution system for all alternatives is expandable, including expansion capabilities if any residential or commercial wells outside the boundaries of the SRST become affected by Site-related contaminants.

For Alternative #1, the proposed water purchase agreement currently sets aside an average water usage of 80,000 gpd for the SRST. This usage would allow for some expansion along the proposed route and adjacent to the SRST. For Alternatives #2, #3 and #4, the water source is plentiful and would allow for greater expansion along the proposed transmission route and adjacent to the SRST.

Administrative Feasibility

All alternatives would require the development of a water district for the SRST by the Town of East Fishkill. Alternative #1 requires a three-party agreement among the Town of Fishkill, the Town of East Fishkill and IBM for the allocation of a water supply for the SRST. All parties are on board and are finalizing this agreement. Alternative #2 is addressed by a Memorandum of Understanding issued in May 2002 by and among the following parties: Dutchess County Water and Wastewater Authority, City of Poughkeepsie, Town of Poughkeepsie, Poughkeepsie Joint Water Board and IBM Corporation. Negotiations are proceeding to a final agreement. Detailed plans and specifications for the transmission pipeline have been submitted to the appropriate agencies for review and approval. For Alternatives #3 and #4, an option agreement currently exists for the acquisition of the two water supply parcels by IBM.

State Acceptance

NYSDEC concurs with EPA's preferred response action.

Community Acceptance

Community acceptance will be assessed after the public comment period has ended for this response action and will be documented in EPA's Action Memorandum decision document.

Cost

The following table identifies the various estimated costs for the four alternatives. Please note that the O&M costs are based on an estimated 30-year period using a 4% discount rate to facilitate comparative analyses.

Alternative	Capital Cost	Annual O&M Costs	Total Present Worth Cost	Cost per 1000 Gals
1	$8,792,965	$68,685	$9,980,666	$5.70
2	$7,107,080	$70,974	$8,334,362	$5.90
3	$8,347,190	$82,000	$9,765,134	$6.80
4	$8,615,545	$76,000	$9,929,737	$6.30

As can be seen by the above cost estimates, Alternative #1 is the most costly with the highest present worth cost. Alternative #1 has the lowest annual O&M costs which translates to the lowest unit cost at $5.70 per 1000 gallons used. Alternative #2 is the least costly alternative with the lowest capital costs and present worth value. Alternatives # 3 and #4 have similar cost estimates with Alternative #3 having the highest O&M costs of the two alternatives and the highest user cost of $6.80 per 1000 gallons used.

PREFERRED RESPONSE ACTION

Based upon an evaluation of the four water source alternatives, EPA and NYSDEC recommend Alternative #1: Town of Fishkill Municipal Supply as the response action for providing an alternate water supply to the Site.

This preference is based on the proven reliability, experience and effectiveness of the Town of Fishkill as a water purveyor in maintaining compliance with Federal and State drinking water regulations and in providing a consistently safe drinking water to its community.

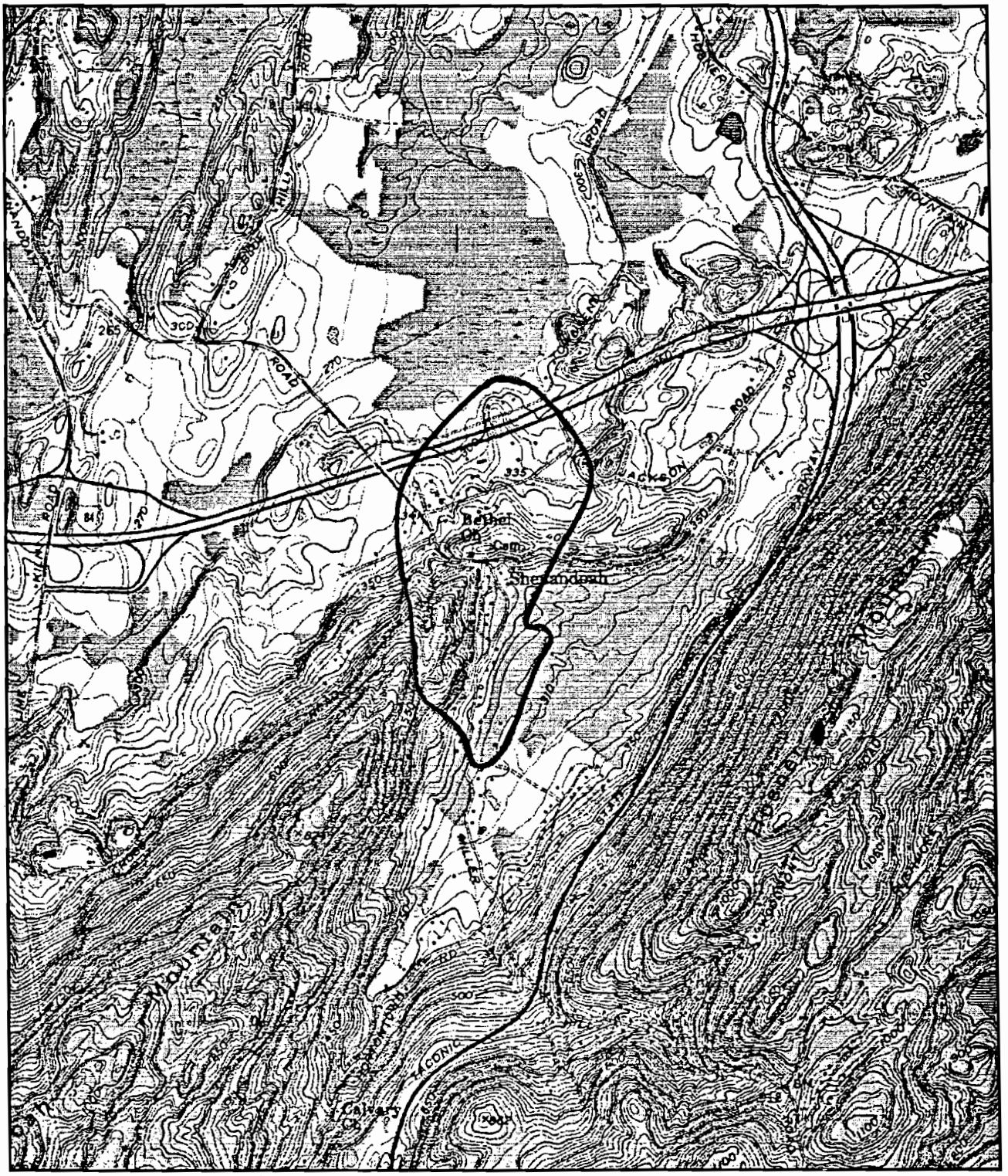
The agreement between the Town of Fishkill and the Town of East Fishkill is underway and would provide for a relatively smooth transition to supplying potable drinking water to the SRST. Reliance on the Town of Fishkill Municipal Water Supply will better ensure the long-term water supply to the SRST community.

EPA has not identified Alternative #2 as its preferred response action because this alternative would require the completion of the 13-mile Dutchess County pipeline. While this project is in the engineering design phase, the sheer scope of the project may create additional uncertainty regarding the estimated time for completion of construction.

EPA did not identify Alternative #3 or Alternative #4 as its preferred response action because the majority of the components required to fully implement these two water supply system operations need to be developed and implemented. The preferred response action is farther along and has an experienced water supply purveyor already in place.

Lastly, the preferred response action represents the lowest O&M costs of the four alternatives which results in the lowest cost to the user.

EPA and NYSDEC believe that the assessment of the four alternatives has produced a preferred response action that would provide the best balance of trade-offs among the alternatives with respect to the evaluating criteria. EPA and NYSDEC also believe that the preferred response action would be protective of public health and the environment, comply with ARARs, be cost-effective and would utilize permanent solutions to the maximum extent practicable.



——— – Estimated Boundary of Site Contamination

Figure 1

Shenandoah Road Groundwater Contamination Superfund Site

(Figure 1 is adapted from Figure 1-1 of the Alternate Water Supply Evaluation Report prepared by Groundwater Sciences Corporation)

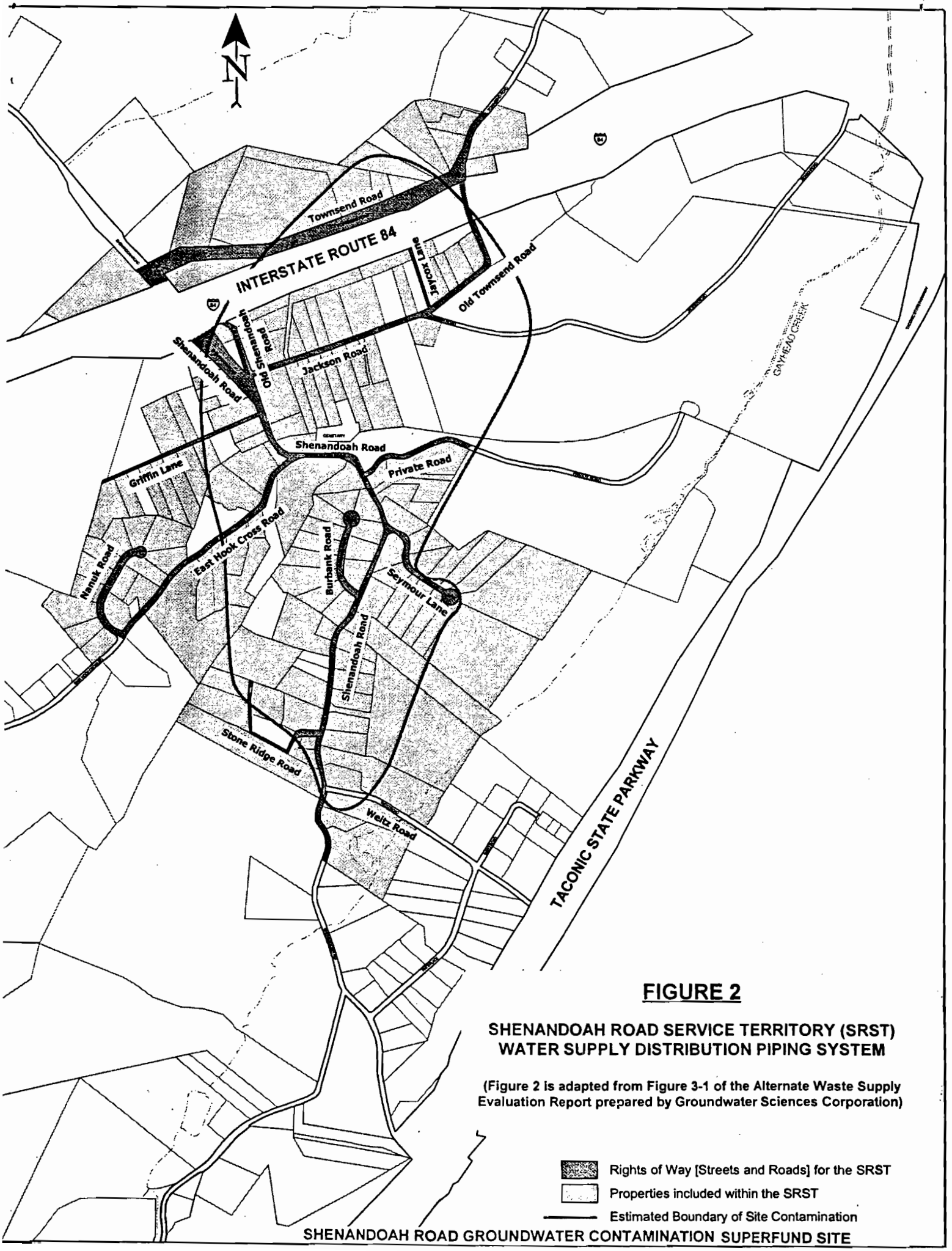


FIGURE 2

SHENANDOAH ROAD SERVICE TERRITORY (SRST) WATER SUPPLY DISTRIBUTION PIPING SYSTEM

(Figure 2 is adapted from Figure 3-1 of the Alternate Waste Supply Evaluation Report prepared by Groundwater Sciences Corporation)

Rights of Way [Streets and Roads] for the SRST

Properties included within the SRST

Estimated Boundary of Site Contamination

SHENANDOAH ROAD GROUNDWATER CONTAMINATION SUPERFUND SITE

Shenandoah Road
314.104

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

DATE: AUG 20 2004

SUBJECT: **DECISION DOCUMENT**: Selection of Alternative for a Comprehensive Environmental Response, Compensation, and Liability Act Non-Time Critical Removal Action at the Shenandoah Road Groundwater Contamination Superfund Site, Town of East Fishkill, Dutchess County, New York

FROM: John La Padula, P.E., Chief
New York Remediation Branch

TO: George Pavlou, Director
Emergency and Remedial Response Division

I. PURPOSE

The purpose of this Decision Document is to request authorization to implement a non-time critical removal action at the Shenandoah Road Groundwater Contamination Superfund Site (Site), Town of East Fishkill, Dutchess County, New York pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. Sections 9601-9675. This non-time critical removal action includes the installation of an alternate public water supply system. The primary contaminants of concern at the Site are tetrachloroethene (PCE) and trichloroethene (TCE). The Site poses a threat to public health and the environment due to the presence of PCE and TCE in numerous private residential drinking water wells. The Environmental Protection Agency (EPA) has determined that supplying the area residents with public water is necessary.

With this decision, EPA selects the preferred alternative identified in the November 2003 Proposed Response Action Document (PRAD), namely, Alternative No. 1 - The Town of Fishkill Municipal Water Supply.

It is anticipated that International Business Machines Corp. (IBM), a potentially responsible party (PRP) for the Site, will conduct this non-time critical removal action, pursuant to the EPA May 2001 Administrative Order on Consent for Removal (AOC-R), Index No. CERCLA-02-2001-2020. As part of this effort, IBM prepared an Alternate Water Supply Evaluation Report (AWSER) which presented a detailed analysis of all the proposed water supply alternatives. The AWSER, together with the PRAD (which provides detailed discussions of the proposed water supply alternatives as well as EPA's preferred alternative), represent the Engineering Evaluation/Cost Analysis (EE/CA), as required by 40 C.F.R. Section 300.415(b)(4)(i).

The objectives of this non-time critical removal action are as follows: 1) to implement an alternate water supply action within the Shenandoah Road Service Territory (SRST), which is

affected by groundwater contaminated with volatile organic compounds (VOCs), including PCE and TCE and 2) to prevent the threat of direct contact with hazardous substances, namely those contained in contaminated residential drinking water wells within the SRST.

The AWSER and the PRAD were made available for public comment from November 19, 2003 through December 20, 2003. On November 20, 2003, EPA conducted a public availability session and a public meeting in Hopewell Junction, Town of East Fishkill, New York to discuss the proposed response action and to receive public comments on the AWSER and the PRAD.

Conditions at the Site meet the criteria for a removal action under CERCLA and Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

It is estimated that activities under this removal action will be completed within two-and-a-half years of the commencement of the action. It is anticipated that this removal action, as described in this Decision Document, will be performed by IBM, as per the May 2001 AOC-R.

The overall present worth cost for completing the removal action is estimated to be approximately $10 million. The total estimated capital cost is $8,792,965 (see Table 1). The estimated capital cost for the installation of the SRST water distribution system is $4,632,845 (see Table 2). The estimated total of system service and repair is $68,685 per year with a present worth over 30 years of $1,187,701 (see Table 3).[1] The tables are presented in Appendix II.

The Site was listed on the National Priorities List (NPL) in June 2001. There are no nationally significant or precedent-setting issues associated with this removal action.

All figures are contained in Appendix I.

The Administrative Record (AR) index is contained in Appendix III. The AR Index identifies the documents that comprise the AR upon which the selection of the removal action is based.

The New York State Department of Environmental Conservation (NYSDEC) was consulted on the planned removal action and concurred with the selected response action (see Appendix IV).

The Responsiveness Summary, identifying comments received during the public comment period and EPA's response to those comments, is contained in Appendix V.

The PRAD, identifying the various alternate water supply alternatives, as well as the preferred alternative, is contained in Appendix A of the Responsiveness Summary.

---

[1] It is anticipated that the system will be operated by the Town of East Fishkill and that IBM will participate in system service and repair activities.

II. SITE CONDITIONS AND BACKGROUND

This Decision Document memorializes the proposed non-time critical action for the Site. The CERCLA Information System ID number for the Site is NYSFN0204269.

A. Site Description

1. Removal site evaluation

The Site is considered a facility as defined by Section 101(9) of CERCLA, 42 U.S.C. Section 9601(9). Past industrial operations at the Site have resulted in the release of hazardous substances, as defined by CERCLA, into the fractured bedrock aquifer below the Site. A VOC plume, emanating from a parcel of property (Facility) located at 7 East Hook Cross Road in Hopewell Junction, has migrated approximately one mile downgradient to the north, resulting in a substantial threat to both the public health and the environment. Residential wells downgradient of the Facility have been contaminated with VOCs above both the Federal Removal Action Levels (RALs) and Federal and State Maximum Contaminant Levels (MCLs). Based on the available information, a CERCLA removal action was warranted at the Site to provide treatment systems on residential wells and to identify and to remove sources of contamination.

The Site is located in a rural area, consisting of residential subdivisions and extensive farmland and woodlands, within the Town of East Fishkill, approximately one mile southwest of the intersection of Interstate 84 and the Taconic State Parkway (see Figure 1). Shenandoah Road is the central thoroughfare which runs through the SRST.

The affected properties at the Site use private wells for potable water supply and septic systems for sanitary wastewater disposal. Some of these private wells are contaminated with elevated levels of PCE and TCE.

Information obtained by EPA and NYSDEC indicates that the Facility was used between 1965 and 1975 by Jack Manne, Inc. to clean and repair microchip holders or "racks." Available information indicates that during these operations, waste solvents, including PCE, and metals, including lead, were disposed of in a septic tank and an in-ground pit, located outside the building at the Facility. Additionally, nitric and sulfuric acid wastes were reportedly disposed of in the pit at the Facility.

On June 2, 2000, EPA received a request from NYSDEC to "perform an appropriate CERCLA emergency response action" at the Site. On June 7, 2000, EPA began to supply bottled water to those residences with private wells with PCE and TCE contamination above maximum contaminant levels (MCLs). Subsequently, on June 19, 2000, EPA initiated the installation of point-of-entry treatment (POET) systems, which consist of a pre-treatment particulate filter for sediment control, a granular activated carbon (GAC) filtering system and a post-treatment UV

light to ensure removal of any potential biological contamination. At that time, of the 60 residences with wells that exceeded MCLs, 57 were initially provided POET systems. The other three residents installed GAC water treatment systems at their own expense, prior to EPA's involvement in the Site. One of these 57 homes was also fitted with a residential air stripper, because of particularly high levels of PCE found in the well. Subsequently, PCE levels were reduced to the point that the air stripper was no longer necessary, but the home remains fitted with a POET system. IBM installed additional POET systems at the Site and currently performs the maintenance on 103 POET systems and samples them on a quarterly basis to ensure their continued effectiveness.

