HARRIS CORPORATION

Town of Poughkeepsie, Dutchess County, New York
Site No. 3-14-061

PROPOSED REMEDIAL ACTION PLAN

February 2001

Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

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Town of Poughkeepsie, Dutchess County, New York
Site No. 3-14-061
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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy to address the significant threat to human health and the environment created by the presence of hazardous waste at the Harris Corporation site. As more fully described in Sections 3 and 4 of this document, use of chemicals associated with Harris Corporation's former semiconductor manufacturing facility has resulted in releases of a number of hazardous wastes, including trichloroethene (TCE), tetrachloroethene (PCE), 1,1,1-trichloroethane (TCA), ethylbenzene, xylenes, methanol, isopropanol, 1,2-dichlorobenzene (1,2-DCB), and 1,4-dichlorobenzene (1,4-DCB) at the site. These releases have resulted in the following significant threat to public health or the environment:

- A potential significant threat to human health associated with contaminated groundwater, which may migrate off site and contaminate private wells, unless actively remediated or contained on site.

While no offsite migration of site-related contaminants has been observed, the NYSDEC has deemed it prudent to mitigate the significant threat to public health and the environment that the hazardous waste discovered at the Harris Corporation site has caused, by proposing the following remedy:

1) Continued extraction of groundwater by a "groundwater extraction and treatment" system that consists of 3 pumping wells, with discharge to, and treatment by, the Arlington POTW (Publicly Owned Treatment Works), to prevent offsite migration of groundwater.

2) Connection of residences to the public water supply, to be implemented if sampling results indicate that any private wells have become contaminated by offsite migration of site-related contaminants in excess of applicable drinking water standards.

3) Institution of a long-term groundwater monitoring program. This program includes annual monitoring of 12 onsite groundwater-monitoring wells and 5 offsite residential wells (i.e., the 5 residential wells which are closest to the site, which are the wells most likely to be affected by offsite migration of contaminants) for volatile organic compounds (VOCs). In addition, quarterly monitoring of the POTW discharge, for VOCs and pH, is currently performed. However, additional monitoring and/or

private wells may be sampled in the future, and the POTW discharge may be analyzed for additional parameters, depending on NYSDEC review of the sampling data and other relevant information. This program would allow the effectiveness of the contaminant plume containment strategy to be monitored, and would be a component of the Operation and Maintenance (O & M) plan for the site.

The proposed remedy, Alternative 3, discussed in detail in Section 7 of this document, is designed to attain the remediation goals selected for this site in Section 6 of this Proposed Remedial Action Plan (PRAP), in conformity with applicable standards, criteria, and guidance (SCGs).

This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for this preference. The NYSDEC will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The NYSDEC has issued this PRAP as a component of the citizen participation plan developed pursuant to the New York State Environmental Conservation Law (ECL) and 6 NYCRR Part 375. This document is a summary of the information that can be found in greater detail in the Remedial Investigation /Feasibility Study (RI/FS) and other relevant reports and documents available at the document repositories.

To better understand the site and the investigations conducted, the public is encouraged to review the project documents at the following repositories:

1. Adriance Memorial Library (Arlington Branch)
   32-34 Haight Avenue
   Poughkeepsie, NY 12603
   Phone: (845)454-9301
   Hours: M/W/F: 9AM-8PM, Tu/Th: 9AM-5PM, Sa: 9AM-2PM

2. Office of the Clerk
   Poughkeepsie Town Hall
   1 Overocker Road
   Poughkeepsie, NY 12603
   Phone: (845)485-3620
   Hours: M-F, 8AM-4PM

3. John Rashak, Project Manager
   NYSDEC- Region 3 Headquarters
   Division of Environmental Remediation
   21 S. Putt Corners Road
   New Paltz, NY 12561-1696
   Phone: (845)256-3179
   Hours: M-F, 8:30AM-4:45PM

4. Michael Knipfing, Citizen Participation Specialist
   NYSDEC- Region 3 Headquarters
   Division of Environmental Remediation
   21 S. Putt Corners Road
   New Paltz, NY 12561-1696
   Phone: (845)256-3154
   Hours: M-F, 8:30AM-4:45PM

The NYSDEC seeks input from the community on all PRAPs. A public comment period has been set from **February 12, 2001 to March 13, 2001** to provide an opportunity for public participation in the remedy selection process for this site. A public meeting is scheduled for **Tuesday, February 27, 2001** at the **Poughkeepsie Town Hall** beginning at **7:00PM.**

At the meeting, the results of the RI/FS will be presented along with a summary of the proposed remedy. After the presentation, a question and answer period will be held, during which the public can submit verbal or written comments on the PRAP.

The NYSDEC may modify the proposed alternative or select another of the alternatives presented in this PRAP, based on new information or public comments. Therefore, the public is encouraged to review and comment on all relevant alternatives, whether described here or elsewhere.

Comments will be summarized and responses provided in the Responsiveness Summary section of the Record of Decision. The Record of Decision is the NYSDEC's final selection of the remedy for this site. Written comments may be sent to **Mr. John Rashak** at the above address on or prior to **March 13, 2001**.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Harris Corporation formerly owned and operated a semiconductor manufacturing facility at 70A Overocker Road in the Town of Poughkeepsie, New York (Fig. 1). The facility, which is located in Dutchess County, was closed in 1981, and sold in 1984.

The 6.66-acre facility was designated as a Class 2 site, and given site number 314061 in the NYSDEC "Registry of Inactive Hazardous Waste Disposal Sites in New York State" in 1981. The Class 2 designation means that the site represents a significant threat to human health or the environment, and action is required.

The site is bounded by industrial properties to the west, north, and east, and a railroad bed (formerly belonging to Conrail) to the southwest and south. Just southwest of the former Conrail railroad bed are residential properties (which also border the industrial sites immediately adjacent to the site's northwest sector).

The site is located within the Casper Creek drainage area of the Lower Hudson River drainage basin (Fig. 2). Runoff from the site reaches Casper Creek about 1/2 mile southwest of the site. From this point, Casper Creek flows southwest to the 2-acre Sunset Lake in the next 1/2 mile. An unnamed stream, which drains the 4-acre Vassar Lake, flows east-southeast into Sunset Lake also.

Casper Creek continues 6 miles further southwest into the 37-acre Cobalt Lake. Within ½ mile beyond Cobalt Lake, Casper Creek flows southwest into the Hudson River.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

Various chemicals were used in the work area as part of the manufacturing process at the Harris Corporation. In 1981, Harris Corporation personnel discovered a leak in the gravity drainage system for the facility. The gravity drainage system was used to collect waste liquid, mostly solvents, from a number of ventilation hoods. The hoods were part of a ventilation system, which prevented chemical vapors from entering the work area.

Waste liquid, mostly solvents, drained from the hoods via a subfloor gravity drainpipe to a 1200-gallon underground waste storage tank, centrally located underneath the building. The waste liquid consisted primarily of methanol, along with lesser amounts of cellusolve (2-ethoxyethanol), xylene, n-butyl acetate, isopropanol, and acetone, all of which can be generally categorized as volatile organic compounds or VOCs.

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The leak was discovered when an inventory of the chemicals used at the facility, cross-referenced with an inventory of the waste products recovered from the facility, revealed a discrepancy. Estimates of the leak have ranged from 1713 to 6500 gallons.

Upon discovery of the leak, Harris Corporation emptied, then excavated, the tank. During the initial (1982) investigation, volatile organic compounds (VOCs) such as trichloroethene (TCE), tetrachloroethene (PCE), and 1,1,1-trichloroethane (TCA), along with the environmental degradation products of these compounds and varying amounts of methanol, xylene, n-butyl acetate, isopropanol, and acetone, were found in groundwater samples collected from the first set of (8) groundwater monitoring wells. Semivolatile organic compounds (SVOCs), such as dichlorobenzenes and phenol, were also found in the 1982 groundwater samples.

During the 1980s, Harris installed a total of 20 groundwater monitoring wells, including three recovery wells, at the site (Fig. 3). Currently, three wells (RW-1, MW-12, and MW-19) are used to recover groundwater, thereby controlling off-site migration of contaminated groundwater. Recovery well RW-1 reaches a depth of 35 feet, while recovery wells MW-12 and MW-19 were drilled to depths of about 100 feet each. The groundwater is discharged to the Arlington "publicly owned treatment works" (POTW) under the terms of a contract between the Harris Corporation and the Town of Poughkeepsie.

3.2: <u>Remedial History</u>

In March, 1984, Poughkeepsie's Town Board authorized Harris Corporation to discharge treated groundwater to the POTW owned by the Arlington Sewer District. At that time, the groundwater extraction and treatment system included two recovery wells (RW-1 and MW-10), as well as an activated-carbon filter. The filter consisted of two in-line, 1000-pound activated carbon tanks. During 1984, the Harris Corporation site was classified as a Class 4 site by the NYSDEC; and this classification was published in the "Registry of Inactive Hazardous Waste Disposal Sites in New York State (Volume 3)". A Class 4 designation means that the "site is properly closed, but requires continued management".