On September 22, 2000, EPA issued an action memorandum documenting verbal authorization to initiate the removal action. In October 2000, EPA and NYSDEC conducted investigatory work at the Facility. A 1,200-gallon metal septic tank was discovered containing materials exhibiting extremely high concentrations of PCE. A buried waste pit, also on the property, had been used for nitric and sulfuric acid waste disposal. EPA and NYSDEC determined that the probable source of the VOC contamination in the nearby residential wells was linked to these historical operations at the Facility, particularly from the septic tank.

On October 27, 2000, EPA issued an action memorandum to continue removal activities at the Site. During November/December 2000, EPA 1) excavated the septic tank, removed its contents for transportation and off-site treatment and disposal and 2) further excavated and disposed of approximately 1,600 tons of contaminated soils around the tank and the associated piping materials.

In April 2001, EPA demolished the processing building at the Facility and excavated and stockpiled contaminated soils underlying it. In May 2001, IBM took over the Site removal action work, pursuant to the AOC-R, which included the removal of the remaining excavated soils, backfilling with clean soil, revegetation and disposal of excavated soils off-Site. Restoration was completed on April 26, 2002. The removal work, conducted at the Facility, is documented in the Final Report for Removal Action at 7 East Hook Cross Road Facility, dated July 18, 2002.

2. Physical location

The Site is located within the Town of East Fishkill, Dutchess County in an area known as Shenandoah. The affected residences at the Site are located on portions of Shenandoah Road, Old Shenandoah Road, Seymour Lane, Burbank Road, Jackson Road, Townsend Road, Old Townsend Road, Jaycox Lane, Stone Ridge Lane and East Hook Cross Road. The area impacted by the groundwater contamination is approximately one mile southwest of the intersection of

Interstate 84 and the Taconic State Parkway and one-and-one-half mile southeast of the Hudson Valley Research Park (see Figure 1).

3. Site characteristics

The Site is in a rural area consisting of residential subdivisions intermingled with extensive farmland and patches of woodlands. The topography is dominated by a northeast/southwest trending valley and ridge complex. The homes in the area use private wells for potable water supply and septic systems for sanitary waste water disposal. At this time, the SRST is not serviced by a public water supply nor are there water mains nearby.

The Site is underlain by unconsolidated Pleistocene glacial deposits that overlie complexly folded, highly fractured and weathered dolostone of the Lower Paleozoic Wappinger Group (valleys) and up thrusted fault blocks of the Precambrian gneissic basement rock (ridges). The heterogeneous glacial overburden deposits range from 0 to 100 feet thick and include tills, glacial fluvial deposits and glacial lacustrine deposits. The overburden and the bedrock aquifers represent two distinct aquifer systems in the East Fishkill area. On-going pumping of approximately one million gallons of water per day from the bedrock aquifer is occurring at the Hudson Valley Research Park to supply IBM's East Fishkill facility process needs and to contain groundwater contaminant plumes on that property. As a result of this pumping, natural groundwater flow patterns in the area have been drastically altered with the IBM facility pumping center serving as a local groundwater sink.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

Sampling conducted between April 2000 and January 2001 by the New York State Department of Health (NYSDOH) and EPA identified 60 private wells contaminated with VOCs, primarily PCE, up to 1,600 parts per billion (µg/l), above the Federal and New York State MCLs of 5 µg/l. Twenty of these wells were contaminated above EPA's RAL for PCE of 70 µg/l.

Laboratory analyses of samples of liquids and sludges from the septic tank at the Facility, collected by EPA on November 30, 2000, revealed high concentrations of VOCs and metals, including PCE at 40,940 parts per million (ppm), TCE at 1,067 ppm and lead at 6,740 ppm in the tank sludges. The poor condition of the tank and obvious contamination of the soils around the tank contributed to PCE and its breakdown products leaking from the tank into the surrounding soils. Once in the soils, the PCE migrated via percolation of rainwater into the underlying bedrock aquifer.

5. National Priorities List (NPL) status

The Site was listed on the National Priorities List (NPL) in June 2001.

6. Maps, pictures and other graphic representations

See Appendix I.

B. Other Actions To Date

1. Previous actions

EPA initiated removal activities at the Site in June 2000. Actions have included the delivery of bottled water to those affected residences and the installation of POET systems to remove the VOC contaminants of concern from the household water. Bottled water delivery for each affected residence began on June 7, 2000 and continued until the completion of POET system installation. GAC systems have been effectively reducing Site-related VOC concentrations to levels below MCLs. The GAC unit is supplemented with a pre-treatment particulate filter for sediment control and a post-treatment ultraviolet light to ensure the removal of any biological contamination. As additional contaminated wells were discovered, bottled water delivery and POET system installation was continued. IBM took over operating and maintaining the POET systems under EPA's May 2001 AOC-R. IBM also installed additional POET systems on homes deemed threatened by the migration of the contaminated groundwater plume. To date, 103 POET systems are in place and operating.

The septic system containing very high levels of PCE, discovered at the Facility, is believed to have been the main source of groundwater VOC contamination. In addition, the leaking of the septic tank caused extensive soil contamination at the Facility. In October 2000, the scope of the removal action was expanded to address the leaking tank and associated contaminated soil. In November 2000, removal activities to remove the septic system and contaminated soils were initiated.

On November 30, 2000, prior to pumping out the 1200-gallon septic tank at the Facility, EPA collected samples of the sludge, oil and water. Originally installed in 1959, the tank had badly deteriorated and had an open bung hole in its bottom, indicating that its structural integrity had been compromised. As a result, extensive soil contamination around the tank was evident. In addition, the pipe leading from the building to the tank was cracked in a number of places. At these locations, field instruments detected high levels of VOC vapors in the soils adjacent to the Site building.

On December 1, 2000, approximately 800 gallons of tank liquids were sent via tanker truck for treatment and disposal and approximately 250 gallons of grossly contaminated sludge from the tank was secured in drums. The tank was subsequently removed from the ground. On December 4, 2000, the tank was cleaned, dismantled and shipped for disposal. On January 24, 2001, the drums of hazardous waste were transported from the Site for incineration.

In an effort to remove contaminated soils, EPA's excavation activities continued through December 15, 2000, at which time approximately 1,600 tons of contaminated soils were removed from the area around the tank and piping and stockpiled on the southern portion of the property. These stockpiled soils were sampled for Resource Conservation and Recovery Act (RCRA) disposal characteristics and the results indicate the soil could be transported and disposed of as

nonhazardous waste. During the week of February 12, 2001, the soils were transported to an off-site RCRA Subtitle D facility.

During its excavation work, EPA determined that the piping from the tank to the leach field was plugged with soil. As a result, the leach field never received either septic or solvent waste. Field screening of the soils in the leach field and around the pipes indicated no VOCs present nor was any septic or solvent odor detected. The leach field was fully uncovered and then backfilled following the discovery of the nature of its construction.

The area of excavation was 30 feet deep and 35 feet wide, extending from the edge of the building to the edge of a driveway leading to East Hook Cross Road. Field screening during the December 14, 2000 excavation and post-excavation sampling in the pit adjacent to the Site building indicated that the soils on the western sidewall and in the bottom of the pit continued to be contaminated with high levels of PCE (above NYSDEC TAGM cleanup level of 1.4 ppm). In December 2000, a six-foot chain link fence was erected around the excavation preventing unauthorized access.

In May 2001, when EPA demobilized its operations at the Site, IBM took over removal activities. These included soil excavation, backfilling the various excavated area with clean fill, disposal of excavated soils and restoration work at the Facility. EPA approved a final report on these activities, on December 23, 2002. The source removal activities conducted at the Facility are believed to have eliminated any further source of groundwater contamination and should reduce the time necessary for remediation of the aquifer.

On August 6, 2001, EPA approved a scope of work, proposed by IBM, to evaluate and implement a permanent water supply for the affected residents under the existing AOC-R. On December 17, 2001, EPA approved IBM's Alternate Water Supply Response Action Work Plan. In November 2003, IBM presented to EPA the final report (AWSER), in accordance with the May 2001 AOC-R.

The AWSER and the PRAD were made available for public comment from November 19, 2003 through December 20, 2003. On November 20, 2003, EPA conducted a public availability session and a public meeting in at the Fire District Administration Building in Hopewell Junction, Town of East Fishkill, New York to discuss the proposed response action and to receive public comments on the AWSER and the PRAD.

2. Current action

Point-of-Entry Treatment (POET) Systems

A regular sampling and maintenance schedule has been arranged for each of the 103 residential POET systems. IBM performs ongoing quarterly sampling at three different stages of each POET system: 1) raw water, 2) between carbon vessels and 3) at the kitchen tap in each home.

In order to continue to protect public health during the implementation phases of the alternate water supply system, the POET systems will remain operational and be maintained until the alternate water supply is installed and operational. At that time, the POET systems will be dismantled and removed upon home hook-up to the public water supply system.

C. State and Local Authorities' Roles

1. State and local actions to date

Early in the process, NYSDOH took an active role at the Site, sampling over 150 private wells in the area at the request of the residents. This activity has lead to the previous removal activities described herein. In addition, NYSDOH serves as the lead agency in addressing health-related issues on the Site, including public outreach and education, health consultation for residents and the activation of the VOC Registry for potentially exposed residents.

NYSDEC has worked with EPA to investigate the source of the groundwater contamination through researching local industrial facilities and rumored disposal areas in the vicinity of the Site.

2. Potential for continued State/local response

New York State performs an oversight role in this current action and future remedial activities to be conducted at the Site.

III. THREATS TO PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

Conditions at the Site meet the criteria for a removal action under Section 40 C.F.R. 300.415(b)(2) of the NCP. Qualifying criteria under the NCP for the threats to the public health and welfare include the following:

> **i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants; and**
>
> **ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems.**

Between April and January 2001, the analytical results generated by the NYSDOH and EPA sampling identified 60 residential wells contaminated by PCE (or its breakdown product TCE) in excess of the Federal and State MCLs of 5 µg/l. EPA's RAL of 70 µg/l for PCE was exceeded in

20 of these wells. The affected residences are significantly impacted by contaminated groundwater, and are currently utilizing the POET systems to ensure a safe water supply. However, these POET systems are only an interim measure and are subject to potential failures such as: filter clogging and/or subsequent failure of the GAC filtering system. Since groundwater, a natural resource, has been determined to be contaminated with VOCs, the potential for further migration of groundwater contamination from the Site continues and may affect future residential development and associated future residents. In addition, the plume is not fully characterized and may migrate, impacting other residents in this area. However, numerous residents were exposed to PCE and other VOCs in their drinking water supplies for an undetermined period of time before EPA initiated the removal action at the Site.

The VOCs identified at the Site may present health risks to humans through ingestion, inhalation or dermal contact. According to available data, when inhaled in air at high concentrations, single exposures to PCE can affect the central nervous system leading to dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking or walking and can possibly lead to unconsciousness and/or death. PCE is also considered a possible human carcinogen by the United States Department of Health and Human Services. Human exposure can occur from ingestion of contaminated water, from food prepared with the water or from showering, bathing or washing. Exposure by inhalation alone during showering may exceed the exposure by direct ingestion.

VOC vapors of the contaminated groundwater can also enter residential air from other home activities through humidifiers, dishwashers, clothes washers and household cleaning apparatuses. These tend to increase the VOC concentration in the air inside the home and may result in exposure of the residents as significant as that from direct ingestion.

The associated health effects from exposure to elevated concentrations of PCE can include eye, skin, respiratory irritation, potential liver and/or kidney damage, toxic effect through inhalation, ingestion or dermal contact, carcinogenic and mutagenic effects and effect on the central nervous system.

(vii) The availability of other appropriate federal or state response mechanisms to respond to the release.

EPA uses its authority to issue orders to PRPs to perform response actions. IBM has assumed responsibility for a significant portion of the necessary work to be conducted at the Site and is expected to undertake the alternate water supply work. State and local authorities are not able to undertake timely response actions to eliminate the threats posed by the Site.

B. Threats to the Environment

Groundwater, a natural resource, has been determined to be contaminated with VOCs. The potential for further migration of groundwater contamination from the Site continues and may affect future residential development.

A remedial investigation and feasibility study (RI/FS) is being conducted by IBM under an Administrative Order on Consent (AOC-RI/FS) Index No. CERCLA-02-2002-2025 which was entered into between EPA and IBM in September 2002. The RI/FS will determine the full nature and extent of groundwater contamination.

IV. ENDANGERMENT DETERMINATION

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

V. EXEMPTION FROM STATUTORY LIMITS

12 Month/$2 Million Exemption

CERCLA and 40 C.F.R. § 300.415(b)(5) limit Federal removal responses to 12 months and $2 million in expenditures for Federal fund-financed removal actions unless the lead agency, here EPA, makes certain determinations regarding the risks posed by the site, the need for response actions and the unavailability of other response actions to address the risks. While the risks posed by the Site rise to the level required by 40 C.F.R. § 300.415(b)(5), this section does not apply because we anticipate that IBM will conduct the proposed removal action. In its letters of July 20 and 27, 2001, IBM proposed to perform the alternate water supply response action under the terms of the AOC-R, paragraph 41(f).

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

The water supply alternatives that were evaluated in the AWSER are as follows:

Alternative No. 1: The selected alternative described in Section A below.

Alternative No. 2: The Town and City of Poughkeepsie Hudson River Intake/Dutchess County Pipeline: This alternative included the purchase of water from the Town and City of Poughkeepsie to be transmitted through a 13-mile pipeline from Poughkeepsie to IBM's East Fishkill Plant. The water supply is drawn by the City and Town of Poughkeepsie primarily from

the Hudson River for the areas in southern Dutchess County. Two million gallons per day (MGD) of capacity would be initially purchased by IBM, with an option to purchase an additional two MGD. The water that would be supplied to the SRST would be a portion of an initial two-million gallon allocation to IBM from this pipeline.

Alternative No. 3: Route 376 Parcel A Property: This alternative is located on Route 376, north of NYS Roue 52, in Hopewell Junction and is adjacent to and south of the Alternative No.4 Parcel B property. In order to develop the property into a functional municipal well field, this alternative included the installation of two new production wells on Parcel A. Each of the two production wells would readily produce a sufficient yield to supply the needs of the SRST.

Alternative No. 4: Route 376 Parcel B Property: This alternative is located on Route 376, north of NYS Route 52, and is adjacent to and north of the Alternative No. 3 property. In order to develop the property into a functional municipal well field, this alternative included the installation of two new production wells on Parcel B. Each of the two production wells would readily produce a sufficient yield to supply the needs of the SRST.

A. Proposed Action

1. Description

There are two phases for the construction of this water supply project. The first phase involves the responsibility of the Town of Fishkill to finalize the water supply source implementation, namely the Snook Road Well Field and transmission line to NYS Route 52. The second phase of the project involves IBM's responsibility for the implementation of this non-time critical removal action, namely supplying public water to the SRST.

In the first phase, the Town of Fishkill and Toll Brothers, Inc., a private real estate developer and contractor, are undertaking a number of capital improvements in connection with the Snook Road Well Field, which is the water supply source for the SRST. These actions include the following:

- the development of the Snook Road Well Field, including the installation of a second supply well, which will be the primary source of water supply for the SRST;
- the creation of the Snook Road Water Improvement Area No.1; and,
- the installation of a 12" water transmission line from the Snook Road Well Field to a location on NYS Route 52 where IBM will assume responsibility for the project and connect the transmission line to the SRST.

In the second phase of this project identified under this removal action, IBM will design, construct and install a public water supply system for the SRST. As stated above, the source of the potable water will be the Town of Fishkill Water Supply system. Figure 2 shows the

proposed route for the water supply transmission lines. Figure 3 shows the proposed distribution system area for the SRST.

The following tasks will be completed by IBM within the Town of East Fishkill, both within the SRST and outside the SRST:

- Formal surveying of the proposed route
- Excavation of trenches (rock, soils, *etc.*) in the rights-of-way
- Restoration of pavement in roads, streets and other rights-of-way
- Installation of highway crossing casings, transmission and distribution piping
- Backfilling of excavation tenches
- Traffic maintenance
- Installation of water booster station
- Installation of water holding tank
- Connection of system to homes
- Installation of fire hydrants, as necessary to meet local code

The project will also require system service and repair activities, including the purchase of chemicals, electricity, insurance, use of a part-time operator, maintenance and repair of transmission and distribution systems, analytical testing and various administrative activities.

A forty-year, three-party agreement is in place among the Town of East Fishkill, the Town of Fishkill and IBM to ensure that the alternate water supply project will be completed within the estimated time frame and that the amount of water necessary for the SRST will be supplied.

2. Contribution to remedial performance

The action proposed in this Decision Document will address the most immediate threats posed to public health by eliminating the contamination pathway and providing a public water supply. The recommended removal action will, to the extent practicable, contribute to the efficient performance of any long-term remedial action, as required by 40 C.F.R. 300.415.

3. Description of alternative technologies

No specific alternate treatment technologies are utilized under this action; therefore, no alternative treatment technologies were evaluated.

4. Engineering Evaluation/Cost Analysis (EE/CA)

The AWSER, together with the PRAD, represent the EE/CA. The AWSER is included in the Administrative Record for the Site, and the PRAD is included in Appendix A of the Responsiveness Summary.

5. Applicable or relevant and appropriate requirements (ARARs)

The ARARs are identified in Section 4 of the AWSER, *i.e.*, related to the provision of an alternate water supply and within the scope of this Decision Document, will be met to the extent practicable.

6. Project schedule

The overall project implementation schedule for the activities in this Decision Document is included in Table 4 in Appendix II.

B. Estimated Costs

The estimated present worth cost for completing the design, construction and installation of the alternate water supply system, including system service and repair activities, is approximately $10 million.

Costs that will be incurred by the Town of Fishkill and others related to the development of the Snook Road Well Field are not included here. These costs will be incurred irrespective of the action proposed herein.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

While the POET systems remain in operation, they are considered temporary and are subject to potential failures, such as filter clogging and/or subsequent failure of the GAC filtering system. Their operation is significantly more costly in the long term than conversion to a permanent water supply system. Since groundwater, a natural resource, has been determined to be contaminated with VOCs, the potential for further migration of groundwater contamination from the Site continues and may affect future residential development and associated future residents. In addition, the plume is not fully characterized and may migrate, impacting other residents in this area. The proposed action will protect the residents from exposure to contaminated groundwater until MCLs are achieved.

VIII. OUTSTANDING POLICY ISSUES

None.

IX. ENFORCEMENT

As set forth in the Site history section above, EPA has issued two AOCs to IBM, *i.e.*, the May 2001 AOC-R and the September 2002 AOC-RI/FS. IBM is expected to fund the entire design, construction and installation of the water supply system, including the respective transmission and distribution pipelines. IBM is also expected to participate in system service and repair activities.

IBM, pursuant to the AOC-RI/FS, is investigating the nature and extent of the groundwater contamination, concurrently with the implementation of the alternate water supply project.

X. RECOMMENDATIONS

This Decision Document represents the selected removal action for the Site, which is located within the Town of East Fishkill, Dutchess County, New York. This document was developed in accordance with CERCLA and is not inconsistent with the NCP. This decision is based on the Administrative Record which was created specifically for this removal action for the Site.

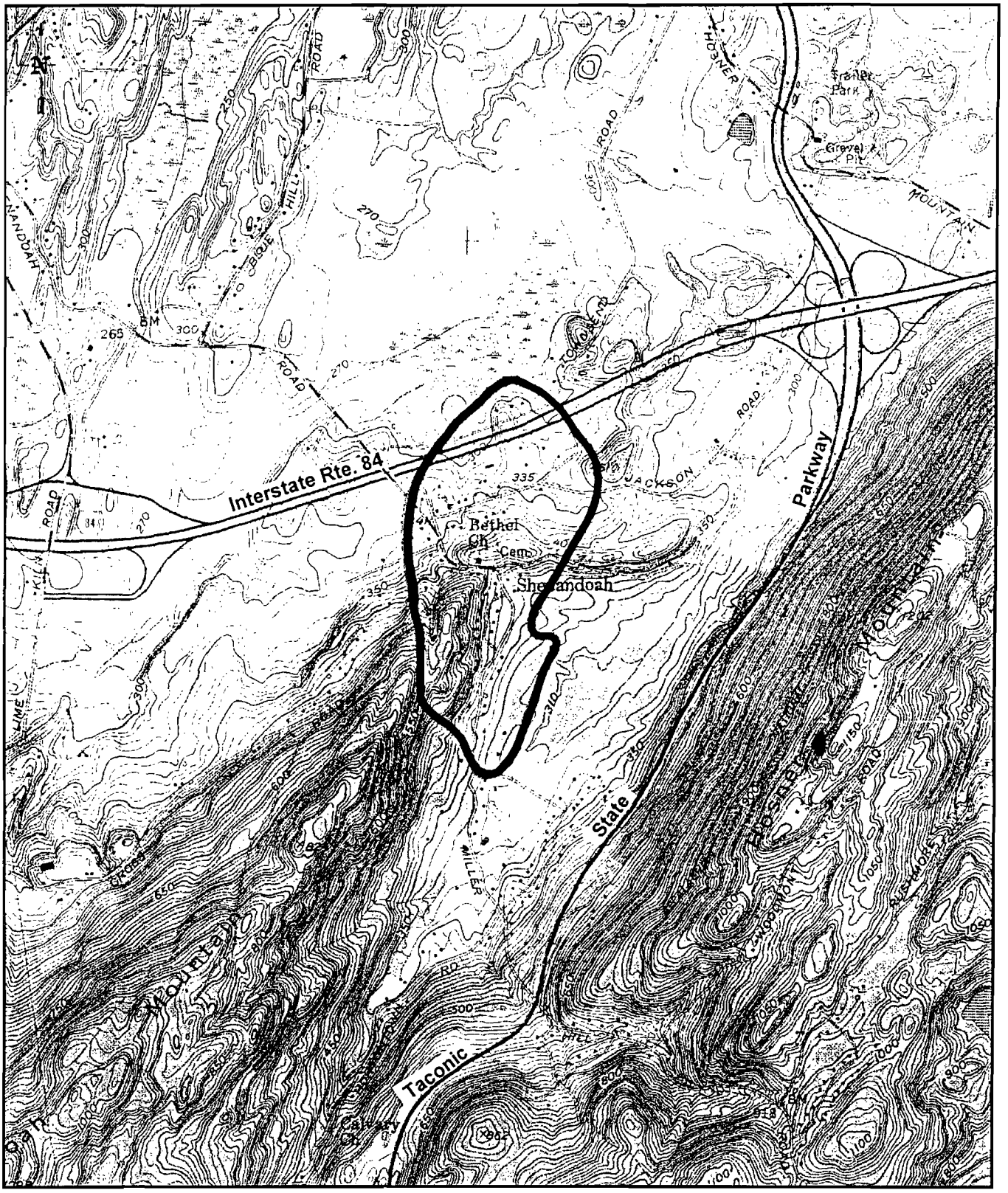
Please indicate your approval of the selected alternative for the non-time critical removal action, by signing below.

Approved: William McCabe **Date:** 8-23-04
George Pavlou
Division Director

Disapproved: _____ **Date:** _____
George Pavlou
Division Director

APPENDIX I

FIGURES



— Limit of Site Constituents Detected

Portion of the Hopewell Junction, NY
7.5-Minute NYSDOT Quadrangle

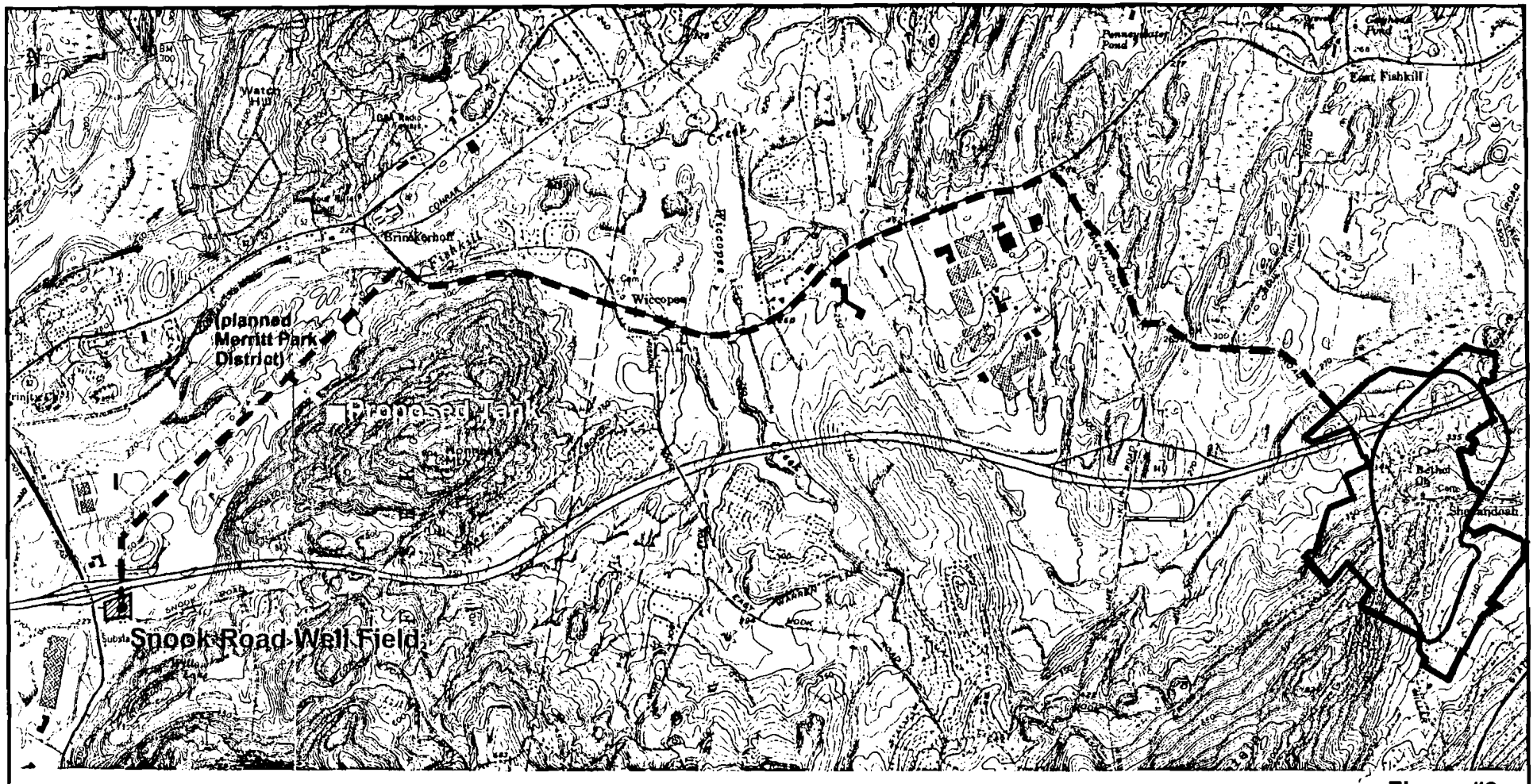
Figure #1

Shenandoah Road Groundwater Contamination Superfund Site

Scale
0 1000' 2000'

GROUNDWATER SCIENCES CORPORATION

21003-002-F4 / 07-28-03



– Transmission Piping Route
– Limit of Response Scope/Distribution System
– Limit of Site Constituents Detected
● – Water Supply Well

Approximate Scale
0 1000' 2000'

Figure #2

Shenandoah Road Groundwater Contamination Superfund Site
Potential Sources of Alternate Water Supply
Alternative 1: Town of Fishkill

GROUNDWATER SCIENCES CORPORATION

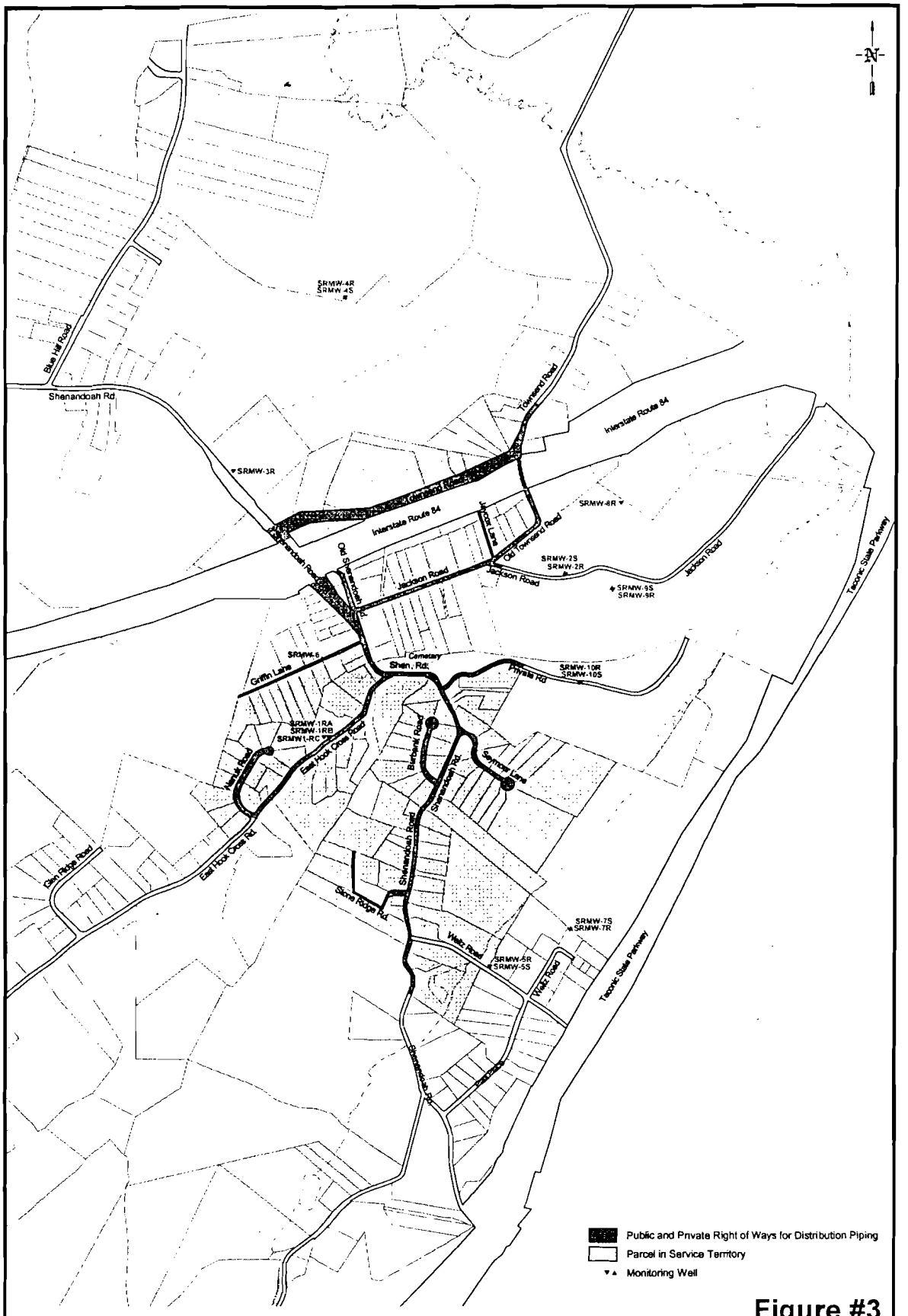


Figure #3

Shenandoah Road Groundwater Contamination Superfund Site
Potential Sources of Alternate Water Supply
Response Scope, Service Territory and Distribution System

Approximate Scale
0 500' 1000'

Parcels source: Geographic Information Systems Lab, Dutchess County Real Property Tax Service Agency, Poughkeepsie, NY; 5/98 (PROPERTIES NOT TO SCALE).

GROUNDWATER SCIENCES CORPORATION
21003-053-C8 / 07-31-03

APPENDIX II

TABLES

Table 1 Total Capital Cost - Town of Fishkill Alternative

Item	Description	Pay Unit	Unit Price	Est Qty	Total
1	8" Ductile Iron Pipe in Town or County Rd.	LF	$ 47.00	9,780.00	$ 459,660.00
2	8" Gate Valve in Town or County Rd.	Each	$ 1,100.00	12.00	$ 13,200.00
3	8" Ductile Iron Pipe in NYS Highway	LF	$ 62.00	10,800.00	$ 669,600.00
4	8" Gate Valve in NYS Highway	Each	$ 1,250.00	11.00	$ 13,750.00
5	Ductile Iron Specials	Ton	$ 3,000.00	7.00	$ 21,000.00
6	Pavement Restoration in Town or County Hwy.	SY	$ 20.00	7,855.00	$ 157,100.00
7	Pavement Restoration in NYS Highway	SY	$ 25.00	7,200.00	$ 180,000.00
8	Hydrant & Valve Assembly	Each	$ 2,900.00	30.00	$ 87,000.00
9	Rock Excavation	CY	$ 60.00	2,500.00	$ 150,000.00
10	Select Backfill	CY	$ 20.00	7,500.00	$ 150,000.00
11	Flowable Backfill	CY	$ 84.00	2,200.00	$ 184,800.00
12	NYS Highway Crossing in 24" Casing	Each	$ 60,000.00	2.00	$ 120,000.00
13	I-84 Highway Crossing in 24" Casing	Each	$ 90,000.00		$ 0
14	Air Release Valve & Chamber	Each	$ 7,000.00	2.00	$ 14,000.00
15	Major Creek Crossing	Each	$ 125,000.00	1.00	$ 125,000.00
16	Minor Creek or Stream Crossing	Each	$ 70,000.00	3.00	$ 210,000.00
17	Master Meter Chamber	Each	$ 85,000.00	1.00	$ 85,000.00
18	Maintenance & Protection of Traffic	Lump Sum			$ 110,000.00
19	Water Booster Station	Each	$ 210,000.00	1.00	$ 210,000.00
20	Capital Contr to Water System (1)	GPD	$ 5.32	80,000.00	$ 425,600.00
21	Water Supply Development				$ -
22	Land and Rights-of-Way				$ -
23	Sub-Total Construction				$ 3,385,710.00
24	Contingencies			5%	$ 170,000.00
	TOTAL CONSTRUCTION				$ 3,555,710.00
	All Indirect Costs -allowance			17%	$ 604,410.00
	Total Cost for Source & Transmission to SST				$ 4,160,120.00
	Water District Distribution - Table 2				$ 4,632,845.00
	TOTAL PROJECT COST				$ 8,792,965.00

(1) Reflects Contribution to Town of Fishkill for purchase of 80,000 gpd of capacity of Snook Road Well Supply

Table 2
Total Capital Cost
Water Distribution System - SRST

Item	Payment Unit	Unit Price	Estimated Quantity	Total
8 inch Ductile Iron Pipe	lin ft	$47.00	20000	$940,000.00
8 inch Gate Valve	each	$1,100.00	24	$26,400.00
D.I. Specials	tons	$3,000.00	6	$18,000.00
Hydrant & Valve Assbly	each	$2,900.00	40	$116,000.00
3/4 inch copper service	each	$1,400.00	150	$210,000.00
Pavement Restoration	sq. yds.	$20.00	13500	$270,000.00
Rock Excavation	cu. yds.	$60.00	2500	$150,000.00
Select Backfill	cu. yds.	$20.00	7500	$150,000.00
I-84 Crossing in Casing Pipe	each	$90,000.00	1	$90,000.00
150,000 gallon standpipe	each	$280,000.00	1	$280,000.00
Maintenance & Prot of Traffic	lump sum			$110,000.00
Individual Household Connections	each	$10,500.00	137	$1,438,500.00
Easements and Land	allowance			$80,000.00
Sub-Total Construction				$3,878,900.00
Contingencies			5%	$193,945.00
Total Construction				$4,072,845.00
Technical Services-Survey, Design	allowance		8%	$320,000.00
Construction Inspection	allowance		4%	$160,000.00
Permits and Admin	allowance		2%	$80,000.00
Total Cost				$4,632,845.00

Table 3

Operation and Maintenance Costs - Town of Fishkill Alternative

Item	Description	Costs
1	Bulk Water Purchase - 12 million gallons/year	$28,185.00
2	Electricity	$3,000.00
3	Insurance	$4,000.00
4	Part-Time Operator	$16,000.00
5	Benefits & Payroll Taxes	$8,000.00
6	Maintenance and Repair	$4,000.00
7	Analytical Testing	1,500.00
8	Bookkeeping & Administration	$4,000.00
	TOTAL ANNUAL COSTS	$68,685.00
	TOTAL PRESENT WORTH (30 years - O&M)	$1,187,701.00

Table 4

Implementation Schedule - Town of Fishkill Alternative

Tasks	Schedule of Completion
Survey and Base Mapping	4th Quarter - 2004
Preliminary Design	1st Quarter - 2005
Permit Applications/ARARs	1st Quarter - 2005
Final Design	2nd Quarter - 2005
Regulatory Approvals	2nd Quarter - 2005
Bidding and Contract Procurement	3rd Quarter - 2005
Construction	2nd Quarter - 2006
System Testing and operations	3rd Quarter - 2006
FINAL COMPLETION	3rd Quarter - 2006
Completion of Source Delivery	September - 2004

APPENDIX III

ADMINISTRATIVE RECORD INDEX

SHENANDOAH ROAD SITE
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

Document #: SR2.4001-2.4108
Title: Shenandoah Road Groundwater Contamination Superfund Site Alternate Water Supply Response Action Work Plan, Town of East Fishkill, Dutchess County, New York (Index Number CERCLA-02-2001-2020)
Category: Removal Response
Author: Groundwater Sciences Corporation, 2 Summit Court, Suite 204, Fishkill, New York 12525
Recipient: IBM Corporation, Corporate Environmental Affairs
Date: December 13, 2001