In April, 1986, the activated-carbon tanks were taken off-line, when the concentration of priority pollutants in the untreated groundwater pumpage dropped below 50 ppb of total VOCs. During 1986, 6 potable downgradient, residential wells were sampled; and the results confirmed that the water quality met New York State standards for public drinking water supplies.

In June, 1986, the Harris Corporation site's classification was changed to Class 2 by the NYSDEC, because the reclassification allowed the NYSDEC to undertake appropriate actions to prevent site-related contamination from adversely affecting human health or the environment, if necessary. This reclassification was in response to the investigation of the contaminant "plume", which indicated that the groundwater extraction and treatment system would have to be expanded to include a third pumping well.

In December, 1986, a new discharge agreement with the Town of Poughkeepsie set a 10-gpm limit on flow rate and a 0.02 lb./day limit on the total discharge of priority pollutants, which meant that the effluent concentration of priority pollutants could not exceed 167 ppb, at the maximum flow rate of 10 gpm. The new agreement also required periodic monitoring.

By June, 1987, the current groundwater extraction and treatment system (Fig. 4), consisting of three pumping-wells (RW-1, MW-12, and MW-19), was in place; and in December, 1991, a new discharge agreement required the annual sampling of 8 groundwater monitoring wells (Note: The new agreement remains in effect as of now. However, the terms and conditions of a proposed permit may supercede it in the future). The 8 wells that require monitoring under the discharge agreement include MW-1 and MW-9 through MW-15. Harris Corporation routinely samples 12, instead of the agreement-mandated 8, monitoring wells, in order to track key groundwater parameters more effectively. The additional wells monitored by Harris Corporation include RW-1, MW-17, MW-18, and MW-19, although other wells among the remaining 8 may be periodically sampled also.

As can be seen from a comparison of Tables 1 and 1A with Tables 1B and 1C, all 11 "contaminants of concern" have decreased over the last 18 years. The maximum TCE concentration among onsite monitoring wells has decreased by a factor of nearly 40, while the maximum PCE concentration among onsite monitoring wells has decreased by a factor of nearly 4. In addition, the maximum TCA concentration among onsite monitoring wells has decreased by a factor of over 300, while the maximum 1,1-DCA (1,1-dichloroethane) concentration among onsite monitoring wells has decreased by a factor of nearly 100. Furthermore, the maximum 1,2-DCE (1,2-dichloroethene) concentration among onsite monitoring wells has decreased by a factor of nearly 125, while the maximum 1,2-DCB concentration among onsite monitoring wells has decreased by a factor of nearly 425. Finally, among "contaminants of concern" of current concern, the maximum 1,4-DCB concentration among onsite monitoring wells has decreased by a factor of nearly 465.

Also, among "contaminants of concern" of historical concern, the maximum methanol concentration among onsite monitoring wells has decreased by a factor of over 1,000,000, while the maximum concentration of total xylenes among onsite monitoring wells has decreased by a factor of over 1,000. In addition, the maximum isopropanol concentration among onsite monitoring wells has decreased by a factor of at least 80, while the maximum ethylbenzene concentration among onsite monitoring wells has decreased by a factor of nearly 200.

SECTION 4: <u>SITE CONTAMINATION</u>

To evaluate the contamination present at the site and to evaluate alternatives which address the significant threat to human health and the environment posed by the presence of hazardous waste, the Harris Corporation has recently conducted a Remedial Investigation/Feasibility Study (RI/FS).

4.1: <u>Summary of the Remedial Investigation (R/I)</u>

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The field investigation associated with the RI was conducted in March, 1999. A report entitled "Focused Remedial Investigation Feasibility Study (RI/FS)", published January, 2000, describes the field activities and findings of the RI in detail.

The RI included the following activities:

1. Potable Well Survey (Fig. 5) to identify the locations of downgradient (offsite) potable wells, and subsequent collection and analysis of groundwater

samples from 15 of these wells.

2. Groundwater Sampling of 17 monitoring wells and 3 pumping wells.

3. Surface Water Sampling of an onsite stream (3 samples) and tributary (one sample).

4. Air Sampling of one office in the main building.

To determine which media (groundwater, air, etc.) contain chemicals at concentrations of concern at the Harris Corporation site, the RI analytical data were compared to environmental Standards, Criteria, and Guidance values (SCGs).

The groundwater, drinking water and surface water SCGs are based upon the NYSDEC Ambient Water Quality Standards and Guidance Values, and Part V of the NYS Sanitary Code.

The air SCGs are based upon the OSHA PELs (permissible exposure limits).

While soil SCGs are based upon the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046" (which provides soil background values and cleanup guidelines for the protection of groundwater, along with health-based exposure scenarios) and sediment SCGs are based upon the NYSDEC "Technical Guidance for Screening Contaminated Sediments", the RI included neither soil nor sediment sampling. However, 3 soil samples were taken in 1981 (see the "Soil" part of Section 4.1.3 for more information).

Chemical concentrations are reported in parts per billion (ppb) for water samples and parts per billion by volume (ppbv) for air samples. For comparison purposes, where applicable, SCGs are provided for each medium.

Based on the RI results, and in light of relevant SCGs and potential public health and environmental exposure routes, the groundwater requires remediation. The RI results are summarized below. More complete information can be found in the RI/FS Report.

4.1.1: Site Geology and Hydrogeology

Groundwater flows to the south-southeast at a gradient of approximately 0.025 foot per foot, while the water table lies at approximately 8 feet below ground surface (bgs; see Fig. 8).

The site consists of bedrock overlain by an unconsolidated soil layer called overburden. The bedrock, composed of fractured shale, is the primary pathway for groundwater. The reason for the characterization of the bedrock as the primary pathway for groundwater can be seen in Figures 6A through 6F, where the water table lies above the bedrock only in a relatively small area, most of which is in the vicinity of the bedrock trough shown in Figure 6. Otherwise, the water table generally lies within the bedrock, which makes it the primary pathway for groundwater. Nevertheless, the unconsolidated overburden provides a secondary pathway for groundwater, especially in areas of maximum overburden thickness.

A small tributary (a.k.a. swale) drains the southeast sector of the site, before flowing into a somewhat larger stream (Fig. 4). This larger (though still relatively narrow and shallow) stream drains the southwest sector of the site as it flows northwest. This larger stream, nevertheless, has a relatively low flow rate, which suggests that the surface water at the site has a minimal effect on the groundwater system.

Field tests have shown that the larger stream has little effect on the monitoring wells. In addition, field observations suggest that this stream loses water to the groundwater system during operation of the groundwater extraction and treatment system. Under natural conditions, however, this stream is believed to be a "gaining" stream (i.e., this stream's flow is believed to be augmented by groundwater under natural conditions).

Also, field observations have determined that aquifer response to recharge from precipitation occurs rapidly, despite the (theoretically) poor hydraulic connection between overburden and bedrock (i.e., slow infiltration of groundwater into the bedrock from the overburden). Therefore, it is likely that the bulk of the recharge to the (bedrock) aquifer occurs in areas where the overburden thickness is small.

The primary water-bearing zones of the site's aquifer are discrete, relatively deep fractures within the bedrock. The water-bearing zones vary in depth from 13 feet bgs (at MW-7) to 99.5 feet "below ground surface" (bgs) (at MW-14), which elevations are measured with reference to an assumed datum (i.e., a "reference elevation") of 100.0 at the building floor slab. In general, the water-bearing zones are deeper (approximately 75 feet bgs) in the monitoring wells which are located further from the main building, and shallower (approximately 30 feet bgs) in the monitoring wells which are located closer to the main building.

4.1.2: Nature of Contamination

As described in the RI/FS report, 35 groundwater, 4 surface water, and 1 air sample(s) were collected at the site in March, 1999 to fully characterize the nature and extent of contamination. This work was done pursuant to a January 21, 1999 Order on Consent between the Harris Corporation and the NYSDEC. Prior to this Order, Harris Corporation had unilaterally studied the site's groundwater for 17 years.

The main category of contaminants which exceed their SCGs is volatile organic compounds (VOCs). These contaminants of concern include trichloroethene (TCE), tetrachloroethene (PCE), 1,1,1-trichloroethane(TCA), 1,2-dichlorobenzene (1,2-DCB), and 1,4-dichlorobenzene (1,4-DCB). Additionally, 1,1-dichloroethane (1,1-DCA), cis-1,2-dichloroethene (1,2-DCE), vinyl chloride, chloroethane, 1,1-dichloroethene (1,1-DCE), and 1,2-dichloroethane (1,2-DCA) represent VOCs which can be introduced into the environment by the breakdown of the first five VOCs, and therefore are included as site-related "contaminants of concern".

Information on the properties, uses, and health effects of each of these 11 current or potential "contaminants of concern" can be obtained from the NYSDOH. However, the NYSDOH believes that there are presently no exposures related to this site; and, more specifically, that the results of the Remedial Investigation do not indicate a potential for exposures to site-related contaminants at levels expected to cause health effects.

4.1.3: Extent of Contamination

Contamination of the groundwater has been limited to the site, based primarily on the 1999 sampling data from 15 of the nearest 16 downgradient private wells. Historical contaminant detections from 15 of the nearest 16 downgradient private wells are summarized under "substances of concern" in Table 2C.