Document #: SR2.4109-2.4226
Title: Quality Assurance Project Plan
Category: Removal Response
Author: STL Newburgh, 315 Fullerton Avenue, Newburgh, NY 12550
Recipient: Groundwater Sciences Corporation, 2 Summit Court, Suite 204, Fishkill, New York 12525
Date: April 2, 2003

Document #: SR2.4227-2.4880
Title: Shenandoah Road Groundwater Contamination Superfund Site Alternate Water Supply Evaluation, Final Report
Category: Removal Response
Author: Groundwater Sciences Corporation, 2 Summit Court, Suite 204, Fishkill, New York 12525
Recipient: IBM Corporation; Corporate Environmental Affairs, Somers, New York 10589
Date: September 19, 2003

Document #: SR6.1001-6.1002
Title: State Concurrence with Potable Water Supply Alternative Recommended by EPA, Shenandoah Road Groundwater Contamination, Superfund Site, NYSDEC Site No. 3-14-104
Category: State Coordination
Author: Dale A. Desnoyers, Director, Division of Environmental Remediation, New York State Department of Environmental Conservation, Albany, New York 12233
Recipient: George Pavlou, Director, Emergency & Remedial Response Division, U. S. Environmental Protection Agency, Region II
Date: November 17, 2003

Document#: SR7.3001-7.3036
Title: Administrative Order on Consent For Removal Action, Index Number CERCLA-02-2001-2020
Category: Enforcement
Author: U.S. Environmental Protection Agency, Region II., New York, New York 10007
Recipient: Wayne S. Balta, Director of Corporate Environmental Affairs, International Business Machines Corporation
Date: May 10, 2001

Document #: SR7.3037-7.3040
Title: Re: Shenandoah Road Groundwater Contamination Site, East Fishkill, Dutchess County NY, Administrative Order on Consent, Index Number CERCLA-02-2001-2020, EPA letter of July 6, 2001
Category: Enforcement
Author: David J. Cartenuto, Office of the Associate General Counsel, IBM, Somers, New York 10589
Recipient: Virginia Capon, Esq., Chief: New York /Caribbean Superfund Section, Office of Regional Counsel, US Environmental Protection Agency, Region II, 290 Broadway, New York, NY 10007-1866
Date: July 20, 2001

Document #: SR7.3041-7.3044
Title: Re: Shenandoah Road Groundwater Contamination Superfund Site, East Fishkill, Dutchess County, NY, Administrative Order of Consent, Index Number CERCLA 02-2001-2020, IBM letter of July 20, 2001, Statement of Work, Alternate Supply Response Action.
Category: Enforcement
Author: David J. Cartenuto, Office of the Associate General Counsel, IBM, Somers, New York 10589
Recipient: Virginia Capon, Esq., Chief: New York /Caribbean Superfund Section, Office of Regional Counsel, US Environmental Protection Agency, Region II, 290 Broadway, New York, NY 10007-1866
Date: July 27, 2001

Document #: SR7.3045-7.3046
Title: Re: EPA approval of the Alternate Water Supply Response Action Statement of Work for the Shenandoah Road Groundwater Contamination Site, East Fishkill, NY, Administrative Order on Consent, Index Number CERCLA-02-2001-2020
Category: Enforcement
Author: John E. La Padula, P.E., Chief, New York Remediation Branch, Emergency and Remedial Response Division, U.S. Environmental Protection Agency, Region II, 290 Broadway, New York, NY 10007-1866
Recipient: Thomas D. Morris, SRGWCS Project Coordinator, International Business Machines Corp. Somers, NY 10589
Date: August 6, 2001

Document #: SR7.3047-7.3048
Title: Re: EPA Approval of the Alternate Water Response Action Work Plan for the Shenandoah Road Groundwater Contamination Site, East Fishkill, NY, Administrative Order on Consent, Index Number CERCLA-02-2001-2020
Category: Enforcement
Author: Doug Garbarini, Chief, Eastern New York Remediation Section, New York Remediation Branch, Emergency and Remedial Response Division, US EPA Region II, New York, New York 10007-1866
Recipient: Thomas D. Morris, SRGWCS Project Coordinator, International Business Machines Corp. Somers, NY 10589
Date: December 17, 2001

Document #: SR7.3049-7.3078
Title: Three-Party Agreement among IBM Corporation, Town of East Fishkill and Town of Fishkill
Category: Enforcement
Author: Edan Dionne, Director, Corporate Environmental Affairs, International Business Machines Corporation, Joan A. Pagones, Supervisor, Town of Fishkill, and Peter Idema, III, Supervisor, Town of East Fishkill
Recipient: None given
Date: January 2004

Document #: SR10.6001-10.6010
Title: Proposed Response Action, Shenandoah Road Groundwater Contamination Superfund Site, Town of East Fishkill, Dutchess County, New York, Superfund Program
Category: Public Participation
Author: US Environmental Protection Agency, Region II, New York, New York 10007-1866
Recipient: Public
Date: November 2003

Document #: SR11.2001-11.2002
Title: EPA Regional Guidance Document
Category: Technical Source and Guidance Documents
Author: US Environmental Protection Agency
Recipient: Public
Date: December 2003

APPENDIX IV

NYSDEC CONCURRENCE

New York State Department of Environmental Conservation
Division of Environmental Remediation, 12th Floor
625 Broadway, Albany, New York 12233-7011
Phone: (518) 402-9706 • **FAX:** (518) 402-9020
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

NOV 17 2003

Mr. George Pavlou, Director
Emergency & Remedial Response Division
U.S. Environmental Protection Agency
Region II
290 Broadway
New York, New York 10007-1866

Dear Mr. Pavlou:

RE: Shenandoah Road Groundwater Contamination
Superfund Site
NYSDEC Site No. 3-14-104

The New York State Department of Environmental Conservation (Department) has reviewed the Proposed Response Action Document for an Alternate Water Supply System prepared by the U.S. Environmental Protection Agency (EPA) for the Shenandoah Road Groundwater Contamination Superfund Site. Based on this review, all four alternatives considered by EPA are capable of providing a safe and dependable potable water supply to the residents of the Shenandoah Road area. Therefore, the Department concurs with the alternative recommended by EPA: Alternative 1, the Town of Fishkill Municipal Water Supply.

This concurrence is provided on a draft document and with short notice as we only received the Proposed Response Action Document on Thursday, November 6, 2003. In the future, please provide the Department sufficient time for review and response.

If you have any questions, you may contact Robert Schick, of my staff, at (518) 402-9662.

Sincerely,

Dale A. Desnoyers
Director
Division of Environmental Remediation

cc: G. Litwin, NYSDOH

APPENDIX V

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

Shenandoah Road Groundwater Contamination Superfund Site
Alternate Water Supply Preferred Alternative
Town of East Fishkill, Dutchess County, New York

INTRODUCTION

This responsiveness summary includes public comments and questions received during the public comment period (November 18, 2003 - December 18, 2003) for the United States Environmental Protection Agency's (EPA's) proposed non-time critical removal action at the Shenandoah Road Groundwater Contamination Superfund Site (Site), as well as EPA's responses to those comments and questions. Comments summarized in this document have been considered in EPA's final selection of the removal action at the Site.

As required under an Administrative Order, IBM, a potentially responsible party (PRP) for the Site, completed an Alternate Water Supply Evaluation Report (AWSER) for the Site. The AWSER discussed the various water supply alternatives that were considered. EPA, in conjunction with the New York State Department of Environmental Conservation (NYSDEC), subsequently issued a Proposed Response Action Document (PRAD) which identified its preferred alternative. The AWSER and the PRAD together are classified as the Engineering Evaluation/Cost Analysis (EE/CA) for this non-time critical removal action.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

Community involvement at the Site has been high. The key issues of concern centered around the contamination of private wells in the Shenandoah Road area.

On June 5, 2000, EPA received a request from the New York State Department of Environmental Conservation (NYSDEC) to perform an appropriate emergency response action at the Site under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. Sections 9601-9675. EPA determined that a sufficient planning period existed before Site activities for this portion of the response, *i.e.*, an alternate water supply source had to be initiated. Accordingly, as stated above, this action is being conducted as an non-time critical removal action.

On November 18, 2003, a public notice was published in the Poughkeepsie Journal. The public notice announced the release and availability of the AWSER and EPA's PRAD, as well as the holding of a public availability session and a public meeting.

On November 20, 2003, EPA participated in the public availability session in the afternoon. At this session, EPA, IBM and its technical consultants answered questions about the various water supply alternatives. In the evening, EPA conducted a public meeting with NYSDEC to further discuss the AWSER and the PRAD, which identified EPA's preferred water supply alternative. At this meeting, EPA also explained that the Agency would prepare a final response action document setting forth EPA's final water supply response action.

The repository for Site-related documents is established at the East Fishkill Community Library, 348 Route 376, Hopewell Junction, New York.

This responsiveness summary documents EPA's response to those comments and questions raised during the public comment period.

Attached to the Responsiveness Summary are the following Appendices:

Appendix A - Proposed Response Action Document
Appendix B - Public Notice, published in the Poughkeepsie Journal on November 18, 2003
Appendix C - November 20, 2003 Public Availability Session and Public Meeting Attendance Sheets
Appendix D - Letters and E-mails Submitted During the Public Comment Period

OVERVIEW OF PUBLIC'S REACTION TO EPA'S PREFERRED REMEDY

EPA received numerous comments on the PRAD and the AWSER during the public comment period. Public comments received generally supported the Agency's preferred alternative of the Town of Fishkill Water Supply although some concern was raised about the continued quality of the proposed supply.

SUMMARY OF COMMENTS AND EPA RESPONSES

Comments were expressed at the public meeting, and written comments were received during the public comment period.

The comments have been categorized as follows:

A. Response Action Issues (Water Supply and Water Consumption)
B. Technical Issues
C. Water Quality Issues

A summary of the comments and EPA's responses to the comments is provided below:

Response Action Issues

Comment #1: How much water is currently being consumed by the Shenandoah Road area residents?

Response #1: Based on the latest quarterly water consumption information gathered from quarterly monitoring and sampling conducted by IBM at those affected Shenandoah Road Service Territory (SRST) residences that are served by point-of-entry treatment (POET) systems, approximately 15,800 gallons of water are used per quarter per family. Adapting this figure to the existing SRST community of roughly 150 properties, the anticipated SRST water usage will be approximately 26,000 gallons per day.

Also, the AWSER presented that the average daily demand required for the SRST is approximately 80,000 gallons per day, which is the water quantity allocated to the Town of Fishkill for the SRST under the three-party agreement. The three-party agreement is further discussed in Comments/Responses #15, #22 and #28. The average per capita water usage can vary considerably from residence to residence. The national average per capita water usage rate is 80 gallons per day.

Comment #2: What will be the monthly cost of water?

Response #2: Using the anticipated water usage for the SRST of 26,000 gallons per day and the estimated water costs for the selected alternative of $5.70 per 1000 gallons used, the monthly water bill for the SRST residents can be approximated to be about $30 per residence. The average water costs for some of the water districts managed by the Town of East Fishkill range from approximately $1.80 to $4.45 per 1000 gallons used. Under the current water usage rates, the yearly water bills range from $150 to $370 per year. As further discussed below in Comments/Responses #4 and #8, it is likely that the actual cost of water to the SRST residents will be lower than estimated.

Comment #3: Who will set the water rates?

Response #3: The Town of East Fishkill will set the water rates for the SRST customers.

Comment #4: Why will the residents pay water bills?

Response #4: EPA does not pay residents' water bills. Also, EPA does not order PRPs to pay residents' water bills. EPA expects IBM to perform or provide for any necessary operations and maintenance (O&M) of the physical infrastructure associated with the provision of drinking water to the homes in the SRST until

the groundwater is safe to drink again. IBM's action with respect to the O&M of the project will not, however, eliminate the need for water bills. Water bills will still be issued to the residents.

The residents will receive certain other benefits from being on a public water supply system, including not having to pay for the testing and maintenance of their wells, the replacement of pumps and other appurtenances and the electricity usage associated with the operation of the pump. Also, water hydrants for fire protection will be installed at key locations throughout the SRST area.

Comment #5: What is the annual cost for the water supply system? What is the nature of the items in those costs?

Response #5: The detailed cost analysis for the selected alternative is contained in the AWSER. The estimated overall capital cost for the project is approximately $8.8 million; the O&M cost is approximately $69,000 per year; and the total present worth cost is approximately $10 million. The capital cost includes, but is not limited to, those costs associated with installing transmission and distributions lines, including rights-of-way for excavation. Various related expenditures are associated with the following: piping, valves, easements, excavation, paving, etc. The O&M costs include bulk water purchase, electricity, insurance, operators' salaries, maintenance and repair, testing, etc.

Comment #6: Why will the East Fishkill residents of the SRST have a higher water bill than the Town of Fishkill residents?

Response #6: Water rates in the various towns vary considerably, since each town may have different administrative and capital expenditures associated with the supply of public water. The Town of East Fishkill will determine the water rates to the residents of the SRST.

Comment #7: What is the cost of water to the residents of the Village of Fishkill and the Town of Fishkill?

Response #7: According to the information provided by the communities, water rates are determined by usage. In some instances, flat rates may be charged on a case-by-case basis. After reviewing some of the water rates in communities within Dutchess County, including the Village of Fishkill and the Town of Fishkill, water rates can vary from $20 to $50 per quarter per residence.

Comment #8: Who will pay for the O&M of the water supply system?

Response #8: EPA expects IBM to perform or provide for the O&M of the water supply system until the groundwater cleanup goals have been achieved. The exact arrangement of what O&M activities IBM will be responsible for has yet to be determined; these could include pump or valve repair or replacement or pipeline repair or replacement. EPA expects that this arrangement will be finalized before the water supply system installation has been completed. With the potential reduction in the O&M costs for the Town of East Fishkill, there may be some reduction in the overall cost of water supplied to the SRST consumer.

Technical Issues

Comment #9: Why was the Four Seasons water supply alterative eliminated?

Response #9: After further investigation of this alternative, it was determined that the existing capacity of the system would not have served the necessary water supply requirements of the SRST. Also, no future water well development information from the Four Seasons Corporation was available for further consideration as a viable water supply.

Comment #10: What will be the back-up source of water for the selected alternative?

Response #10: The Town of Fishkill selected alternative will include two separate drinking water wells, as part of its operations. Under municipal requirements, municipal water supplies are required to have two supply wells to ensure that a safe water will be distributed uninterrupted to the SRST community in case one well has to be taken out of service.

Comment #11: Will the residents be able to use their existing wells? Are there any restrictions or regulations through local ordinances to prevent the use of multiple water supplies at residences?

Response #11: The Town of East Fishkill does not require mandatory connection to an available public water supply system.

However, according to Section 186-21 of the Municipal Code of the Town of East Fishkill:

"A. If an owner has any source of water other than from the municipal public water system, such source will be considered nonpotable. Before making any service connection between the municipal public water supply and a consumer's premises, it is required that all connections between individual wells or other outside sources of water supply physically be disconnected from

the consumer's plumbing fixtures, which are connected to the municipal potable water supply."

"B. All owners of property within the confines of a municipal water district shall not use nonpotable water as a source of water supply for any purpose. Nonpotable water is defined as any source of water other than from a municipally owned water system."

Disconnecting the private residential wells within the SRST will be addressed during the development of the SRST water district by the Town of East Fishkill and the Dutchess County Department of Health.

Comment #12: What is the proposed conceptual route to bring water from New York State Route 52 to the SRST?

Response #12: As per the transmission route identified in the AWSER for the Town of Fishkill alternative, the transmission line would extend east from the Town of Fishkill border along the Route 52 right-of-way to a location where it would connect with Shenandoah Road. The line would then travel along the Shenandoah Road right-of-way to the SRST community. The distribution lines would then follow the various streets and roads within the SRST community, including Burbank Road, Seymour Lane and others. IBM will be responsible for the design and construction of the transmission pipeline along Route 52 from the location where it picks up the Town of Fishkill Snook Road Well Field water supply.

Comment #13: When will soil sampling occur?

Response #13: The original removal action, conducted at the former operating facility at 7 East Hook Cross Road, included confirmatory soil sampling which indicated that contaminated soils were remediated and removed off-site. Since the former operations building was removed and clean soils were used as fill in the excavated areas, there is no indication that further soil contamination has occurred at the East Hook Cross Road location.

During the remedial investigation/feasibility study (RI/FS) phase of the project (to be conducted over the next two years or so), there will be some soil sampling conducted during the drilling and installation of new monitoring wells in order to characterize the geologic formations in the area.

Comment #14: Will some of the compounds, *i.e.*, manganese and iron, that were shown to be in some of the water supply sources presented in the AWSER cause damage or leaching to galvanized piping?

Response #14: The preferred alternative does not show any issue with the compounds identified and, as such, should not affect piping and residential water piping in the SRST. If, at some time in the future, these compounds become an issue, appropriate actions would be taken by the water district to alleviate them.

Comment #15: Will we receive uninterrupted water during a blackout?

Response #15: The Town of Fishkill's production wells are serviced by emergency generators which would start up at any power shortage. Also, the storage holding tank has enough capacity to handle a limited period of daily demand. To date, the Town of Fishkill residents have not been without water during some of the recent blackouts.

Please note that a three-party agreement among the Town of East Fishkill, Town of Fishkill and IBM has been recently executed to ensure that sufficient capacity will be available to the SRST residents. This agreement contains a section on Water Emergency Procedures.

Comment #16: Can the SRST residents have multiple supplies in their homes?

Response #16: Each household is permitted only one connection to the new water supply system. As indicated in Response #11 above (Section 186-21 of East Fishkill's municipal code), before any service connection between the municipal public water supply and a consumer's premises can be made, it is required that all connections between individual wells or other outside sources of water supply physically be disconnected from the consumer's plumbing fixtures.

Comment #17: Are there any assurances to SRST homeowners that future properties will be prevented from using the public water supply?

Response #17: As water purveyors, the Town of East Fishkill is responsible for ensuring that sufficient water capacity is available for the SRST. Any additional capacity that it may need for future development must be above and beyond that dedicated to the SRST.

The SRST water supply capacity, as reserved by IBM from the Town of Fishkill, is to be used solely for the SRST residents. This reserved capacity cannot be used for future development outside of the affected SRST area unless those properties are found to be affected by Site-related contaminants.

Comment #18: What are the two alternative water supply sites located on Route 376? Who owns the property there? How were these locations selected?

Response #18: The two water supply alternatives on the large parcel of property on Route 376 are two separate and distinct potential production well fields. During the alternate water supply source investigation process, the Route 376 property was divided into two separate areas (one at the north end of the property and one at the south end). The two sites represent two unique water supply alternatives, as presented in the AWSER. The entire property is currently owned by the Proust family. These potential well development areas were identified, investigated and developed by IBM's contractor, Groundwater Sciences Corporation, in order to expand the AWSER water supply alternative list for the SRST area, as required in EPA's Administrative Order on Consent for Removal Action (CERCLA-022001-2020).

Comment #19: Can the community reject the four alternatives and demand a community water system from Honness Mountain Road?

Response #19: If the community, as a whole, provided a technical rationale as to why the preferred alternative was not suitable as a water supply, then there may be cause to pursue other potential water supply alternatives. The Honness Mountain area has not been investigated as a water source, hence, EPA does not have information about its viability as a water source.

The four alternatives presented in the AWSER represent the most feasible and available sources of safe public water supply for the SRST area. Also, a number of other alternatives were given a very thorough investigation. The final four, as presented in the AWSER, represent the best available alternate water sources, with respect to quality and quantity, for the SRST. These represent the only alternatives that were found to be viable as clean water sources for the SRST community. Since a preferred alternative was found to be suitable by EPA and NYSDEC for the SRST, there is no reason to pursue other water supply venues.

EPA has neither qualitative nor quantitative information that a water supply from the Honness Mountain region would be suitable as a water supply for the SRST.

Please note that, after EPA and New York State reviewed the water supply alternatives, the Town of Fishkill water supply source, *i.e.*, the Snook Road Well Field, is the most cost-effective for the SRST. As stated above, the quality of the water to be supplied by the Snook Road Well Field complies with Federal and State drinking water standards.

Comment #20: Why was the Dutchess County Pipeline Alternative not selected as the preferred alternative?

Response #20: While this project is in the engineering design phase, EPA did not choose this alternative, since it requires the construction of a 13-mile water transmission line before any water would be able to reach the Town of East Fishkill and the SRST community. Since this transmission line is a major component of this alternative, the sheer scope of the project may create additional uncertainty regarding the estimated time for completion of its construction, as compared to the selected alternative.

Comment #21: Would the Meadow Creek Corporate Park be able to connect into the SRST water supply?

Response #21: Under the 3-party agreement, the Town of East Fishkill must use the capacity reserved by IBM for the water supply needs of the SRST. The Town of East Fishkill may secure additional quantities of water, above and beyond the reserved capacity, to service other users such as the proposed the Meadow Creek Corporate Park or any other future development.

Comment #22: Do the existing well fields used by the IBM East Fishkill Facility have any effect on the Town of Fishkill alternative?

Response #22: The three existing production well fields (the Main Plant Well Field, the Railroad Spur Well Field and the Wiccopee Well Field) used by the IBM East Fishkill facility are separate and distinct from the Snook Road Well Field, the Town of Fishkill water supply alternative. These well fields are approximately two to three miles away and are located in two different towns. The water transmission line for the Town of Fishkill alternative will travel directly past these well fields but will not be connected to them.

There was also some public concern that water from these well fields may be commingled with the water that would be supplied to the SRST from the Town of Fishkill. This action is not included in the three-party agreement and will not occur. As stated in the AWSER, since the IBM well fields have insufficient capacity to handle the future needs of the IBM facility itself, they were ruled out as a potential alternate water supply source for the SRST. The Dutchess County Pipeline alternative is being developed specifically to handle the increased usage requirements for the IBM Facility.

Comment #23: Please expand on the risk assessment discussion.

Response #23: A baseline risk assessment, which will evaluate carcinogenic and noncarcinogenic risks of the various volatile organic compounds (VOCs) found in the soils and groundwater, will be performed during the remedial investigation phase of the project. This effort would include evaluating the

various exposure pathways considered during a risk assessment, including inhalation, ingestion and dermal exposure, for the VOC contaminants of concern at the Site.

Comment #24: Who pays for the 150,000-gallon water storage tank? Where will it be built? What will it look like?

Response #24: The water storage tank is a necessary part of the water supply system in that it will provide the water supply reserve during peak usage.

IBM will construct the water storage tank and connect it to the various transmission lines. The exact location of the tank remains to be determined. It will be a standard configuration, with estimated dimensions of 40 feet in height and 25 feet in diameter. The exact location of this tank will be determined during the design phase of the project. EPA will consider the SRST community's input to ensure that the tank is built in an acceptable location within the SRST.

Comment #25: Why is IBM not pursuing further investigation of the Shenandoah Road area?

Response #25: As stated above, IBM will continue to perform the RI/FS phase of the project, which will determine the full nature and extent of groundwater contamination at the Site. This process will include installing new monitoring wells, as well as sampling the soil gas, air, surface water and groundwater.

Comment #26: Will there be property tax increases?

Response #26: Since IBM is funding the entire construction and installation of the water supply system for the SRST, EPA does not believe that there would be any impacts to existing tax structures related to the installation of this water supply project.

Any property tax increase that may be directly related to the increase in value of a property after it is connected to a public water supply service would be better addressed by the Town of East Fishkill.

Comment #27: Will IBM maintain the POET systems that are currently installed at the affected SRST residences if any resident does not hook up to the new water supply system?

Response #27: Once the permanent water service is in place and supplying each home, the POET system for that home would be dismantled and removed. IBM would not be required to continue maintaining any remaining POET systems for those

homeowners who decide not to connect to the public water supply system. Any continued maintenance of remaining POET systems would be the responsibility of the homeowner. However, as stated in Response #11 above, the Town of East Fishkill Municipal Code states that if an owner has any source of water other than from the municipal public water system, such source will be considered nonpotable. Before making any service connection between the municipal public water supply and a consumer's premises, it is required that all connections between individual wells or other outside sources of water supply physically be disconnected from the consumer's plumbing fixtures, which are connected to the municipal potable water supply.

Comment #28: How long will the three-party agreement be in effect? Does this agreement require New York State approval?

Response #28: The Town of East Fishkill, the Town of Fishkill and IBM prepared the three-party agreement to remain in place for a period of forty years. According to the agreement, "the Town of East Fishkill shall have the right and option to extend the Agreement for successive 10-year terms..." This agreement does not require New York State approval prior to its implementation. The agreement has been executed and is in place. A copy of the agreement is included in the Administrative Record for the alternate water supply.

Comment #29: Who will pay for the installation of the water lines and the restoration of the streets and roads?

Response #29: IBM will be financially responsible for the completion of the water supply project, which would include the installation of water transmission lines from the boundary of the Town of Fishkill and the Town of East Fishkill and the distribution lines within the SRST, as well as the restoration to original or improved conditions of those rights-of-way, *i.e.*, street and roads, which will be used as the routes for the installation of the piping. EPA will ensure that IBM and its contractors comply with any local ordinances and communicate with local agencies to make sure that the construction and installation activities are conducted in a safe and reliable manner.

Water Quality Issues

Comment #30: Why is there no mention made about the expansion of the Southern Duchess Sand and Gravel Mining operations and the effect it would have on the underlying aquifer?

Response #30: The Town of Fishkill provided EPA with its technical evaluation of the effect that the mining operations may have on the Snook Road Well Field which is

located more than one-and-one-half miles from the mining operations. Data from extensive pumping tests of the proposed water supply wells at the Snook Road Well Field indicate that the zone of influence or recharge area to those proposed wells does not include the sand and gravel aquifer underlying Clove Creek in the vicinity of the mining operations. The Snook Road Well Field lies in the Sprout Creek-Fishkill Creek aquifer. Data also indicate that the discharge of storm water at the mining operations will not impact the quality of the proposed Snook Road Well Field. Based on a review of the information supplied by the Town of Fishkill, EPA concurs with this assessment and believes that the operation of the mining site would not have an effect on the Snook Road Well Field.

Comment #31: Is there any concern over high levels of manganese in the proposed water supply?

Response #31: No, the water quality of the Town of Fishkill alternative shows non-detectable levels of manganese. The Federal and State secondary standards for manganese are intended to prevent potential aesthetic problems, such as poor taste, odor and staining of plumbing fixtures, rather than adverse health impacts.

Comment #32: Will the Clove Creek Aquifer be protected?

Response #32: As stated above in Response #30 above, data from extensive pumping tests of the proposed water supply wells at the Snook Road Well Field indicate that the zone of influence or recharge area to those proposed wells does not include the sand and gravel aquifer underlying Clove Creek. The local water supply authorities drawing potable water from the Clove Creek aquifer would be responsible for ensuring that the source of that drinking water is protected.

Comment #33: Will the historical nature of the Snook Road Well Field area be preserved?

Response #33: Appropriate steps will be taken to ensure that actions taken during the construction of the water supply system comply with any historical preservation requirements, as identified in the National Historical Preservation Act.

Comment #34: What provisions have been established for compensation or treatment for future healthcare issues that may arise as a result of drinking contaminated water prior to the installation of the POET systems?

Response #34: At the present time, no health studies are proposed for the SRST. Any health concerns should be directed to the Duchess County Health Department, the

New York State Department of Health or the Federal Agency for Toxic Substances and Disease Registry. There are no provisions under the Superfund law to provide for any compensation resulting from potential past exposure to groundwater contamination.

Comment #35: Where are the results of the 1987 residential well testing?

Response #35: This residential well testing was performed in relation to IBM's East Fishkill facility and is not associated with the Site. Since these data were not Site-related, EPA did not use these data in its pre-remedial investigation and evaluation of the Site to develop the hazard ranking for proposed listing on the Superfund National Priorities List (NPL). The Site was listed on the NPL on June 14, 2001. EPA suggests contacting IBM for these historical data.

Comment #36: When the groundwater is fully restored, the public should be given a choice between a public supply and a private supply.

Response #36: The restoration of the groundwater to below Federal and State maximum contaminant levels will probably be a lengthy process. As such, it may take up to 30 or 40 years before any private well in the SRST area may produce safe drinking water without treatment. If and when that occurs, any connection to private wells or the installation of new private wells would have to be addressed at the local level with the Town of East Fishkill.

In order to provide the SRST residents with a safe drinking water supply, it is necessary to install a public water supply system now to ensure the protection of public health.

Comment #37: What is the quality of the water that will be supplied to the SRST residents? In particular, there are concerns about how chlorine may affect aquarium life.

Response #37: The water quality supplied to the SRST will comply with Federal and State drinking water standards. Chlorination is a necessary part of the public water supply process in order to ensure that bacterial contamination does not reach the consumer. With respect to the residual chlorine content of the water, EPA recommends that the homeowner secure technical advice from aquarium-life specialists on the best way to maintain a healthy aquatic environment for the various plant and animal species associated with an aquarium.

Comment #38: There was some public concern expressed about the commingling of drinking water from different well fields or other water supplies within the transmission lines that would supply water to the SRST.

Response #38: According to the Town of Fishkill, the water supply area associated with the Snook Road Well Field will be known as the Snook Road Water Improvement Area #1. The transmission line from this well field will be a newly constructed 12" water main. This line will be installed by the Toll Brothers, a private developer and contractor and will run along Merritt Boulevard to a location on NYS Route 52. At this location on NYS Route 52, IBM will pick up the construction work to install a transmission line from that point to the SRST. As stated previously, an allocation of 80,000 gal/day from this water supply has been assigned to the Town of East Fishkill to service the SRST.

With respect to additional potential water sources, the Town of Fishkill currently has no agreement nor any definitive plans to obtain water from the Village of Fishkill (within the Town of Fishkill) water supplies which draws water from the Clove-Creek Aquifer. The new Snook Road Well Field water supply facilities are being constructed in such a manner as to facilitate a potential connection at such time as an acceptable agreement may be reached between the two communities.

The Town of Fishkill does have definitive plans to ultimately interconnect the facilities of the Snook Road Water Improvement Area #1 with the facilities of the Town of Fishkill Brinkerhoff Water District. This interconnection would, thereby, allow a commingling of water from the Snook Road Well Field with that of the Brinkerhoff Well Field. This operation would permit better well field management, increase overall system efficiency and capacity and continue to provide a safe and sufficient water supply to the SRST.

All public water supplied to the SRST community would meet Federal and State drinking water standards.

Appendix A

Proposed Response Action Document

Shenandoah Road Groundwater Contamination Superfund Site

Town of East Fishkill, Dutchess County, New York

EPA
Region 2

November 2003

MARK YOUR CALENDAR

November 14 - December 15, 2003: Public comment period for the Alternate Water Supply Evaluation Report and this Proposed Response Action Document.

November 20, 2003
Public Information Session:
3:00-5:00 PM
Public Forum: **7:00-9:00 PM**
Location: Fire District Administration Building
2502 NYS Route #52
Hopewell Junction, NY 12533

COMMUNITY ROLE IN RESPONSE SELECTION PROCESS

EPA relies on public input to ensure that the concerns of the community are considered in selecting an effective response action for each Superfund site. To this end, the Alternate Water Supply Evaluation Report (AWSER) and this Proposed Response Action Document (PRAD) have been made available to the public for a 30-day public comment period, as described above.

At the above-referenced public forum, EPA will present the conclusions of the AWSER in order to further elaborate on the reasons for recommending the preferred response action and to receive public comments.

PURPOSE OF THIS DOCUMENT

This Proposed Response Action Document (PRAD) describes the water supply alternatives (response actions) that were considered for the Shenandoah Road Groundwater Contamination Superfund site (Site) and identifies the preferred response action with the rationale for this preference. The Site includes homes whose drinking water wells are contaminated with volatile organic compounds. The water supply alternatives describe different options for providing potable water by waterline to the affected homes. EPA's preferred response action is to use the Town of Fishkill Municipal Water Supply as the permanent potable water source for the homes impacted at the Site.

This document was developed by the United States Environmental Protection Agency (EPA), in consultation with the New York State Department of Environmental Conservation (NYSDEC). EPA is issuing this document as part of its public participation responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

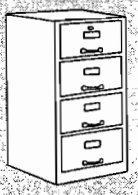
The water supply alternatives summarized here are described in more detail in the Alternate Water Supply Evaluation Report (AWSER). This report, together with this PRAD, represents the Engineering Evaluation/Cost Analysis which EPA has used to identify its preferred response action. EPA and NYSDEC encourage the public to review the AWSER to gain a more comprehensive understanding of the Site and EPA's preferred response action.

This PRAD is being provided as a supplement to the AWSER to inform the public of EPA and NYSDEC's preferred response action and to solicit public comments pertaining to all the alternatives evaluated, as well as the preferred response action. The proposed action is formally referred to as a non-time critical removal action.

Changes to the preferred response action or a change from the preferred response action to another response action may be made if public comments or additional data indicate that such a change will result in a more appropriate response action.

The final decision regarding the selected response action will be made after EPA has taken into consideration all public comments. EPA is soliciting public comment on all of the water supply alternatives considered in the detailed analysis of the AWSER, since EPA and NYSDEC may select a response action other than the preferred response action, based on overall public input.

The Administrative Record file, which contains the information upon which the selection of the response action will be based, is available at the following locations:



East Fishkill Community Library
348 Route 376
Hopewell Junction, NY 12533

Hours: Mon-Thurs: 10:00 AM - 8:00 PM
Fri: 10:00 AM - 6:00 PM
Sat: 10:00 - 5:00 PM

EPA-Region II
Superfund Records Center
290 Broadway, 18th Floor
New York, NY 10007-1866
(212) 637-4308

Hours: Mon-Fri: 9:00 AM - 5:00 PM

Comments received at the public meeting, including written comments and responses thereto, will be documented as part of EPA's decision document, which is identified as an Action Memorandum, and will formalize the selection of the response action.

Written comments on this document should be addressed to:

Damian Duda, Remedial Project Manager
United States Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866
Telephone: (212) 637-4269
Telefax: (212) 637-3966
E-mail: duda.damian@epa.gov

SITE BACKGROUND

Site Description

The Site (see Figure 1) is located within the Town of East Fishkill, Dutchess County in an area known as Shenandoah, approximately one mile southwest of the intersection of Interstate 84 and the Taconic State Parkway and one-and-one-half miles southeast of the Hudson Valley Research Park. The Site is in a rural area consisting of residential subdivisions intermingled with extensive farmland and patches of woodlands. The topography is dominated by a northeast/southwest trending valley and ridge complex. The homes in the area use private wells for potable water supply and septic systems for sanitary wastewater disposal. There are currently no water mains in the vicinity of the Site.

Residential well sampling conducted at the Site by the New York State Department of Health (NYSDOH) in April and May of 2000 indicated that a number of residential wells were contaminated with the volatile organic compound (VOC) tetrachloroethene (PCE) above the Federal and New York State Maximum Contaminant Level (MCL) of 5 parts per billion (ppb). One well was also found to be contaminated with trichloroethene (TCE) above the MCL of 5 ppb. PCE is the main contaminant of concern at the Site. Contaminated residential wells are located on Shenandoah Road, Old Shenandoah Road, Seymour Lane, Burbank Road, Jackson Road, Townsend Road, Old Townsend Road, Jaycox Lane, Stone Ridge Lane and East Hook Cross Road. Groundwater is the primary source of drinking water in the area.

Site History

Information obtained by EPA and NYSDEC indicates that, between approximately 1965 and 1975, a parcel of property (the Facility), located at 7 East Hook Cross Road in East Fishkill, was used by Jack Manne, Inc. to clean and repair computer chip racks. Available information indicates that during these operations, solvents, including PCE, and metals, including lead, were disposed of in a septic tank and an in-ground pit located at the Facility. Additionally, nitric and sulfuric acid wastes were reportedly disposed of in the pit at the Facility.

In the Fall of 2000, EPA and NYSDEC determined that the probable source of the PCE contamination in the nearby residential wells was linked to historical operations at the Facility. As described later in this PRAD, the processing building at the Facility was demolished and underlying contaminated soil was removed. After completion of the excavation activities, the property was restored to grade with clean fill and was vegetated.

Site Geology/Hydrogeology

The hydrogeology underlying the Site is quite complex, including unconsolidated glacial deposits that overlie complexly folded, highly fractured and weathered dolostones (valleys) and up-thrusted fault blocks of the gneissic basement rock (ridges). The heterogeneous glacial overburden deposits range from zero to 100 feet thick and include tills, glacial fluvial deposits and glacial lacustrine deposits. The overburden and the bedrock aquifers represent two distinct aquifer systems in the East Fishkill area. The valley is underlain by as much as 30 to 40 feet of glacial till with frequently encountered dolostone. A local groundwater flow zone underlying the Site most likely extends northward from the Facility in the direction of East Hook Cross Road. Groundwater elevations measured in the water supply well for the Facility suggest that the groundwater elevation in the underlying bedrock is lower than the groundwater

elevation in the saturated till zone, surrounding the Facility, indicates a downward gradient beneath the Facility. Based on the pattern of PCE occurrences and the magnitude of those occurrences, the preferred direction of groundwater flow away from the Facility has been to the north in the direction of a large wetland north of Townsend Road and east of Shenandoah Road. The highest concentrations in residential wells due east of the Facility suggest that the groundwater flow through the ridge system has also been significant. Detection of PCE in residential wells south of the Facility suggests that groundwater flows southward towards the unnamed stream between Shenandoah and Hosner mountains.

Site Characterization and Response

In June 2000, following the discovery of the contaminated residential wells, EPA initiated an emergency response action at the Site and began delivery of bottled water to the affected residences. Of the then 60 known contaminated residential wells, 20 had contamination exceeding the removal action level (RAL) for PCE. Under the Superfund Program, if any contaminant concentration exceeds its RAL, EPA is authorized to take immediate, short-term action to address that contamination. As a result, point of entry treatment (POET) systems were installed by EPA in those homes with contaminated wells at or above RALs to ensure a safe supply of water. POET systems include a cartridge particulate filter, two granular activated carbon tanks and an ultraviolet light. These actions were taken to protect the health of the public until a more permanent solution could be implemented. To date, 105 POET systems are operating in the Site community.