The affected (onsite) groundwater is concentrated beneath the building and somewhat downgradient from the building (toward the two outside remedial pumping wells: MW-12 and MW-19, respectively). Based on extensive sampling of downgradient residential wells and the operational data on the existing remedial system, contaminated groundwater has not migrated off site.

Trace concentrations of chemicals have been detected in three surface water samples. However, none of these chemicals were detectable at station SW-3, which represents the furthest-downstream sample taken at the site (Fig. 3).

Groundwater (On Site)

Tables 1, 1A, 1B, and 1C summarize the extent of contamination for the contaminants of concern for the years 2000, 1999, 1988, and 1982, respectively, in groundwater, and compare the data with the SCGs for the site.

The results of the March, 1999 groundwater sampling event are fully documented in the January, 2000 RI/FS report, and summarized in Table 2A for seven chemicals of concern. Other chemicals present in these groundwater samples were at concentrations below relevant standards.

The 1999 sampling results show that considerable progress has been made in cleaning up the disposed chemicals at the site prior to 1982. No acetone, methanol, or xylenes (the major components of the original spill) were detected in any of the March, 1999 groundwater samples. Groundwater standards for TCA have been met at all 20 monitoring wells. However, there were 13 exceedances for TCE (with a maximum value of 39 ppb at MW-7), 3 exceedances for PCE (with a maximum value of 16 ppb in MW-19), 2 exceedances for 1,1-DCA (with a maximum value of 8.3 ppb at MW-4), and 3 exceedances for cis-1,2-DCE (with a maximum value of 12 ppb at MW-7). In addition, there were 3 exceedances for 1,2-DCB (with a maximum value of 31 ppb at MW-8). However, there were no exceedances for 1,4-DCB among the 20 monitoring wells during the March, 1999 groundwater sampling event. The locations of the 20 monitoring wells are shown in Fig. 3.

TCE is the most widely detected contaminant among the seven chemicals of concern. The groundwater standards for TCE were exceeded in 13 of the 20 monitoring wells during the March, 1999 groundwater sampling event. With the possible exception of MW-1, the groundwater flow directions indicate that the groundwater at these wells is captured by the remedial pumping system.

MW-1 is a shallow well, screened primarily in the overburden and secondarily in the bedrock. MW-1 was constructed in the vicinity of what has been hypothesized as a 'trough' or trench in the bedrock. Contaminated groundwater in the vicinity of the trough may flow into the stream at the southeast part of the site.

During the RI/FS, the highest concentration of any VOC or contaminant of concern was 39 ppb of TCE. Although this concentration of 39 ppb, found at MW-7, is above the groundwater standard of 5 ppb, it is still relatively low, and not indicative of a Dense Nonaqueous Phase Liquid (DNAPL) source. In addition, all of the samples collected from the five other (inside) wells installed around the former UST (underground storage tank) had concentrations of chemicals at the same order of magnitude as MW-7. Therefore, the slightly higher concentrations at MW-7 do not provide a clear demonstration that this well is at the primary source of TCE or other VOC contamination.

Furthermore, an analysis of the TCE data collected from groundwater samples taken from recovery well RW-1 (which is located inside the main building, about 30 feet south-southwest of the center of the former underground tank) suggests that the concentration of TCE has reached a steady-state condition (i.e., a nearly constant amount, independent of time). The projected concentration of TCE at RW-1 in 2029 (30 years after the March, 1999 data) is about 20 ppb (Fig.7). In comparison, the TCE concentration in March, 1999 was 24 ppb.

A plausible explanation for the distribution of VOC chemicals is that there are multiple, minor sources in the soil and bedrock beneath the building. These sources could have been created by direct leaks from the old gravity collection system that drained to the former UST, or they could have resulted from adsorption to the rock/soil from the impacted (and, therefore, contaminated) groundwater.

Profiles of groundwater and bedrock elevations, as well as the March, 1999 sampling results for combined TCE, PCE and 1,2-DCE concentrations at selected monitoring-well locations, are shown in Figures 6A through 6F; while Figure 6 shows the plan view of the six cross-sectional views. In addition, Figure 9 shows that the "estimated non-detect line for VOCs in groundwater" extends offsite only in the southern sector of the site, and no further than the tributary to the main stream that borders the southwest sector of the site.

The results of the February, 1988 groundwater sampling event are also fully documented in the January, 2000 RI/FS report; and summarized in Table 2B for the seven chemicals of concern, plus an eighth chemical (1,2-DCA).

In February, 1988, there were 10 exceedances for TCE (with a maximum value of 72 ppb in MW-7), 3 exceedances for PCE (with a maximum value of 49 ppb in MW-19), no exceedances for TCA (with a maximum value of 5 ppb in MW-7), 3 exceedances for 1,1-DCA (with a maximum value of 57 ppb in MW-7), and 5 exceedances for cis-1,2-DCE (with a maximum value of 76 ppb in MW-7). No analysis for DCBs was performed during the 1988 sampling event. Locations of all 20 monitoring wells are shown in Fig. 3.

During January to February 2000, subsequent to the RI/FS, Harris Corporation sampled nine on-site monitoring wells (MW-1, -9, -10, -11, -13, -14, -15, -17, and –18) and the three pumping wells (MW-12, MW-19, and RW-1), in accordance with the routine sampling plan for the site. The results are summarized in Table 1 for the seven key chemicals of concern.

For the January/February 2000 sampling, there were 9 exceedances for TCE (with a maximum value of 29 ppb in pumping well MW-19), 5 exceedances for PCE (with a maximum value of 34 ppb in MW-19), no exceedances for TCA (with a maximum value of 0.6 ppb in pumping well RW-1), no exceedances for 1,1-DCA (with a maximum value of 3.7 ppb in monitoring well MW-1), 2 exceedances for cis-1,2-DCE (with a maximum value of 7.4 ppb in MW-1), 1 exceedance for 1,2-DCB (with a maximum value of 7.3 ppb in RW-1), and no exceedances for 1,4-DCB (with a maximum value of 0.6 ppb in RW-1).

Comparison of the results for the individual wells that were sampled in both 1999 and 2000 indicates that the chemical concentrations in the three pumping wells and in monitoring well MW-15 were higher in 2000, and the concentrations in monitoring well MW-10 were lower. Otherwise, the results for the two samplings were about the same.

Groundwater (Off Site)

Water samples were collected at 15 of the 16 closest downgradient, residential wells (Fig. 5) during March, 1999. No site-related chemicals were detected in any of these samples, except for low-level TCA detections at four of the 15 private wells which were sampled. These four private wells are located on Vassar View Road, southwest of the site, and further from the site than all except two of the 16 closest downgradient, residential wells. The TCA concentrations found in these four private wells ranged in concentration from 0.6-1.8ppb of TCA.

There are several intervening wells with no TCA present. Therefore, the origin of these isolated detections of TCA is uncertain.

PCE (0.8 ppb at one private well in November, 1994) and 1,1-DCA (1.3 ppb at the same private well in August, 1995) are the only other chemicals of concern that have been detected among the 19 residential wells historically sampled (of which only 15 wells remain).

In March, 1999, MTBE (methyl tert-butyl ether) was found in three other wells; while methylene chloride was found in a fourth well, and chloroform and naphthalene were found in a fifth well. In addition, chloroform, bromodichloromethane, dibromochloromethane, and bromoform were found among the August, 1995 and October, 1995 samples in the well that also had detections of PCE and 1,1-DCA in November, 1994 & August, 1995, respectively. Furthermore, chloroform was detected in December, 1998 in the same well that would again detect chloroform, along with naphthalene, in March, 1999. However, none of these 7 additional chemicals exceeded NYSDEC groundwater or NYSDOH drinking water standards. Furthermore, none of these 7 additional chemicals are thought to have originated at the Harris Corporation site.

Surface Water

During the March, 1999 sampling event, the surface water sample obtained at station SW-1 (located at the mouth of the swale that drains the marshy area southeast of the main building) contained 1.1 ppb of 1,1-DCA, 2.4 ppb of cis-1,2-DCE, 0.99 ppb of TCE, and 0.71 ppb of total DCBs. However, the surface water sample obtained at station SW-2 (located in the main stream opposite pumping well MW-12) contained only 0.57 ppb of cis-1,2-DCE. The drop in VOC concentrations from SW-1 to SW-2 is due to the mixing of the swale's discharge with the water in the main stream, as well as to the volatilization (evaporation) of the contaminants.

No site-related chemicals were detected further downstream (at station SW-3), mostly as a result of the volatilization of the contaminants. However, 1.1 ppb of TCA was detected upstream of the confluence of the swale with the main stream (at station SW-4). Nevertheless, based on the distribution of the chemicals in the groundwater and the chemistry at SW-1, the source of this TCA appears to be from off-site sources upstream of the industrial park.

The surface waters in the vicinity of the site are Class D waters (NYSDEC has proposed upgrading them to Class C, as part of a general reclassification of surface waters statewide, in order to protect New York State's surface water resources more fully). The Class D standards for TCE and total DCBs are 40 ppb and 50 ppb, respectively.