In November and early December 2000, EPA excavated the septic tank associated with the Facility at 7 East Hook Cross Road and removed its contents for transportation and off-site treatment and disposal. At this time, EPA also excavated contaminated soils associated with the septic tank and temporarily stockpiled the soils on Site. Based on field screening results and post-excavation soil sampling results collected by EPA, it was evident that high levels of PCE still remained in the soil beneath the Facility. As a result, it was necessary for EPA to demolish the process building at the Facility prior to excavation of the underlying contaminated soil. During excavation of the contaminated soil associated with the former septic tank, two additional PCE disposal areas were discovered. Approximately 4,800 tons of contaminated soil associated with the former septic tank and the two PCE disposal areas were staged at the Site until August 2001.

In May 2001, an Administrative Order on Consent (AOC) for Removal Action was executed between IBM and EPA. Under the removal AOC, IBM, a potentially responsible party (PRP) for the Site, assumed responsibility for the completion of the soil removal action started by EPA and maintenance of the POET systems. Additional response actions by IBM under the terms of the AOC include evaluation of alternate water supply sources, construction of the EPA-selected response action and initial groundwater investigations to enhance the understanding of groundwater conditions in and around the Site.

In August 2001, IBM removed the stockpiled PCE contaminated soil from the Site and transported it for appropriate off-site treatment and disposal. In August 2001, EPA discovered a buried "acid pit" directly south of the former operations building. Field sampling results revealed high concentrations of PCE in the soil surrounding the acid pit. IBM, under EPA supervision, completed the excavation of the contaminated soil in January 2002 and sent approximately 2,000 tons of contaminated soil off-site for disposal.

In an EPA-approved Statement of Work, IBM agreed to evaluate various alternatives in order to provide a safe, alternate drinking water supply to the Site. In December 2001, EPA approved the final Alternate Water Supply Response Action Work Plan which called for the evaluation of six different water supply alternatives. An examination of these and other alternatives were included in the AWSER. This PRAD addresses the four alternatives which were deemed implementable in the AWSER.

Currently, IBM, with EPA oversight, samples, monitors and maintains the POET systems at the Site on a quarterly basis.

SUMMARY OF SITE RISKS

The levels of PCE found in numerous residential drinking water wells at the Site exceed EPA's MCL and RAL for PCE. This presents an unacceptable risk to the users of those wells. There is also a potential risk that additional residential wells in this area may be impacted above the MCL and/or RAL for PCE as the groundwater contaminant plume migrates.

The installation of an alternate water supply will eliminate the potential for ingestion exposure from hazardous substances in the private water supply wells on the Site.

A risk assessment will be conducted as part of the remedial investigation and feasibility study (RI/FS) phase of this project, since the levels of PCE found in the private water supply wells on the Site exceeded Federal and State drinking water standards and represent a substantial risk to public health through ingestion. The RI/FS phase of the project is being performed by IBM under a separate AOC with EPA that was executed in September 2002.

REMOVAL ACTION OBJECTIVES

The following removal action objectives have been established for this response action:

- to provide a safe and reliable supply of potable water
- to minimize exposure to contaminants found in the drinking water

The proposed response action is considered non-time critical because, although there is a significant threat to public health and the environment, the affected residential wells have been temporarily fitted with POET systems in order to provide safe and potable drinking water until such time as a permanent response action can be implemented.

The calculation of the water supply needs of the community affected by the Site's contamination, also known as the Shenandoah Road Service Territory (SRST), is based on the provision of a full-service community water supply and distribution system for the Site. In accordance with NYSDOH water supply calculation guidelines, it is estimated that an average daily demand for the Site will be 80,000 gallons per day (gpd).

The extent of the SRST for this AWSER was determined based on the extent of the existing groundwater contamination plume, as determined by monitoring and sentinel well data, and the knowledge of the hydrogeology of the Site. Figure 2 shows the extent of the Site plume and the proposed SRST of 154 properties, which includes all 102 residences currently fitted with operating POET systems. The public roads and rights-of-way along which the distribution mains will be constructed are also shown on Figure 2.

The SRST water distribution and storage system would have the same design parameters irrespective of which water supply alternative is selected. In order to expedite the project, IBM has begun the preliminary design work on these common components under EPA's and NYSDEC's technical direction and review. The SRST distribution system includes 20,000 linear feet of 12-inch diameter piping to be installed along the public and private rights-of-way, 40 hydrants, 24 gate valves, house services, house connections, a 150,000-gallon storage tank and numerous appurtenances and incidentals required to complete the installation of the water supply system. This system also includes an elevated storage tank needing less than one-eighth of an acre of land and will be sized to meet fire protection standards and to provide emergency storage. The location of this tank will be determined in the near future.

SUMMARY OF PROPOSED RESPONSE ACTIONS

Four water supply alternatives or response actions were developed in the AWSER and are described below.

The construction time for each response action reflects the time required to design, construct and implement the response action. The present worth operation and maintenance (O&M) costs for the response actions discussed below are calculated using a 30-year time interval and a discount rate of 4%. The actual time period for O&M will depend on the ultimate decision made with regard to the restoration of the Site groundwater.

All of the alternatives include the basic SRST distribution system.

The response actions are as follows:

Alternative No. 1: Town of Fishkill Municipal Water Supply

Capital Cost	$8,792,965.00
Annual O&M Cost	$68,685.00
Present Worth O&M Cost for 30 years	$1,187,701.00
Total Present Worth Cost	$9,980,666.00
Construction Time:	2 years, 2 months

Alternative #1 would involve the purchase of up to 80,000 gpd of potable water by the Town of East Fishkill from the Town of Fishkill under a 40-year agreement. This agreement entered into by both towns and IBM requires that IBM construct all capital facilities and convey ownership of the same to each town, as appropriate.

Alternative #1 would include the Snook Road Well Field (SRWF), proposed transmission piping from the SRWF to NYS Route #52 and a planned water supply storage tank anticipated to be constructed on the adjacent Hosner Mountain; these parts of Alternative #1 would be completed by the Town of Fishkill. Alternative #1 would also include the transmission piping from the Town of Fishkill border with East Fishkill to the SRST; this part of Alternative #1 would be completed by IBM for the SRST.

The SRWF is situated on 5.5 acres of land bounded to north by I-84, to the south by Snook Road, to the west by an area maintained by the Fishkill Historical Society and to the east by private residential development and undeveloped private property. The SRWF has the potential to produce up to 3.0 million gallons a day (MGD) of potable water. Related to the SRWF, the Town of Fishkill would create the Merritt Park Water District (MPWD), which lies within the Town of Fishkill, as the main recipient of the water produced from the SRWF.

East Fishkill would also be a recipient of the water produced from the SRWF.

The Town of Fishkill has indicated the transmission piping (12-inch ductile iron) would be extended to NYS Route #52 as part of the MPWD project. The Town of Fishkill water project would also include the construction of a one- million gallon water storage tank. The transmission piping involves the installation of a water main from the existing Town of Fishkill Municipal Water System to the Site. Alternative #1 would require the installation of approximately 20,000 feet of transmission pipeline in order to reach the SRST.

Alternative No. 2: Town and City of Poughkeepsie Hudson River Intake/Dutchess County Pipeline

Capital Cost:	$7,107,080.00
Annual O&M Cost:	$70,974.00
Present Worth of O&M Cost for 30 years	$1,227,282.00
Total Present Worth Cost:	$8,334,362.00
Construction Time:	2 years

Alternative #2 would involve the purchase of water from the Town and City of Poughkeepsie that will be transmitted through a 13-mile pipeline from Poughkeepsie to IBM's East Fishkill Plant. The water that would be supplied to the SRST would be a portion of an initial two million gallon allocation to IBM from this pipeline. This allocation and IBM's participation in the construction of the pipeline are covered by a binding Memorandum of Understanding to be replaced by a contract currently under negotiation. Design has been completed for the pipeline and permit applications have been submitted for its construction.

Under Alternative #2, the water supply is drawn by the City and Town of Poughkeepsie primarily from the Hudson River for the areas in southern Dutchess County. Two (2) MGD of capacity would be initially purchased by IBM, with an option to purchase an additional 2.0 MGD.

Alternative #2 would include the Hudson River Surface Water Intake, the Water Filtration Plant jointly owned by the City and Town of Poughkeepsie, transmission mains, the Fairview Pump Station, backup supplies from the Frank Well Field and a proposed 13-mile pipeline to be constructed by the Dutchess County Water and Wastewater Authority to the IBM East Fishkill Plant site.

Water supply for this alternative would consist of treated surface waters of the Hudson River filtered at the Poughkeepsie Water Filtration Plant, which include an intake system, rapid mix coagulant basin, solids contact clarifier, sedimentation basins, aeration basins, sand filtration and a clearwell. The capacity of the plant is 16 MGD, and the combined peak daily demand for the City and town is 9.35 MGD. Upon completion of upgrades in 2005, the plant will be expanded to between 19.3 and 21.33 MGD. Alternative #2 would require the installation of approximately 13,000 feet of transmission pipeline to reach the SRST.

Alternative No. 3: Route 376 Parcel A Property

Capital Cost:	$8,347,190.00
Annual O&M Cost:	$82,000.00
Present Worth O&M Cost for 30 years:	$1,417,944.00
Total Present Worth:	$9,765,134.00
Construction Time:	2 years, 4 months

The Alternative #3 Parcel A property is located approximately 1500 feet north of NYS Route #52 on Route 376 and is adjacent to and south of the Alternative #4 Parcel B property. In order to develop the property into a municipal well field, Alternative #3 would involve the installation of two new production wells on Parcel A. Testing indicates that each of the two production wells would readily produce sufficient yield to supply the needs of the SRST. The wells would be located at a minimum of 200 feet from the property line of the parcel on which they would be constructed and at least 200 feet from Gayhead Creek. Initial groundwater sampling results show that the water meets Federal and State drinking water standards. These results also indicate that some elevated concentrations of manganese in the groundwater. These parameters may require additional treatment and maintenance requirements in the water system but do not have any health-related implications. The results of aquifer testing indicate that the two production wells would be able to provide the necessary capacity for the normal and peak water demands for the Site; these results also suggest that significantly higher yields than are necessary would be sustainable from each of the wells tested. Some groundwater contamination sources were identified in the vicinity of the proposed well field; however, it has been determined that this contamination will not threaten the potential groundwater supplies. Various permits would be necessary in order to implement this alternative, including a floodplain permit and a State construction permit. At the present time, it is anticipated that the necessary permits would be issued to allow the project to proceed. Alternative #3 would include pre-treatment for manganese. Alternative #3 would require the installation of approximately 12,000 feet of transmission pipeline to reach the SRST.

Alternative No. 4: Route 376 Parcel B Property

Capital Cost:	$8,615,545.00
Annual O&M Cost:	$76,000.00
Present Worth O&M Cost for 30years:	$1,314,192.00
Total Present Worth:	$9,929,737.00
Construction Time:	2 years, 4 months

The Alternative #4 Parcel B property is located roughly three-quarters mile north of NYS Route 52 on Route 376 and is adjacent to and north of the Alternative #3 Parcel A property. In order to develop the property into a municipal well field, Alternative #4 would involve the installation of two new production wells on Parcel B. Testing indicates that each of the two production wells would readily produce sufficient yield to supply the needs of the SRST. All wells would be located at a minimum of 200 feet from the property line of the parcel on which they would be constructed and at least 200 feet from Gayhead Creek. Initial groundwater sampling results show that the water meets Federal and State drinking water standards. The results of aquifer testing indicate that the two production wells would be able to provide the necessary capacity for the normal and peak water demands for the Site. These results also suggest that significantly higher yields than necessary would be sustainable from each of the wells tested. Some groundwater contamination sources were identified in the vicinity of the proposed well field; however, it has been determined that this contamination will not threaten the potential groundwater supplies. Various permits would be necessary in order to implement this alternative, including a floodplain permit and a State construction permit. At the present time, it is anticipated that the necessary permits would be issued to proceed with the project. Alternative #4 would require the installation of approximately 15,000 feet of transmission pipeline to reach the SRST.

EVALUATION OF RESPONSE ACTIONS

To select a preferred alternative or response action for a site, EPA conducted a detailed analysis of the viable response actions. The detailed analysis consists of an assessment of the individual response actions against each of three evaluation criteria: 1) effectiveness, 2) implementability and 3) cost, as well as a comparative analysis focusing upon the relative performance of each response action against those criteria.

Effectiveness

The effectiveness criterion refers to a response action's ability to meet the removal action objectives. The overall assessment of effectiveness is based on a composite of more specific criteria: 1) overall protection of public health and the environment; 2) compliance with applicable or relevant and appropriate requirements (ARARs); 3) long-term effectiveness and permanence; 4) reduction of toxicity, mobility and volume through treatment; and, 4) short-term effectiveness.

Implementability

The implementability criterion deals with the assessment of implementing the response actions by considering the following factors: constructability, reliability, expandability and administrative feasibility. This criterion will also assess State and community acceptance.

Cost

The costs to be assessed are as follows: capital costs, including both indirect and direct costs; annual O&M costs; and, present worth costs, which include the present value of 30 years of O&M costs, using a 4 % discount rate.

COMPARATIVE ANALYSIS OF RESPONSE ACTIONS

A comparative analysis of the alternatives, based upon the evaluation criteria noted above, follows.

Effectiveness

Overall Protection of Public Health and the Environment

All alternatives equally protect public health and the environment by providing a safe, reliable, sufficient and uncontaminated source of potable water to the Site community within the SRST.

Compliance with ARARs

All Federal and State drinking water ARARs will be achieved under all of the alternatives. All alternatives would be regulated under the Federal Safe Drinking Water Act requirements. Transmission and distribution pipelines will comply with locally specific ARARs for all alternatives. Applicable permit approvals will be achieved prior to construction for all alternatives. For Alternatives #3 and #4, development of the source water supply may require additional approval levels and/or requirements.

Long-Term Effectiveness and Permanence

All alternatives are equally effective in providing a long-term, reliable source of potable water that meets Federal and State drinking water standards. For Alternative #1, the permanence of the water supply would be guaranteed through a contract between the Town of Fishkill and the Town of East Fishkill. The Town of Fishkill has a long history of supplying quality drinking water through a well-managed complex water distribution system. Alternative #2 is effective in terms of multi-governmental ownership

[Town and City of Poughkeepsie and Dutchess County Water Authority] of source and distribution works to the point of connection on NYS Route #52. Water source upgrades are currently being constructed to expand capacity, improve filtration efficiency and eliminate any residual contaminants. The City of Poughkeepsie and the Town of Poughkeepsie have a long history of providing a quality drinking water supply through a complex distribution system. For Alternatives #3 and #4, there is a strong likelihood of ongoing well redevelopment costs. Alternative #3 will require treatment for manganese. Alternative #4 has high chloride concentrations, but no pre-treatment is necessary.

Reduction of Toxicity, Mobility, or Volume through Treatment

None of the alternatives reduce the toxicity, mobility or volume of the contamination at the Site. This evaluation criteria in not wholly applicable to this proposed response action. However, all alternatives protect the public health and the environment by providing a safe and reliable drinking water source, thereby reducing the potential impact of the groundwater contamination at the Site.

Short-Term Effectiveness

Alternative #1 has an estimated completion time of 26 months and requires extensive work in the boundaries of NYS Route #52 which may lead to significant short-term traffic safety and delay issues. There is one major creek crossing and three minor creek crossings associated with the transmission route of this alternative. Alternative #2 has an estimated completion time of 24 months and also requires substantial work in the boundaries of NYS Route #52, which may lead to moderate short-term traffic safety and delay issues. There are three minor creek crossings associated with the route of this alternative. Alternative #3 has an estimated completion time of 28 months and requires minor work in the boundaries of NYS Route #52, which may lead to some short-term traffic safety and delay issues. There are three minor creek crossings associated with the route of the alternative. Alternatives #3 and #4 require additional water supply source design and approvals. Wetlands permitting issues may be involved with the source development for Alternatives #3 and #4.

Implementability

Constructability

All alternatives are deemed constructable. Each alternative requires some work along the boundaries of NYS Route #52; Alternative #1 requires the most work along NYS Route #52. Alternative #1 requires the installation of approximately 20,000 feet of pipeline to the SRST, a pump station, a meter pit and other appurtenances in the Town of East Fishkill and the construction of a one-million gallon water storage tank in the Town of Fishkill. Alternative #2 requires the installation of approximately 13,000 feet of transmission pipeline, a pump station, a meter pit, other appurtenances. Alternative #2 also includes the construction of the 13-mile Dutchess County pipeline. Alternative #3 requires the installation of approximately 12,000 feet of transmission pipeline, development of the well field and pump station with chlorination and manganese treatment and other appurtenances. Alternative #3 will also require significant work on the boundaries of Route 376. Alternative #4 requires the installation of approximately 15,000 feet of transmission pipeline, including development of the well field, construction of the pump house and installation of chlorination system and other appurtenances.

Reliability

Alternatives #1 and #2 require the establishment of a water district in the Town of East Fishkill to identify the area served, namely the SRST. Alternative #1 is highly reliable as a result of the pending inter-municipal agreement between the Town of Fishkill and the Town of East Fishkill, the experience the Town of Fishkill has in the distribution and regulation of potable water supplies and the guarantee from the Town of Fishkill of supplying sufficient potable water to the Town of East Fishkill. Alternative #2 is similarly highly reliable as a result of the multiple municipal ownership of the water supply sources, including viable surface and groundwater supplies. Alternative #2 is also reliable as a result of the involvement of the Dutchess County Water and Wastewater Authority in the design and construction of the proposed transmission line and related improvements from the Town of Poughkeepsie to East Fishkill. Alternatives #3 and #4 are deemed reliable with municipal ownership and control of the water supply sources and distribution system improvements. If Alternative #3 or Alternative #4 were selected and the Town of East Fishkill did not establish a water district, then the reliability using of a private water purveyor would be less certain.

Expandability

The proposed distribution system for all alternatives is expandable, including expansion capabilities if any residential or commercial wells outside the boundaries of the SRST become affected by Site-related contaminants.

For Alternative #1, the proposed water purchase agreement currently sets aside an average water usage of 80,000 gpd for the SRST. This usage would allow for some expansion along the proposed route and adjacent to the SRST. For Alternatives #2, #3 and #4, the water source is plentiful and would allow for greater expansion along the proposed transmission route and adjacent to the SRST.

Administrative Feasibility

All alternatives would require the development of a water district for the SRST by the Town of East Fishkill. Alternative #1 requires a three-party agreement among the Town of Fishkill, the Town of East Fishkill and IBM for the allocation of a water supply for the SRST. All parties are on board and are finalizing this agreement. Alternative #2 is addressed by a Memorandum of Understanding issued in May 2002 by and among the following parties: Dutchess County Water and Wastewater Authority, City of Poughkeepsie, Town of Poughkeepsie, Poughkeepsie Joint Water Board and IBM Corporation. Negotiations are proceeding to a final agreement. Detailed plans and specifications for the transmission pipeline have been submitted to the appropriate agencies for review and approval. For Alternatives #3 and #4, an option agreement currently exists for the acquisition of the two water supply parcels by IBM.

State Acceptance

NYSDEC concurs with EPA's preferred response action.

Community Acceptance

Community acceptance will be assessed after the public comment period has ended for this response action and will be documented in EPA's Action Memorandum decision document.

Cost

The following table identifies the various estimated costs for the four alternatives. Please note that the O&M costs are based on an estimated 30-year period using a 4% discount rate to facilitate comparative analyses.

Alternative	Capital Cost	Annual O&M Costs	Total Present Worth Cost	Cost per 1000 Gals
1	$8,792,965	$68,685	$9,980,666	$5.70
2	$7,107,080	$70,974	$8,334,362	$5.90
3	$8,347,190	$82,000	$9,765,134	$6.80
4	$8,615,545	$76,000	$9,929,737	$6.30

As can be seen by the above cost estimates, Alternative #1 is the most costly with the highest present worth cost. Alternative #1 has the lowest annual O&M costs which translates to the lowest unit cost at $5.70 per 1000 gallons used. Alternative #2 is the least costly alternative with the lowest capital costs and present worth value. Alternatives # 3 and #4 have similar cost estimates with Alternative #3 having the highest O&M costs of the two alternatives and the highest user cost of $6.80 per 1000 gallons used.

PREFERRED RESPONSE ACTION

Based upon an evaluation of the four water source alternatives, EPA and NYSDEC recommend Alternative #1: Town of Fishkill Municipal Supply as the response action for providing an alternate water supply to the Site.

This preference is based on the proven reliability, experience and effectiveness of the Town of Fishkill as a water purveyor in maintaining compliance with Federal and State drinking water regulations and in providing a consistently safe drinking water to its community.

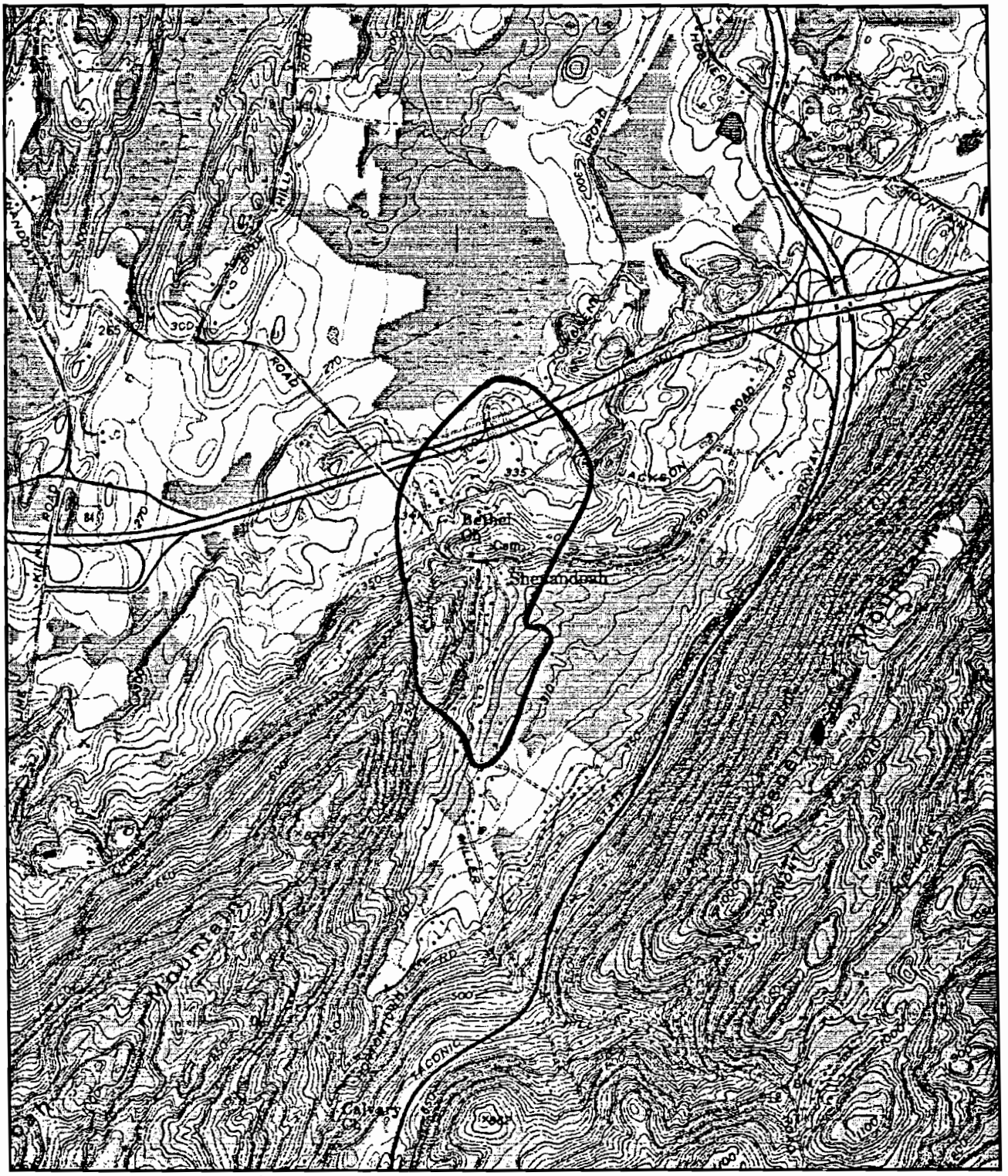
The agreement between the Town of Fishkill and the Town of East Fishkill is underway and would provide for a relatively smooth transition to supplying potable drinking water to the SRST. Reliance on the Town of Fishkill Municipal Water Supply will better ensure the long-term water supply to the SRST community.

EPA has not identified Alternative #2 as its preferred response action because this alternative would require the completion of the 13-mile Dutchess County pipeline. While this project is in the engineering design phase, the sheer scope of the project may create additional uncertainty regarding the estimated time for completion of construction.

EPA did not identify Alternative #3 or Alternative #4 as its preferred response action because the majority of the components required to fully implement these two water supply system operations need to be developed and implemented. The preferred response action is farther along and has an experienced water supply purveyor already in place.

Lastly, the preferred response action represents the lowest O&M costs of the four alternatives which results in the lowest cost to the user.

EPA and NYSDEC believe that the assessment of the four alternatives has produced a preferred response action that would provide the best balance of trade-offs among the alternatives with respect to the evaluating criteria. EPA and NYSDEC also believe that the preferred response action would be protective of public health and the environment, comply with ARARs, be cost-effective and would utilize permanent solutions to the maximum extent practicable.



——— – Estimated Boundary of Site Contamination

Figure 1

Shenandoah Road Groundwater Contamination Superfund Site

(Figure 1 is adapted from Figure 1-1 of the Alternate Water Supply Evaluation Report prepared by Groundwater Sciences Corporation)

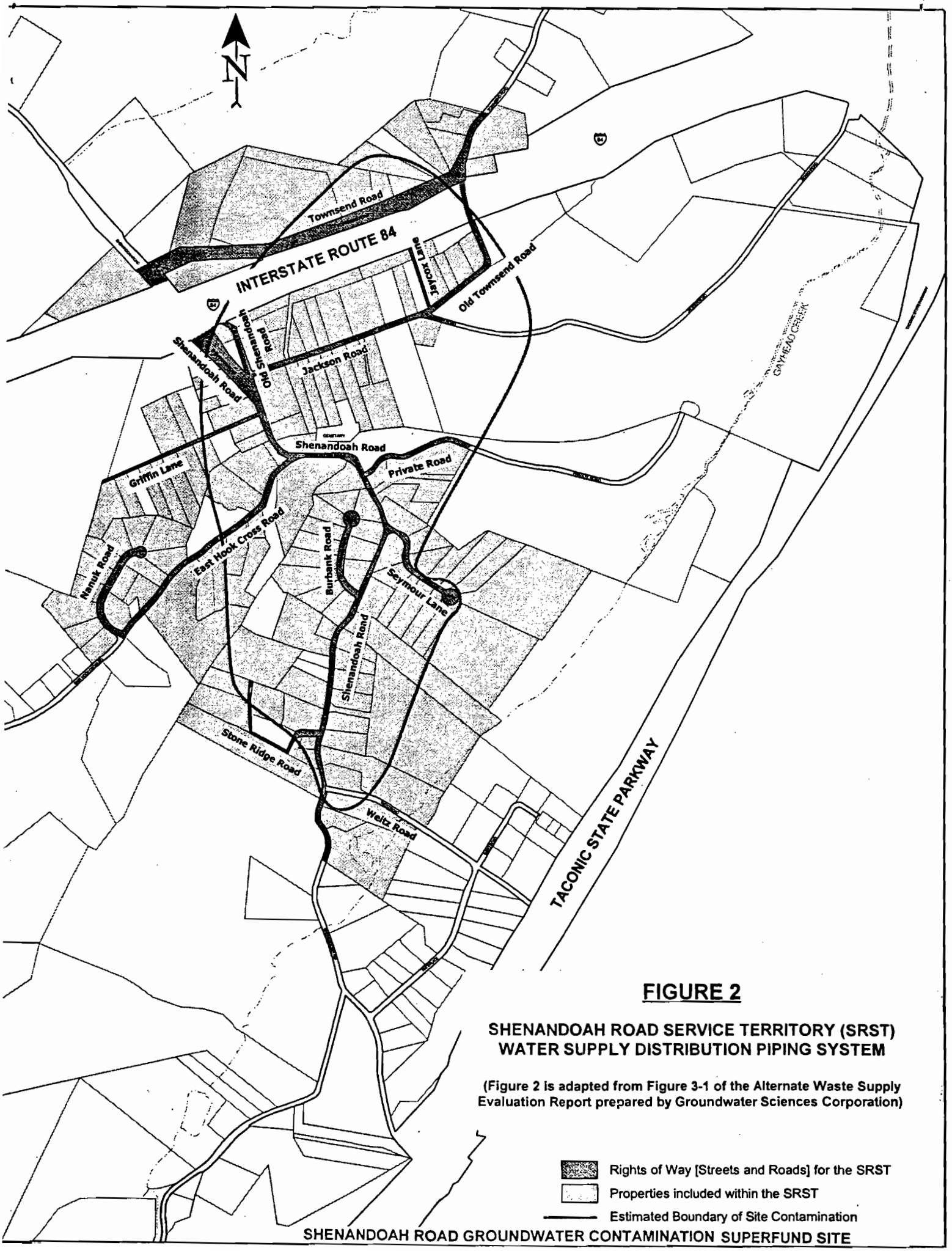


FIGURE 2

SHENANDOAH ROAD SERVICE TERRITORY (SRST) WATER SUPPLY DISTRIBUTION PIPING SYSTEM

(Figure 2 is adapted from Figure 3-1 of the Alternate Waste Supply Evaluation Report prepared by Groundwater Sciences Corporation)

Rights of Way [Streets and Roads] for the SRST

Properties included within the SRST

Estimated Boundary of Site Contamination

SHENANDOAH ROAD GROUNDWATER CONTAMINATION SUPERFUND SITE

Appendix B

Public Notice

- II-2-0061-NASX -

U.S. Environmental Protection Agency Shenandoah Groundwater Contamination Superfund Site

The U.S. Environmental Protection Agency (EPA) has completed an evaluation of water supply alternatives for the Shenandoah Road Groundwater Contamination Superfund Site, located in the Town of East Fishkill, Dutchess County, New York. Based on this evaluation, EPA recommends the Town of Fishkill Municipal Supply as the preferred water supply. A Public Information Session on the selection of an alternate water supply to service the Shenandoah Road area will be held Thursday, November 20, 2003 from 3:00 p.m. to 5:00 p.m. and followed by a Public Forum from 7:00 p.m. to 9:00 p.m. The Public Information Session and the Public Forum will take place at the East Fishkill Fire District Administration Building located at 2502 Route 52 in Hopewell Junction, N.Y.

Specific details regarding the preferred water supply as well as EPA's evaluation process are contained in the administrative record, which is available for review at the East Fishkill Community Library, 348 Route 376, Hopewell Junction, NY 12533 and the EPA Region 2 Superfund Records Center, 290 Broadway, 18th Floor, New York, NY 10007-1866. Please note that any comments regarding EPA's preferred water supply or the documents contained in the administrative record should be submitted within 30 days of this publication to: Mr. Damian Duda, Remedial Project Manager, U.S. Environmental Protection Agency, 290 Broadway, 20th Floor, New York, NY 10007-1866, or duda.damian@epa.gov. Mr. Duda can also be contacted at (212) 637-4269.

0000501328

Appendix C

Public Availability Session and Public Meeting Attedance Sheets

Shenandoah Road Groundwater Contamination Superfund Site
November 20, 2003
Public Availability Session - 3:00 to 5:00 PM

Please **SIGN-IN** below - the information will be used to update our mailing list.

Name	Organization/Address	Telephone
Dan Craig Hg	NYSDOH - Albany	518-402-7860
KEN BEYER	229 SHENANDOAH Rd Hopewell Jct NY 12533	845-227-5347
Lee Felshin	DCHD	845 486-3400
Dorothy Bergmann	Groundwater Sciences Corp	845-896 0288
Mitchell Ruchim	Groundwater Sciences Corp	845 896 0288
William Clinton	12 Burton Ave Rhinebeck	845 22[illegible] 9436
Sonja Sjoholm-deHaas	DCWWA 27 High St Poughkeepsie NY 12601	845-486-3757
Mark Kearney	RNN Television 721 Broadway Kingston, NY 12473	845-339-6600
Paul Kassaine	7 GRIFFIN LN	845 226 8132
Dan Kassaine	"	"
Kathy Nieder	50 East Hook Cross Rd Hopewell	223-7492
Ed. Schneider	155 Jackson Rd.	226-5927
Maryann Tillinghast	225 Bluehill Rd	226-3290
Stephen Hardorp	94 Townsend Rd,	227-5824

Shenandoah Road Groundwater Contamination Superfund Site
November 20, 2003
Public Availability Session - 3:00 to 5:00 PM

Please **SIGN-IN** below - the information will be used to update our mailing list.

Name	Organization/Address	Telephone
ARDEN	2407 RT 52 Hpl Jct N.Y	845-226-2557
Cochran	" " " "	"
Lance Davi	136 Jackson Rd. Hopewell Jct.	845-223-4760
Rick Destefe	Dutchess County Lakes Comm.	(845)452-1267
Pamela Henry	1 Jaycee Ln Hopewell	845-223-3578
DAN SHAPLEY	POUGHKEEPSIE JOURNAL	845-437-4814
PAUL/VICTOR POTANIC	255 SHENANDOAH RD HOPEWELL	845-414-1313
Gene Gaines	109 Jackson Rd. HJ	845-223-3357
[illegible]	140 Jackson Rd Hopewell	845 227-8021
Anton Drucker	138 Jackson Rd Hopewell	227-8068
Katharine GRuber	138 Jackson Rd Hopewell Jct.	227-8068
Charles Trupia	5 Catt. Pl. Hopewell	226-4598
JACK SHAW	147 SHENANDOAH RD HOP.	227-5772
Tom Clancy	11 Griffin Lane Hopewell	227-6398

Shenandoah Road Groundwater Contamination Superfund Site
November 20, 2003

Public Availability Session - 3:00 to 5:00 PM

Please **SIGN-IN** below - the information will be used to update our mailing list.

Name	Organization/Address	Telephone
John Ivkon	574 Shenandoah Rd	221-1906
William Jackson	7 Old Townsend Rd.	226-5332

Shenandoah Road Groundwater Contamination Superfund Site
November 20, 2003
Public Meeting - 7:00 to 9:00 PM

Please **SIGN-IN** below - the information will be used to update our mailing list.

Name	Organization/Address	Telephone
Chester CAROL Acho rd	3 Burbank Rd HJ	226-1567
Gregory Bartholomew	133 Jackson Rd	207-5101
Alice + Frank Gaer	13b Townsend Rd H.J.	227-6467
Vinny Pepe	15 Seymour Lane HJ	226-1890
Pat Manning	641 Hortontown Road	221-3400
Andrew Havelock	499 Shenandoah Rd	221-2186
CHRIS MARCIN	20 WEITZ Rd HJ	226 3175
Carmine Quaglio	PO Box 357 Hopewell Jct	227-5694

Shenandoah Road Groundwater Contamination Superfund Site
November 20, 2003
Public Meeting - 7:00 to 9:00 PM

Please **SIGN-IN** below - the information will be used to update our mailing list.

Name	Organization/Address	Telephone
Mary Swartz	D.C. Leg.	226-417
J. Kudlow	2407 Rt 52 Hyde Park N.Y.	226-2857
Fred Robbins	Neighbors for a Safe Community East Fish Kill Citizens' Alliance 39 Carpenter Rd. Hopewell 12533	221-0921
Wayne Jackson	182 JACKSON RD H.J. 12533	226-5227
William & Carole Clinton	12 Burbank Road Hopewell Jct	221-9436
Rick + Jessie Kreidler	8 Patti Place, Hopewell Jct. 12533	221-9494
Steve Cole	IBM	433-7962
Nick Seeger	51 Stone Ridge Lane	226664
John Wren	574 Shenandoah Rd Hopewell	221-1906
[redacted]	[redacted]	[redacted]
Marge Horton	Dutchess County Legislator 2 Anthony Ct H.J. 12533	226-9646
R Parella	[redacted]	226-6277
J Bondi	9 Burbank Rd Hopewell Jct	226-4896
Chris Selke	7 Burbank Rd Hopewell Jct	227-5205

Shenandoah Road Groundwater Contamination Superfund Site
November 20, 2003

Public Meeting - 7:00 to 9:00 PM

Please **SIGN-IN** below - the information will be used to update our mailing list.

Name	Organization/Address	Telephone
PETER IDEMA III	TOWN of EAST FISHKILL	845-221-4503
Lena Krikanova	IBM	914-766-2296
Karl Diamond	627 SHENANDOAH RD Hopewell Jct N.Y.	845-226-4123
Janice & Robert Pistor	10 Nanak Road Hopewell Jct NY	221-1658
JANET GREENMAN	488 SHENANDOAH ROAD HJT	227-0161
Madeline & Earl Wagner	585 Shenandoah Rd. H.J	221-4871
Karl Ricciola	5 GRIFFEN La. Hopewell Jct NY	226-5358
Vic ORSETTI	630 Shenandoah Rd Hopewell Jct NY	226-5240
DAVE MILES	5 Burbank Rd. H.J.	223-7238
Marilyn D'Andrea	14 Burbank Rd.	226-4510
Carmine Quagliano	OLD STATE ROAD	227-5691
Stephen C. Dunbar	11 SEYMOUR LANE	226-5059
Dan Mele	1410 HUDSON HILLS	227-6464
John and Nuban Corder	6 Seymour Lane, Hopewell Jct	226-4961

Shenandoah Road Groundwater Contamination Superfund Site
November 20, 2003
Public Meeting - 7:00 to 9:00 PM

Please **SIGN-IN** below - the information will be used to update our mailing list.