If the site's surface waters are upgraded to Class C, the standard for total DCBs would decrease to 5 ppb, while the standard for TCE would remain at 40 ppb. There are no Class C or D standards for 1,1-DCA, TCA, or cis-1,2-DCE. Therefore, the surface waters in the vicinity of the site are in compliance with both current and proposed surface water standards, insofar as the site-related chemicals are concerned. In addition, contaminants do not appear to be entering the main stream from the bedrock groundwater at the site. The locations of all (four) surface-water sampling stations are shown in Fig. 3.

Air (Inside Main Building)

Analysis of air samples from inside the main building on site (70A Overocker Road) detected only one contaminant, 1,1-DCE, at 0.79 ppm (3.2 mg/m3). This chemical was not found in the groundwater or the soils at the site, and, therefore, it is not believed to be a result of past disposal activities.

The February, 2000 "Report on Soil-Gas Sampling Conducted on January 26, 2000 at the Harris Corporation Site" contains the results of three soil-gas sample analyses. To further study the extent of soil-gas contamination and its potential for release into the air inside the main building, a soil-gas sample was collected from underneath the building's floor slab (from the top of the MW-5 riser pipe). Two additional samples were taken from the northwest and southeast sectors that are adjacent to the main building's exterior. These samples also constituted a check on the level of residual contamination in the vadose zone (which is equivalent to the zone or volume occupied by the unsaturated part of the overburden soil) under and around the main building. This report found no significant contamination in the vadose zone.

The analytical results from this sampling event did not find any site-related contamination that would signify that a DNAPL (dense non-aqueous-phase liquid) pool of product exists underneath the main building. Therefore, indoor air problems due to DNAPL are unlikely. Indoor air problems due to soil contamination are also unlikely, based upon the findings of the "February, 2000 "Report on Soil-Gas Sampling Conducted on January 26, 2000 at the Harris Corporation Site".

Soil

Three soil samples were taken from the pit of the former underground tank on November 18, 1981. These soil samples were analyzed for acetone, methanol, isopropanol, n-butyl acetate, xylene, and cellosolve acetate, as well as for other organic compounds. The results of this soil analysis found no organic-compound contamination (traceable to the compounds under investigation) among the three soil samples.

Representative soil profiles are shown in Figures 6G and 6H, respectively. These soil profiles are the A-A' and C-C' cross-sectional views which are depicted, in relation to the site, in Figure 6.

This above assessment is consistent with the findings of the soil gas study. No COC's (chemicals of concern) were detected in the soil gas sample collected from interior monitoring well MW-5. If COC's were present in the overburden beneath the building, off-gassing from the soil should have resulted in at least detectable concentrations in the soil gas samples. Because no COC's were detected in the soil gas, the chemicals are most likely in the bedrock below the water table.

Sediments

No analysis of stream sediments for contaminants has been performed.

4.2 Interim Remedial Measures:

No NYSDEC-approved Interim Remedial Measures have been implemented for this site.

The "Groundwater Recovery System" (see Figure 4) was implemented in 1984; and modified in 1986, and again in 1987, all of which was prior to NYSDEC's Consent Order of January 21, 1999. Additional information on this "Groundwater Recovery System" is available in section 3.2 ("Remedial History").

4.3 Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Chapter 6 of the RI report.

An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are:

1. The source of contamination;
2. The environmental media and the transport mechanisms;
3. The point of exposure;
4. The route of exposure;
5. The receptor population.

These elements of an exposure pathway may be based on past, present, or future events.

Ingestion, dermal contact, and inhalation, associated with the potable use (i.e., drinking, cooking, and bathing) of contaminated groundwater, are the pathways of greatest concern; especially since there are at least 16 private wells in the vicinity of the site. However, the summary of historical monitoring of downgradient residential wells shown in Table 2C indicates that NYSDOH drinking water standards have not been exceeded in the annual sampling of the 6 (now 2) of the closest residential wells. Therefore, exposures to site-related contaminants are not expected as a result of private well use.

4.4 Summary of Environmental Exposure Pathways:

Exposure pathways which exist at the site include ingestion and inhalation by fish & wildlife. However, the site-related volatile organic contaminants (VOCs) are not present on the (soil) surface. In addition, the groundwater contaminant concentrations of VOCs migrating off-site are low. Therefore, the impact of VOCs on the surface water in the vicinity of the site, as well as ingestion and inhalation of VOCs by fish and wildlife, is not significant.

SECTION 5: ENFORCEMENT STATUS

An "Order on Consent" (Index # A3-0368-9807) between Harris Corporation and NYSDEC went into effect on January 1, 1999, since Harris Corporation is a "potentially responsible party" (PRP) for the contamination at the Harris Corporation site. In general, PRPs are owners, operators, waste generators, and haulers, whether current or historic, who may be legally liable for contamination at a site.

Since the loss of chemicals was first reported at the site, Harris Corporation has unilaterally removed the underground tank, completed various investigations, and constructed a groundwater remediation system (Fig. 4). The groundwater remediation system has been operated and modified over the last 16 years. During this period, the progress and monitoring of this remediation system has been regularly reported to the NYSDEC.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria and Guidance (SCGs), and be protective of human health and the environment. At a minimum, the remedy selected should eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site, through the proper application of scientific and engineering principles.

The goals selected for this site are:

1. Continue to prevent, to the extent practicable, the potential for exposure to groundwater adversely affected by the site (i.e., groundwater that exceeds NYSDOH standards for drinking water).

2. Continue to prevent, to the extent practicable, off-site migration of groundwater adversely affected by the site (i.e., groundwater that does not attain NYSDEC Class GA Ambient Water Quality Criteria).

SECTION 7: SUMMARY OF THE

EVALUATION OF ALTERNATIVES

The selected remedy should protect human health and the environment, be cost-effective, comply with other statutory laws, and utilize permanent solutions and alternative (including resource-recovery) technologies to the maximum extent practicable. Potential remedial alternatives for the site were identified, screened and evaluated in the report entitled "Focused Remedial Investigation Feasibility Study" (RI/FS) of January, 2000.

A summary of the detailed analysis follows. As presented below, the "time to implement" reflects the time required by the PRP to design the remedy, to procure a construction contract, and to construct the remedy.

7.1 Description of Alternatives

Through a process of screening potentially applicable technologies for remediating the groundwater at the site, four alternatives (numbered 1-4) were developed. The description of each alternative concludes with a summary of costs, while Table 3 provides a summary comparison of all 4 alternatives.

Alternative 1: No Action (Discontinue Groundwater Extraction and Treatment System/Discontinue Monitoring Program)

Description. Alternative 1, the "No Action" alternative, is evaluated as a procedural requirement and as a basis for comparison.

In Alternative 1, the current interim groundwater extraction and treatment system would be shut down, and no monitoring would be conducted. "Natural attenuation" would be the only process relied upon for treatment of the site's groundwater.

"Natural attenuation" means a reliance on natural processes to achieve site-specific remedial objectives within a reasonable time frame, as compared to that offered by more proactive remedial measures. Natural attenuation processes may include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, and/or concentration of contaminants in the soil groundwater.

Institutional controls would be implemented as part of this alternative. Alternative 1's institutional controls would include deed, development, and groundwater-use restrictions, in order to minimize human contact with contaminated media.

Deed and development restrictions would prohibit construction in specified areas of the site that would expose workers, or the surrounding public, to any remaining groundwater contaminants. Deed and development restrictions would also serve as a notification of the groundwater contamination to future owners, in addition to restricting access to contaminated media. Notices on deeds and building permits would act as reminders of these development restrictions.

Groundwater-use restrictions would be implemented at the site to prevent development of the underlying groundwater as a potable or as a process water source, unless the necessary water quality treatment (as determined by the NYSDEC) is implemented.

Estimated capital and long-term O&M costs for Alternative 1 are presented below. These costs are based on the RI/FS report, and have a range of accuracy of -30 to +50%. These costs are for dismantling the current groundwater extraction and treatment system. Annual O&M costs are estimated on a 30-year implementation basis, and based on a 5% interest rate to estimate the present worth cost.

Present Worth ($):	90,000
Capital Cost ($):	89,200
Annual O & M ($):	0
Time to Implement (Yrs.):	less than 1

Additional detail on the cost of this alternative is presented in Table 9-3 of the RI/FS.

Alternative 2: Discontinue Groundwater Extraction and Treatment System/Continue Monitoring Program/Connect to Public Water Supply

Description. In Alternative 2, the interim groundwater extraction and treatment system currently operating at the site would be permanently shut down. However, 12 (onsite) monitoring (and pumping) wells, as well as 5 private drinking water wells located downgradient of the site, would be monitored annually, in order to determine if site-related contaminants are present in concentrations exceeding drinking water standards. Alternative 2 includes the added precaution of connecting the lots located downgradient of the site to a public water system, if necessary.

If the exceedance of any NYS drinking water standard were recorded for any off-site well, that well would be resampled immediately. If the exceedance were confirmed, the lot with the contaminated well would be connected to the public water system as soon as possible. At the same time, the private well would be closed.

Public water service from the Town of Poughkeepsie is available for all 16 lots that contain private wells immediately downgradient of the site. Any connection of a lot to the public water supply system, and/or the closure of a private well, would be subject to the permission of the property owner. This alternative would include development and groundwater use restrictions at the site.

Institutional controls would be implemented as part of this alternative. Alternative 2's institutional controls would include deed, development, and groundwater-use restrictions, in order to minimize human contact with contaminated media.

Deed and development restrictions would prohibit construction in specified areas of the site that would expose workers, or the surrounding public, to any remaining groundwater contaminants. Deed and development restrictions would also serve as a notification of the groundwater contamination to future owners, in addition to restricting access to contaminated media. Notices on deeds and building permits would act as reminders of these development restrictions.

Groundwater-use restrictions would be implemented at the site to prevent development of the underlying groundwater as a potable or as a process water source, unless the necessary water quality treatment (as determined by the NYSDEC) is implemented.

Estimated capital and long-term O&M costs for Alternative 2 are presented below. These costs are based on the RI/FS report, and have a range of accuracy of -30 to +50%. Annual O&M costs are estimated on a 30-year implementation basis, and based on a 5% interest rate to estimate the 'present worth' cost.

This cost estimate does not include the contingency costs that would be incurred for the connection of residences with contaminated wells to the public water supply.

Present Worth ($):	345,000
Capital Cost ($):	8,000
Annual O & M ($):	21,900
Time to Implement (Yrs.):	less than 1

Additional detail on the cost of this alternative is presented in Table 9-4 of the RI/FS.

Alternative 3: Continue Groundwater Extraction and Treatment System (Continue Discharging to the Arlington POTW)/Continue Monitoring Program/Connect to Public Water Supply

Description. Alternative 3 requires continued operation of the groundwater extraction and treatment system that is currently being implemented, and discharge of the extracted groundwater to the POTW. Alternative 3 includes the added precaution of connecting the lots located downgradient of the site to a public water system, if necessary.

Alternative 3 includes a monitoring program, which requires annual on-site sampling of 12 (monitoring and pumping) wells and annual off-site sampling of 5 private drinking water wells. Under this monitoring program, if the exceedance of any NYS drinking water standard were recorded for any off-site well, that well would be resampled immediately. If the exceedance were confirmed, the lot with the contaminated well would be connected to the public water system as soon as possible. At the same time, the private well would be closed.

Public water service from the Town of Poughkeepsie is available for all 16 lots that contain private wells immediately downgradient of the site. Any connection of a lot to the public water supply system, and/or the closure of a private well, would be subject to the permission of the property owner. This alternative would include development and groundwater use restrictions at the site.

Institutional controls would be implemented as part of this alternative. Alternative 3's institutional controls would include deed, development, and groundwater-use restrictions, in order to minimize human contact with contaminated media.

Deed and development restrictions would prohibit construction in specified areas of the site that would expose workers, or the surrounding public, to any remaining groundwater contaminants. Deed and development restrictions would also serve as a notification of the groundwater contamination to future owners, in addition to restricting access to contaminated media. Notices on deeds and building permits would act as reminders of these development restrictions.

Groundwater-use restrictions would be implemented at the site to prevent development of the underlying groundwater as a potable or as a process water source, unless the necessary water quality treatment (as determined by the NYSDEC) is implemented.

Estimated capital and long-term O&M costs for Alternative 3 are presented below. These costs are based on the RI/FS report, and have a range of accuracy of -30 to +50%. Annual O&M costs are estimated on a 30-year implementation basis, and based on a 5% interest rate to estimate the 'present worth' cost. This cost estimate assumes that the water quality of 5 residential wells would always be monitored.

This cost estimate does not include the contingency costs that would be incurred for the connection of residences with contaminated wells to the public water supply.

Present Worth ($):	592,000
Capital Cost ($):	0
Annual O & M ($):	38,500
Time to Implement (Yrs.):	less than 1

Additional detail on the cost of this alternative is presented in Table 9-5 of the RI/FS.

Alternative 4: Continue Groundwater Extraction and Treatment System (With Discharge to Surface Water, After On-Site Treatment)/Continue Monitoring Program/Connect to Public Water Supply

Description. Alternative 4 is similar to Alternative 3, except that the extracted groundwater would be treated with activated carbon, and discharged to the stream that abuts the property's southwestern border. Since Alternative 4 eliminates POTW charges for sewage treatment, its O&M cost (for the activated-carbon system) is currently about 6-7% less than that of Alternative 3. This alternative would include development and groundwater use restrictions at the site.

Institutional controls would be implemented as part of this alternative. Alternative 4's institutional controls would include deed, development, and groundwater-use restrictions, in order to minimize human contact with contaminated media.

Deed and development restrictions would prohibit construction in specified areas of the site that would expose workers, or the surrounding public, to any remaining groundwater contaminants. Deed and development restrictions would also serve as a notification of the groundwater contamination to future owners, in addition to restricting access to contaminated media. Notices on deeds and building permits would act as reminders of these development restrictions.

Groundwater-use restrictions would be implemented at the site to prevent development of the underlying groundwater as a potable or as a process water source, unless the necessary water quality treatment (as determined by the NYSDEC) is implemented.

Estimated capital and long-term O&M costs for Alternative 4 are below. These costs are based on the RI/FS report, and have a range of accuracy of -30 to +50%. Annual O&M costs are estimated on a 30-year implementation basis, and based on a 5% interest rate to estimate the 'present worth' cost. This cost estimate assumes that the water quality of 5 residential wells would always be monitored.

This cost estimate does not include the contingency costs that would be incurred for the connection of residences with contaminated wells to the public water supply.

Present Worth ($):	709,000
Capital Cost ($):	36,700
Annual O & M ($):	43,700
Time to Implement (Yrs.):	2

Note that the annual 'O&M' costs for Alternatives 3 and 4 differ by a relatively small amount. Alternative 3 must pay a sewage treatment (groundwater discharge) fee, while alternative 4 must pay for the maintenance of the activated-carbon system. Additional detail on the cost of this alternative is presented in Table 9-6 of the RI/FS.

A detailed evaluation of each of these alternatives is presented in Section 7.2 below.

7.2 Evaluation of Remedial Alternatives

The 8 criteria used to evaluate the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each criterion, a brief description is provided, followed by an evaluation of the 4 alternatives, based on the first 7 of the 8 criteria (A detailed discussion of the evaluation criteria, and a comparative analysis of 6 alternatives (which were reduced to 4 alternatives for this Proposed Remedial Action Plan), is also included in the RI/FS).

Remedial alternatives are developed and evaluated using the first 7 of 8 criteria specified by both the National Oil and Hazardous Substances Contingency Plan (NCP) and the New York State hazardous waste regulations. These evaluation criteria, along with an analysis of the extent to which each of the 4 alternatives meets each of the criteria, are as follows:

1. Compliance with the New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance. The most significant SCGs for this site are the groundwater and drinking water standards associated with the chemicals of concern.

Alternative 1 would rely solely on natural attenuation to reduce contaminant concentrations. However, based on the steady-state conditions projected for the next 30 years as to the TCE contamination in RW-1 (Fig. 7), it is unlikely that NYSDEC Class GA groundwater standards would be achieved in a reasonable time frame. Since the contaminant plume would not be controlled by an active remedy, it is possible that site-related contaminants would reach the downgradient water supply wells and cause the drinking water standards to be exceeded.

No air releases are expected in the implementation of Alternative 1; therefore no NAAQS (National

Ambient Air Quality Standards) would apply.

In summary, Alternative 1 would not comply with the Federal and state requirements that require a selected remedial alternative to attain a cleanup level that eliminates, reduces, or controls risks to human health and the environment. Rather, the risks to human health and the environment would be increased if Alternative 1 were selected.

Alternative 2 would be designed to achieve drinking water standards for downgradient homeowners by relying solely on natural attenuation (to decrease groundwater contaminant concentrations, in order to meet the relevant Class GA groundwater standards). Since the contaminant plume would not be controlled by an active remedy, it is possible that site-related contaminants would reach the downgradient water supply wells and cause the drinking water standards to be exceeded.

The remedial activities included in this alternative would not generate air emissions in excess of applicable air quality standards.

Alternative 2 would partially comply with the Federal and state regulations that require a selected remedial alternative to attain a cleanup level that eliminates, reduces, or controls risks to human health and the environment. Under this alternative, human health risk would be reduced because a route of exposure (i.e., groundwater ingestion) would be eliminated when a home is connected to the public water supply. Therefore, groundwater remediation would rely on passive techniques (which may require more time to achieve groundwater standards than non-passive techniques).

Alternative 3 would achieve compliance with chemical-specific SCGs for the site, including drinking water and Class GA groundwater standards.

Remedial activities for Alternative 3 would be continued until the Class GA standards are met. A private well that supplies water containing VOCs at concentrations exceeding drinking water standards would be closed; and that home would be connected to the public water supply. In Alternative 3, effluent from the groundwater extraction system would be discharged to the local sewer, in accordance with the existing agreement with the Town.