Name	Organization/Address	Telephone
Pat Adornetto	589 SHENANDOAH Rd Hopewell	221-0490
Ruth Swanigan	625 Shenandoah Rd. Hopewell Jct	296 4930
Tim Callinan	15 Seymour Lane Hopewell Jct NY 12533	221-3595
ED Carbone	641 Shenandoah Road	845 - 226-6532
Elaine & Bill Lee Jr	9 Griffin Ln. Hopewell Jct	2266326
Pete Rosenberg	Fishkill Ridge Caretakers, INC 58 Briggs Hill Rd Sherman, CT	203-733-0843 06784

Appendix D

Letters and E-mails Submitted During the Public Comment Period

Andrew & Marie Pavelock
499 Shenandoah Road
Hopewell Jct., NY 12533

December 1, 2003

Damian Duda, Remedial Project Manager
United States EPA
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: Shenandoah Road Groundwater Contamination Superfund Site

Dear Mr. Duda:

We have some additional questions and concerns we would like addressed which have come up as a result of the November 20, 2003 Open Meeting.

What provisions have been established for compensation or treatment for future health care issues that may arise as a result of drinking contaminated water prior to the installation of the treatment systems?

What is the annual cost for the water supply system actually paying for? Please provide a detailed breakdown addressing this issue.

Why are we, the homeowners, responsible for the cost for the system, when it is the responsibility of the "polluter" to correct the situation? The approximate cost per year for us would be $272.00, using your highest estimated numbers. This is a significant cost per year for us, as retired senior citizens. We will have to pay to correct a situation caused solely by someone responsible for illegal disposal of chemicals. This hardly seems as if the "polluter" is being held accountable for their actions.

Will these contaminants cause damage or leaching to galvanized piping?

Who is going to be responsible for costs incurred for maintenance or repairs to this proposed system? Will that also, fall to the homeowner or will the maintenance and/or repairs be covered in the annual cost?

We would very much appreciate it if you could respond to these questions and concerns in writing.

Thank you.

Sincerely,

Andrew P. Pavelock

Marie C. Pavelock

"Barclay, Bridget" <bebarclay@co.dutchess.ny.us>

11/24/2003 02:32 PM

To: Damian Duda/R2/USEPA/US@EPA
cc:
Subject: Shenandoah Road Groundwater Contamination Site

Dear Mr. Duda,

The EPA's Proposed Response Action for the Shenandoah Road Groundwater Contamination Site describes Alternative #1 (Town of Fishkill Municipal Water Supply), as including construction of a water transmission main along NYS Route 52. What is the proposed conceptual route to bring water from NYS Route 52 to the Shenandoah Road Service Territory?

Thank you,

Bridget Barclay,
Deputy Director
DCWWA

Damian Duda

11/24/2003 04:28 PM

To: "Barclay, Bridget" <bebarclay@co.dutchess.ny.us>
cc: morrist@us.ibm.com, John Malleck/R2/USEPA/US@EPA
Subject: Re: Shenandoah Road Groundwater Contamination Site

Bridget, as per the proposed transmission route identified in the Alternate Water Supply Evaluation Report for the Town of Fishkill alternative, the waterline would extend east along the NYS Route 52 right-of-way to the intersection of Shenandoah Road, then proceed south along the Shenandoah Road right-of-way to the identified Service Territory. During the design phase of the selected project, we will make every effort to solicit input from the agencies involved. Please let me know if you need any further information. Thank you.

BURBANKDAD@aol.com

12/17/2003 12:29 PM

To: Damian Duda/R2/USEPA/US@EPA, sgromkowski@fishkill-ny.gov
cc: Doug Garbarini/R2/USEPA/US@EPA, James Haklar/R2/USEPA/US@EPA, Dean Maraldo/R2/USEPA/US@EPA, David Rosoff/R2/USEPA/US@EPA, Laura McDavid/R2/USEPA/US@EPA, Camileprice@sprintmail.com, Jerry.Nappi@mail.house.gov, RHorton722@aol.com, Nick.Curran@mail.house.gov
Subject: Comments To The EPA Concerning .....

Comments To The EPA Concerning The Shenandoah NPL Site As It Relates To The Proposed Water District

There should be no financial obligation placed on any of the households in the planned Shenandoah Water District, UNTIL ground water remediation is complete as promised by the EPA. We remember the EPA explaining remediation at numerous community meeting, A water district is necessary to expedite the practicality of ground water remediation because of the volumes of water that had to be extracted for a successful clean up.

In addition:

IBM has acted in an irresponsible manner by not pursuing a full and continuous investigation of area contamination. The investigation was requested by the NY DEC over **many** decades. IBM never contacted us!

Results of the 1987 Shenandoah Road well testing by IBM was never produced by the principal responsible party. RE:DEC

Technical Directive Document NO. 02-8710-09 Contract NO. 68-01-7346 for the Environmental Service Division, U.S. Environmental Protection Agency, November 18, 1987, stated that there was a perceived pollution problem within a 4-miles radius of the IBM East Fishkill Plant. Information in this report was not shared with the community until after we were declared an NPL Site. This report indicated well and air testing were in order. Why did IBM keep the community in the dark? IBM's deception, a poor business decision!

The creation of a water district is an EPA solution imposed on IBM for their lack of responsibility, WHY should we pay for a Step in the remediation process? Public meetings hosted by the EPA for the community make this very clear. And it is on video.

The actual water contamination problem disappears at the END of REMEDIATION not the steps along the way. The health and physiological problems will **never** disappear.

When the ground water is fully restored, then we the people, served by this "interim step" water district, should be given a choice if we want a public supply or a private supply. Since the documented statements by the EPA on site investigators indicate that Water remediation may take years, it's an IBM financial problem not our!

Finally, unless the EPA was inaccurate the various cancerous compounds found in many of our

wells are present because IBM managers told their subcontractor to dump, not recycle the semi-conductor cleaning fluid.

Peter M Parenti, Jr
11 Burbank Road
Hopewell Junction, NY 12533 TEL 407 736 8030 845 221 293

prostenberg@sbcglobal.net

From: <CallinanD@aol.com>
To: <rrwissle@gw.dec.state.ny.us>; <tphalley@juno.com>; <segoverm@gw.dec.state.ny.us>; <Supplelaw@aol.com>; <LZeisel@dsltc.com>; <Vandewaterlaw@aol.com>; <mxmoran@gw.dec.state.ny.us>
Cc: <djvachon@gw.dec.state.ny.us>; <donaldw@groff.org>; <rostenberg@worldnet.att.net>
Sent: Tuesday, November 18, 2003 12:52 PM
Subject: EPA/Shenandoah Meeting (Thur Nov. 20)

All:

Now that IBM & the EPA have finalized their decision on where our future water will be coming from I expect the State of New York to do everything in their power to protect the source with vigor! Might someone from the DEC attend the meeting?

Denis Callinan

****

Poughkeepsie Journal, November 18, 2003

- EPA/Shenandoah Meeting (Thur Nov. 20)

U.S. Environmental Protection Agency
Shenandoah Groundwater
Contamination Superfund Site

The U.S. Environmental Protection Agency (EPA) has completed an evaluation of water supply alternatives for the Shenandoah Road Groundwater Contamination Superfund Site, located in the Town of East Fishkill, Dutchess County, New York. Based on this evaluation, EPA recommends the Town of Fishkill Municipal Supply as the preferred water supply. A Public Information Session on the selection of an alternate water supply to service the Shenandoah Road area will be held Thursday, November 20, 2003 from 3:00 p.m. to 5:00 p.m. and followed by a Public Forum from 7:00 p.m. to 9;00 p.m. The Public Information Session and the Public Forum will take place at the East Fishkill Fire District Administration Building located at 2502 Route 52 in Hopewell Junction, N.Y.

Specific details regarding the preferred water supply as well as EPA's evaluation process are contained in the administrative record, which is available for review at the East Fishkill Community Library, 348 Route 376, Hopewell Junction, NY 12533 and the EPA Region 2 Superfund Records

Center, 290 Broadway, 18th Floor, New York, NY 10007-1866. Please note that any comments regarding EPA's preferred water supply or the documents contained in the administrative record should be submitted within 30 days of this publication to: Mr. Damian Duda, Remedial Project Manager, U.S. Environmental Protection Agency, 290 Broadway, 20th Floor, New York, NY 10007-1866, or duda.damian@epa.gov. Mr. Duda can also be contacted at (212) 637-4269.

rpistor@netzero.com

12/14/2003 06:27 PM

To: Damian Duda/R2/USEPA/US@EPA
cc:
Subject: Shenandoah Road Groundwater Contamination Superfund Site

Mr. Duda:

Please see the attached file in consideration for the EPA's Action Memorandum. This attachment has also been mailed.

Thank You,

Robert L. Pistor

EPA 12-14-2003.doc

Robert L. Pistor
Janis C. Pistor
10 Nanuk Road
Hopewell Jct., NY
12533-6507
(845) 221-1658

Mr. Damian Duda
Remedial Project Manager
United States Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Subject: Shenandoah Road Groundwater Contamination Superfund Site
Town of East Fishkill, Duchess County, New York

Dear Mr. Duda:

First I want to thank you, your office, the entire EPA and NYS action staff, and IBM for the response and attention to this unfortunate problem. All are to be commended.

As an IBM retiree, it is comforting to see IBM assuming financial responsibility and being a "good neighbor" while becoming a pro-active participant working with the EPA. This is also commendable and appreciated.

The following represents our situation, and, as a part of the public opinion phase, we have the following concerns and questions specific to our property and the established project.

Our home and property is not currently infected by the contamination plume, but, as we understand, is within the service area for the alternative water supply.

1. If we choose NOT to allow installation of the alternative water supply to our home, will....

   A. IBM and Groundwater Sciences Corp. continue to fund and test our well water supply on a regular schedule, utilizing the same analysis techniques which are currently applied and reported by Groundwater Sciences Corp.?

   B. IBM fund an alternative water supply installation if our well were to become contaminated in the future?

2. What will be the homeowner's financial burden for the alternative water supply

3. What is the alternative water supply capability to provide uninterrupted service during major power problems such as the Northeast blackout we all experienced this past summer?

4. As a hobby, I maintain marine aquariums. The specimens are very sensitive to chlorine contamination. The alternative water supplies all would pose problems in this regard. Are there restrictions or regulations in the plan or local codes, which would prevent the use of multiple water supplies to our home?

5. What kind of damage are we to anticipate to our properties, driveways, roads, curbs, underground services and facilities, etc.? What would be our financial responsibilities for these repairs and restorations?

6. Lastly, although I am not aware of the specifics, I am somewhat concerned regarding the agreements made between IBM and the local townships.

    A. Will there be any future school or town property tax impacts resulting from this project?

    B. Are there assurances to the homeowners being serviced by this project, that current and future non-contaminated commercial and residential properties, will not utilize or impact the alternative water supply?

Thank you for your time and attention.

Regards,

Robert L. Pistor

Janis C. Pistor

prostenberg@sbcglobal.net

From: <CallinanD@aol.com>
To: <rostenberg@worldnet.att.net>
Sent: Tuesday, November 18, 2003 12:40 PM
Attach: ATT00142.eml
Subject: Fwd: meeting to vote on water supply - pass this on = article in

In a message dated 11/17/2003 12:18:37 PM Eastern Standard Time, CallinanD writes:

| Peter:

If you do get the opportunity to attend the meeting please attempt to get anaswers to these questions. I believe that Fred Robbins will be taping the meeting. Go get them. As far as I know the EPA is not aware that we will not be at the meeting.

Denis

1) **How much water is currently being consumed by the 150+ families on a daily basis?**
These amounts are available to the EPA since each time Groundwater Sciences comes for the quarterly test they record your water usage. The figures must reflect different times of the year as usage might be significantly higher in the summer with lawn watering. I am concerned that if 80,000 gallons are available and this will also supply the 500+ homes being built on Route 9 will what's left cover our needs?

2) **What backup water supply will be connected to the Fishkill System to insure a continuous supply in the event the Fishkill system fails?**

The Fishkill system is threathened by the Southern Dutchess Sand & Gravel Mining. What will the EPA, the DEC the Town of Fishkill and the Town of East Fishkill do to protect this supply?

Even the New York City water system has a backup so why not us?

3) **Which statement is correct?**
a) IBM is paying for the operating & maintenance costs for 30 years.
b) The residents will be paying $68,686+ per year for operating &maintenance costs. (That would amount to $445 per family - seems a little

steep for having had our wells polluted by IBM)

4) **Can the community reject all four options and demand a fifth such as a community water system from Hosner Mountain Road?**

The proposed Snook Road well field is about 500 feet from the new Hess Gas Station on Route 9. It is also over the Clove Creek Aquifer which is being put at risk by a plan to mine sand &gravel from the aquifer and create an open pit. Great source of water.

5) **What are the two sites on Route 376? Who owns the property?**

a) If one is the property behind the smoke house the land is already polluted with MTBE from the tanks at Blue Hill Shell (now a Mobil Station)

b) If the second is the property behind the town highway department the land was an illegal dump site which is under a criminal investigation that involves several Dutchess County town highway supervisors and some waste haulers from Connecticut.

6) **What will happen to our current wells? Will they be capped? Who will pay any costs associated with this operation?**

Don

You mentioned, soil sampling - We need to ask was it done, if not it needs to be done.

INTERESTING POINT - regarding the FISHKILL water source - I read the article carefully and in summar says: IBM will pay Fishkill $425,600 (appears to be a flat fee) for 80,000 gallons of water per day for Shennandoah residents, should it be needed. This water will come from the municipal wells on Snook Ro

(this is a 5 acre well field being developed for 513 homes on Merrit BLVD- they IBM, Fishkill & East Fishk it can serve Shenandoah residents also) According to the article the Maybrook pipline from Poughkeesie option , however the Fishkill water supply is becoming more of a likely possiblity.

Although this is another option I don't think it changes our concerns regarding regarding piping, even if it i reserve supply, there would still need to be a connection to it.

If and when a pipe (alternate water source) is installed down Griffin Lane, will IBM pay for the all of the wo required for the installation and the work to restore the road to vehicle traffic condition?

If wells are providing good water, will we be able to continue to use them.

If all houses must be connected to an alternate water source, then houses with non contaminated wells sl piped so that they can use the alternate source in the event their well water is compromised.

How is the Fishkill water supply going to be a posssible water source?????

Will the Town take over the alternate water source (higher taxes???)

Will IBM continue maintain the filters of non contaminated wells if these wells can continue to remain in us will owners have to assume cost? (what is cost?)

Look it over Don tell me what you

Griffin Lane

John Condon <bolivar@frontiernet.net>

12/18/2003 11:23 PM

To: James Haklar/R2/USEPA/US@EPA, Damian Duda/R2/USEPA/US@EPA
cc: RoyJorg@aol.com, BURBANKDAD@aol.com
Subject: Shenandoah Contamination Site - Comments on Water Source Proposals

Dr. Haklar and Mr. Duda:

Attached are my comments concerning the proposed water sources.

John Condon Proposed Source of Water, Comments

Shenandoah Groundwater Contamination Site – Comments

In order to provide water to the groundwater contaminated by PCE, TCE and other chemicals, the US Environmental Protection Agency has proposed to use water from the well field at Snook Road. It is the best alternative provided the concern below is addressed.

The quality and quantity of the water from this site appear to be the best of the proposed sites, with one caveat; the Snook Road site lies under a very significant historical site. The Van Wyck Homestead Museum located on Route 9 and Snook Road was the site of a major depot during the Revolutionary War and was General Putnam's Headquarters. George Washington and Lafayette visited the homestead and it was an important component of the defense of the strategic Hudson Valley. Numerous artifacts have been unearthed already and are on display at the Van Wyck Homestead. The Snook Road site is located right in the midst of the camp and the remnants of the farm buildings are still there. A thorough and complete archeological review should be conducted. All items should be mapped and catalogued. The Snook Road well field was the site of the farm and was used extensively by Colonial forces.

The United States government should insure that our history is protected. The New York State Office of Parks, Recreation and Historic Preservation should have extensive information about the site as well as the Fishkill Historical Society. Unfortunately, as the recent history has shown, the government of the State of New York, to date, promotes economic development at the expense of public health. Economic development, which New York State defines as increasing the wealth of the shareholders of IBM, may take precedence over preserving our heritage as well.

The United States should be made aware that local politicians might be more interested in developing the well field at the expense of our history. Shortsighted attempts to increase revenue from selling water may result in a significant portion of our history being lost. Care should be taken that the Town of Fishkill or others does not pay archeological "hired guns" to undervalue or ignore the historical significance of the site.

The military cemetery of the Fishkill Depot has never been uncovered. We owe a debt to those who bled and died to preserve our liberty that they will not be forgotten.

With respect to the other proposed sites, the citizens of the Shenandoah area should not be subjected to the water from the IBM facility. IBM, as a multinational corporation, has the singular objective of enriching its stockholders. It has loyalty to no nation or any individual. It would be unconscionable to further subject the citizens of East Fishkill to IBM.

Similarly, the citizens of East Fishkill should not be subject to the Maybrook water line. If this alternative is chosen there should be a complete investigation to insure that there are no conflicts of interest with local political figures, some of which are IBM retirees. Similarly the investigation of the two sites in the vicinity of Route 376 should be expanded to investigate potential conflicts of interest with local officials.

The Town of Fishkill water source is the best alternative but all artifacts and history related to the Fishkill Depot and farm must be preserved.

John M. Condon
6 Seymour Lane
Hopewell Junction, NY 12533

ELAINE K LEE
<elainel@us.ibm.com>
12/17/2003 01:17 PM

To: Damian Duda/R2/USEPA/US@EPA
cc:
Subject: Shenandoah Road Groundwater Contamination Superfund Site

I have a few questions that I would like to have answered and documented in the Action Memorandum for the Shenandoah Road Groundwater Contamination Superfund Site.

The questions are as follows:

Question #1
Why do the residents of the superfund site have to pay for the water usage?

We did not create the situation. If anything, the original residents should not have to pay for the water usage. When our homes were purchased paying for water was not part of our financial plans. This thought is throughout the community. When we do sell our homes, the new residents will be well aware of the impending water bill and will take that into account when buying.

Question #2

Why do the East Fishkill residents of the Shenandoah area have a higher water bill than Fishkill?

This seems to be a punishment imposed on the residents of the Shenandoah by the Town of East Fishkill.

Question #3

What is the cost of water to the residents of the Village of Fishkill?

Question #4

What is the cost of water to the residents of the Town of Fishkill?

Thank you and have a pleasant day,
Elaine
894 - 7273 pager #6444 - 0726