Alternative 3 would not generate air emissions in excess of applicable air quality standards. In addition, Alternative 3 would comply with the Federal and state regulations that require a selected remedial alternative to attain a cleanup level that eliminates, reduces, or controls risks to human health and the environment. Under this alternative, site contaminants in groundwater would be removed; and homeowners would receive potable water.

Alternative 4 is similar to Alternative 3, except that the extracted groundwater would be treated to satisfy the requirements of a SPDES permit.

2. <u>Protection of Human Health and the Environment</u>. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

Alternative 1 would require neither the groundwater extraction and treatment system nor monitoring. Once the groundwater extraction and treatment system is shut down, the contaminant plume would not be controlled; and would migrate to other areas. By shutting the pumping wells off, the hydraulic gradient at the site would change; and site groundwater may begin to flow to the small streams located near the southeast and southwest property borders. The flow of contaminated groundwater into these small streams may cause an additional risk of exposure to humans, aquatic life, animals, and vegetation.

Alternative 1 would not be protective of human health since downgradient water supply wells would likely be exposed to site contaminants, causing contaminant exposure to humans. Likewise, Alternative 1 would not be protective of the environment; since low-level concentrations of contaminants would remain in the groundwater.

Institutional measures included in Alternative 1 serve to protect human health by preventing human contact with the contaminants that would remain at the site; however, the potential for human exposure to the contaminants would remain.

Alternative 2 would require that the groundwater extraction and treatment system be terminated, that the potable water wells of homes be periodically sampled, that homes be connected to the public water system (if necessary), and that natural attenuation be monitored. Alternative 2 would provide a reliable source of potable water for those homes with wells that supply water containing site-related contaminants at concentrations above drinking water standards. Therefore, this alternative would be protective of human health by eliminating the potable water exposure route, since homeowners would be provided with an alternate source of potable water.

Long-term groundwater monitoring, as included in this alternative, would not be protective of human health and the environment, but would assess migration and natural attenuation of the contaminant plume. The monitoring would document the nature of any continued risk posed by the contamination. As no active remedial measures are included in Alternative 2, the contaminant plume may migrate to other areas; and would not be controlled. By shutting the pumping wells off, the hydraulic gradient at the site would change; and site groundwater may begin to flow to the small streams located near the southeast and southwest property borders. The flow of contaminated groundwater into these small streams may cause an increased risk of exposure to humans, aquatic life, animals, and vegetation.

Alternative 3 would include the extraction of contaminated groundwater from the underlying aquifer to control the contaminant plume, monitoring of drinking water and groundwater, and connection of homes to the public water supply, if necessary. Alternative 3 would be protective of human health and the environment by reducing contaminant levels in the groundwater, and by providing potable water to downgradient homeowners.

Alternative 4 is similar to Alternative 3, except that it would require that extracted groundwater be treated to remove VOCs (in accordance with a SPDES permit) prior to being discharged to a nearby stream.

3. <u>Short-term Effectiveness</u>. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during construction and/or implementation of the remedial action are evaluated. The length of time needed to achieve the remedial objectives is also estimated, and compared with the other alternatives.

Alternative 1 would cause short-term impacts due to the dismantling of the groundwater extraction and treatment system, as well as due to the sampling activities. The activities of Alternative 1 would not be expected to cause any short-term exposures to site contaminants.

Alternative 2 would cause short-term impacts, as a result of the dismantling of the groundwater extraction and treatment system, sampling activities, and connection(s) to the public water supply (if necessary). The activities of Alternative 2 would not be expected to cause any short-term exposures to site contaminants.

Alternative 3 would cause short-term impacts, due to sampling activities, construction, and connection to the public water supply (if necessary). The activities of Alternative 3 would not be expected to cause any short-term exposures to site contaminants.

Alternative 4 would have short-term impacts similar to those of Alternative 3, along with the additional short-term impact associated with the periodic maintenance of the activated-carbon treatment system.

4. <u>Long-term Effectiveness and Permanence.</u> This

criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

Alternative 1, the 'no action' alternative, would not provide a high degree of long-term effectiveness and permanence. Environmental degradation may occur as a result of migration of contaminants to surrounding media. Although human health risks may be minimized through the use of deed, development, and groundwater restrictions, these institutional measures would not eliminate the potential for human exposure to site contaminants (e.g., groundwater uptake in downgradient areas). As the contaminant plume would not be actively controlled in this alternative, downgradient homeowners may become exposed to site contaminants via the groundwater ingestion pathway.

Alternative 2 would provide a permanent and effective solution for eliminating the potable water route of exposure to nearby homeowners. However, environmental degradation may continue to occur from migration of contaminants to surrounding areas.

Alternative 3 would remove VOCs permanently from the underlying groundwater, and provide a permanent potable water supply to the downgradient homeowners, if necessary. By monitoring or providing an alternate water supply to the downgradient homeowners, the potable water route of exposure to site contaminants would be controlled. The estimated time frame for continued operation of the groundwater extraction and treatment system is 30 years.

Alternative 4 would have a long-term effectiveness and permanence similar to that of Alternative 3, as long as the activated-carbon filter were properly maintained.

5. <u>Reduction of Toxicity, Mobility or Volume.</u> Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 1 would result in a minimal decrease in the toxicity, mobility, and volume of VOC contaminants at the site, as it would rely solely on 'natural attenuation' processes.

Alternative 2 would rely solely on natural attenuation to reduce the toxicity, mobility, and volume of groundwater contaminants.

Alternative 3 would reduce the mobility and volume of contaminants underlying the site, by extracting the contaminated groundwater and discharging it off-site. The discharge would receive conventional treatment from the wastewater treatment plant operated by the town.

Alternative 4 would reduce the mobility and volume of contaminants similar to Alternative 3, except that the discharge would be treated on-site using GAC. In both cases, the treatment process would reduce the toxicity of the contaminant.

6. <u>Implementability.</u> The technical and administrative feasibility of implementing each alternative is evaluated. Technical feasibility includes the difficulties associated with the construction relevant to each alternative, and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated; along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

Alternative 1 would involve no notable constraints to implementation, as it would involve shutting down and dismantling the current groundwater extraction and treatment system. Development, deed, and groundwater use restrictions would require administrative effort to implement.

Alternative 2 would involve no notable constraints to implementation, as it would require the shutting down and dismantling of the current groundwater extraction and treatment system, sampling, and connecting homes to an existing public water supply. However the property owners must give permission for their homes to be connected to the public water system.

Alternative 3 would involve no notable constraints to implementation, as it would require the continued operation of the extraction system, minor construction, sampling, and connecting homes to an existing public water supply, if necessary. Periodic approvals would be necessary, in order to continue discharging contaminated groundwater to the POTW.

Alternative 4 would be similar to Alternative 3, in that no notable constraints to implementation appear to exist. Approval from the NYSDEC would be necessary, in order to discharge treated groundwater to the onsite stream system.

7. Cost. When two or more alternatives have met the requirements of the previous six evaluation criteria, cost (i.e., cost-effectiveness) can be used as the basis for the final decision. Capital, operation, and maintenance costs were estimated for each alternative, along with "present worth", in Section 7.1, in order to evaluate the cost of each alternative. The costs for each alternative are summarized in Table 3.

8. Community Acceptance. The public's concerns relevant to the RI/FS report and associated documents, as well as this Proposed Remedial Action Plan, will be evaluated. A Responsiveness Summary will be prepared that describes the public comments received, and how the Department will address the issues of public concern. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued. These notices will describe the differences between the remedies, and the reasons for all changes to the proposed remedy.

SECTION 8: SUMMARY OF THE PROPOSED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC is proposing Alternative 3 as the remedy for this site.

Alternative 3 is proposed because it would protect the public health and the environment. This alternative would provide for the connection of downgradient homes with private drinking water wells, contaminated at levels exceeding NYSDOH public drinking water standards for site-related contaminants, to the public water supply. This alternative would also provide for the continued removal of contaminated groundwater via the three existing groundwater recovery wells, and treatment in the publicly-owned-treatment-works or POTW. This alternative would require routine operation and maintenance of the groundwater extraction and treatment system, since all recovered groundwater would be discharged directly into the local sanitary sewer line (which is connected to the Arlington POTW).

Alternatives 1 and 2 do not provide equivalent protection of public health and the environment. However, Alternative 4 is very similar to the proposed remedy, and may become more cost-effective in the future. As a result, Alternative 4 would be equivalent to a contingent remedy.

The estimated present worth cost to implement the remedy is $592,000. The cost to construct the remedy is estimated to be $0 (which does not include the contingency costs that would be incurred for the connection of residences with contaminated wells to the public water supply.); and the estimated average annual O & M cost for 30 years is $38,500. The $38,500 estimate includes $23,500 for the O & M of the groundwater extraction and treatment system; $11,500 for the monitoring of all wells (both on site and residential), as well as the discharge to the

POTW; and $3,500 for contingencies.

The elements of the proposed remedy are as follows:

1. Continued operation and maintenance of the current groundwater extraction and treatment system.

2. Connection of residences to the public water supply, to be implemented if sampling results indicate that any private wells have become contaminated by offsite migration of site-related contaminants in excess of applicable drinking water standards.

3. Institution of a long-term monitoring program. This program includes the monitoring of both onsite monitoring wells and offsite residential wells, for VOCs. In addition, periodic monitoring of the POTW discharge would be performed, as required by the Arlington Sewer District. This program would allow the effectiveness of the contaminant plume containment strategy to be monitored, and would be a component of the O & M for the site.

4. Institutional controls consisting of onsite deed and groundwater use restrictions. Institutional controls would include deed, development, and groundwater-use restrictions, in order to minimize human contact with contaminated media. Deed and development restrictions would prohibit construction in specified areas of the site that would expose workers, or the surrounding public, to any remaining groundwater contaminants. Deed and development restrictions would also serve as a notification of the groundwater contamination to future owners, in addition to restricting access to contaminated media. Notices on deeds and building permits would act as reminders of these development restrictions. Groundwater-use restrictions would be implemented at the site to prevent development of the underlying groundwater as a potable or as a process water source, unless the necessary water quality treatment (as determined by the NYSDEC) is implemented.

Table 1

Nature and Extent of Contamination
Groundwater Results – January/February 2000

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs	SCGs (ppb)
Groundwater	Volatile Organic Compounds (VOCs)	Trichloroethene (TCE)	0.9 to 29	9 of 12	5
		Tetrachloroethene (PCE)	ND (1) to 34	5 of 12	5
		1,1,1-Trichloroethane (TCA)	ND (1) to 0.6	0 of 12	5
		1,1-Dichloroethane (1,1-DCA)	ND (1) to 3.7	0 of 12	5
		cis-1,2-Dichloroethene (1,2-DCE)	ND (1) to 7.4	2 of 12	5
		1,2-Dichlorobenzene (1,2-DCB)	ND (1) to 7.3	1 of 12	3
		1,4-Dichlorobenzene (1,4-DCB)	ND (1) to 0.6	0 of 12	3
		Methanol	No data		50
		Xylenes	No data		5
		Isopropanol	No data		50
		Ethylbenzene	No data		5

Note: Footnotes for Tables 1, 1A, 1B & 1C are listed on the page following Table 1C.

Table 1A

Nature and Extent of Contamination
Groundwater Results - March 1999

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs	SCGs (ppb)
Groundwater	Volatile Organic Compounds (VOCs)	Trichloroethene (TCE)	ND (0.5) to 39	13 of 20	5
		Tetrachloroethene (PCE)	ND (0.5) to 16	4 of 20	5
		1,1,1-Trichloroethane (TCA)	ND (0.5) to 3.8	0 of 20	5
		1,1-Dichloroethane (1,1-DCA)	ND (0.5) to 8.3	2 of 20	5
		cis-1,2-Dichloroethene (1,2-DCE)	ND (0.5) to 12	3 of 20	5
		1,2-Dichlorobenzene (1,2-DCB)	ND (0.5) to 31	4 of 20	3
		1,4-Dichlorobenzene (1,4-DCB)	ND (0.5) to 2.5	0 of 20	3
		Methanol	ND (5)	0 of 20	50
		Xylenes	ND (0.5)	0 of 20	5
		Isopropanol	ND (Tent. ID'ed)	0 of 20	50
		Ethylbenzene	ND (0.5)	0 of 20	5

Note: Footnotes for Tables 1, 1A, 1B & 1C are listed on the page following Table 1C.

Table 1B

Nature and Extent of Contamination
Groundwater Results - February, 1988

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs	SCGs (ppb)
Groundwater	Volatile Organic Compounds (VOCs)	Trichloroethene (TCE)	ND (1) to 72	10 of 20	5
		Tetrachloroethene (PCE)	ND (1) to 49	3 of 20	5
		1,1,1-Trichloroethane (TCA)	ND (1) to 5	0 of 20	5
		1,1-Dichloroethane (1,1-DCA)	ND (1) to 57	3 of 20	5
		cis-1,2-Dichloroethene (1,2-DCE)	ND (1) to 76	5 of 20	5
		1,2-Dichlorobenzene (1,2-DCB)	No Data		3
		1,4-Dichlorobenzene (1,4-DCB)	No Data		3
		Methanol	No Data		50
		Xylenes	ND (3)	0 of 4	5
		Isopropanol	No Data		50
		Ethylbenzene	No Data		5

Note: Footnotes for Tables 1, 1A, 1B & 1C are listed on the page following Table 1C.

Table 1C

Nature and Extent of Contamination
Groundwater Results - 1982

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs	SCG (ppb)
Groundwater	Volatile Organic Compounds (VOCs)	Trichloroethene(TCE)	ND (10) to 1290	10 of 15	5
		Tetrachloroethene (PCE)	ND (10) to 98	4 of 15	5
		1,1,1-Trichloroethane (TCA)	ND (10) to 680	3 of 15	5
		1,1-Dichloroethane (1,1-DCA)	ND (10) to 574	7 of 15	5
		cis-1,2-Dichloroethene (1,2-DCE)	ND (10) to 1190	10 of 15	5
		1,2-Dichlorobenzene (1,2-DCB)	ND (10) to 8110	5 of 9	3
		1,4-Dichlorobenzene (1,4-DCB)	ND (10) to 1440	2 of 9	3
		Methanol	ND to 5,380,000	5 of 11	50
		Xylenes	ND (10) to 533	5 of 16	5
		Isopropanol	ND to 400	2 of 11	50
		Ethylbenzene	ND (10) to 96	3 of 15	5

Note: Footnotes for Tables 1, 1A, 1B & 1C are listed on the page following Table 1C.

FOOTNOTES

Tables 1, 1A, 1B, and 1C

1. "ppb" means parts per billion;
2. "Concentration range" means the range of concentrations for each chemical among the total number (up to 20) of monitoring wells sampled;
3. "SCG" means Standards, Criteria and Guidance standard;
4. "Frequency of Exceeding SCG" means the total number of well samples which exceeded the standard for that chemical, among the total number (up to 20) of samples;
5. "ND" means that the chemical was not detected above the "detection limit" (which is the concentration shown in parenthesis); however, if the detection limit was not reported, there is no parenthesis after "ND";
6. "Tent. ID'ed" means that the chemical was "tentatively identified". For example, isopropanol was not specifically "targeted" for analysis during the 1999 laboratory work. However, the laboratory examined the "mass spectral" data for the samples to determine if non-targeted compounds were present. Such compounds, if determined to be present based on an analysis of the mass-spectral data, were reported as "tentatively identified compounds" or "TICs". Isopropanol was not reported as a "TIC" in any of the 1999 samples. Therefore, isopropanol was presumed absent from the site's groundwater in 1999.
7. "No Data" means that groundwater samples were not analyzed for this chemical during this sampling event;
8. Methanol, xylenes, isopropanol, and ethylbenzene are no longer chemicals of concern.

Table 2A

Summary of March, 1999 Groundwater Results (ppb)

Location	1,1-DCA	1,2-DCE	TCA	TCE	PCE	1,2-DCB	1,4-DCB
MW-1	4.4	6.0	1.8	21	0.71		
MW-2							
MW-3							
MW-4	8.3	3.9	3.4	15	2.6	9.7	2.1
MW-5	1.0	4.1		8.8	1.6	2.7	
MW-6		0.87		2.8			
MW-7	5.7	12	3.8	39	6.0	14	1.7
MW-8	3.2	5.4	0.69	15	2.0	31	2.5
MW-9	0.84	2.2		19	3.9		
MW-10	0.72	1.8		13	3.4	0.61	
MW-11		1.1		11	1.5		
MW-12		1.2		9.5	4.5		
MW-13		4.4		1.0			
MW-14	0.77	3.4		1.7			
MW-15				12	4.7		
MW-16							
MW-17				6.0	5.4		
MW-18				1.2			
MW-19		0.70		14	16		
RW-1	2.5	5.0	0.72	24	5.3	12	1.2

Footnotes:

1. "ppb" means "parts per billion";
2. The "detection limit" for all 7 chemicals of concern is 0.5 ppb;
3. A blank space means that the chemical of concern was reportedly below the 0.5 ppb "detection limit", per the analysis of that monitoring well's sample;
4. "1,2-DCE" includes both the "cis" and "trans" forms of "1,2-DCE"; however, only "cis-1,2-DCE" has been found at the site.

Table 2B

Summary of February, 1988 Groundwater Results (ppb)

Location	1,1-DCA	cis-1,2-DCE	TCA	TCE	PCE	1,2-DCA
MW-1	5	16		42		
MW-2						
MW-3						
MW-4	36			22	2	2
MW-5	9	21		17	4	
MW-6	1	3		2		1
MW-7	57	76	5	72	10	53
MW-8				2		
MW-9	2	3		16	4	
MW-10	1	2		9	2	
MW-11	2	4		9	1	
MW-12			1	11	4	
MW-13		8		3		
MW-14	1	14		3		
MW-15				3		
MW-16						
MW-17			3			
MW-18				2		
MW-19		3		30	49	
RW-1		3	1	26	23	1

Footnotes:

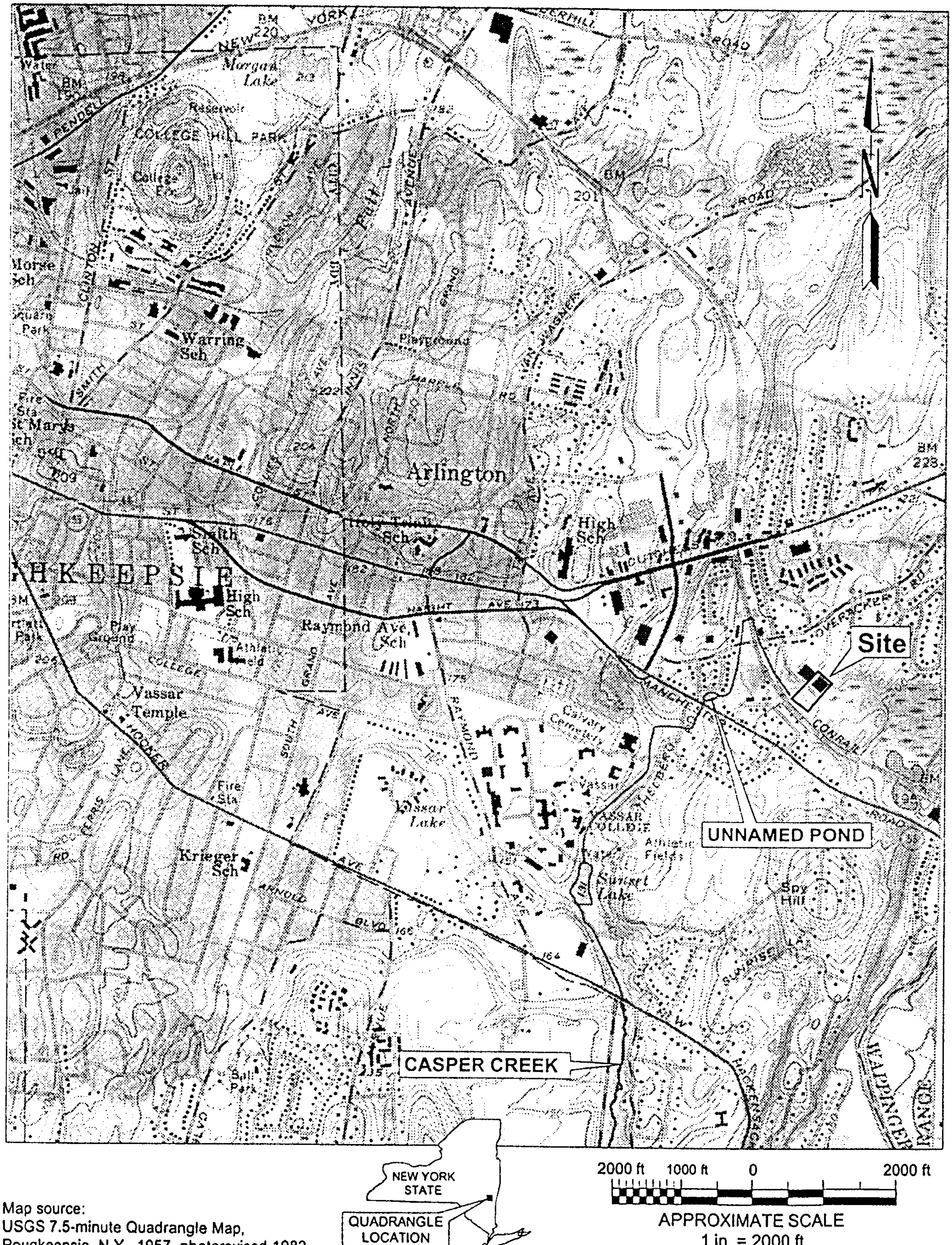
1. "ppb" means "parts per billion";
2. The "detection limit" for all 6 chemicals of concern is 1 ppb;
3. A blank space means that the chemical of concern was reportedly below the 1 ppb "detection limit", per the analysis of that monitoring well's sample;
4. 1,2-DCB and 1,4-DCB were not chemicals of concern during the February, 1988 groundwater sampling event; however, 1,2-DCA was a chemical of concern during this sampling event.

TABLE 3

SUMMMARY OF DETAILED EVALUATION OF REMEDIAL ALTERNATIVES

HARRIS CORPORATION SITE

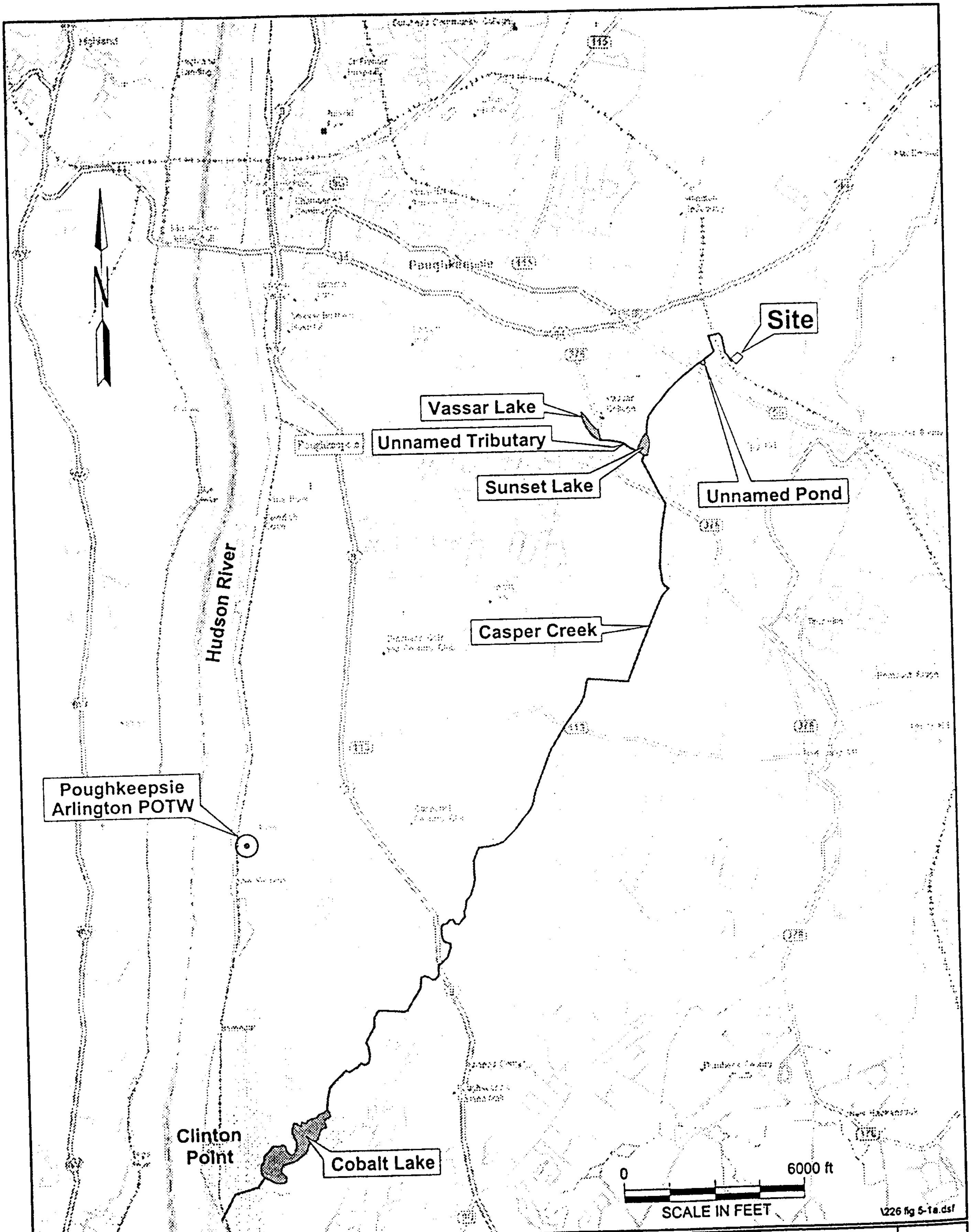
ALTERNATIVE	OVERALL PROTECTION OF OF HUMAN HEALTH AND THE ENVIRONMENT	COMPLIANCE WITH SCGs	REDUCTION OF TOXICITY, MOBILITY OR VOLUME	SHORT-TERM EFFECTIVENESS	LONG-TERM EFFECTIVENESS AND PERMANENCE	IMPLEMENTABILITY	COST
ALTERNATIVE 1: Stop Interim Extraction and Treatment Program and Cease Monitoring	Not protective of human health or the environment. Institutional controls (deed, development, and groundwater use restrictions) provide minimal prevention of human contact. Low-level contaminant concentrations will remain in the environment and may migrate to nearby streams.	Relies solely on natural attenuation to achieve site SCGs. Potable water of downgradient lots may not meet drinking water standards. May not achieve groundwater SCGs within a reasonable time frame.	Relies on natural attenuation to reduce toxicity, mobility, and volume of the groundwater contaminant plume.	Activities will not cause significant short term exposure to human health.	Potable wells of private homeowners may become contaminated. Does not provide long-term effectiveness or permanence as contaminants will remain in site groundwater and will not be controlled.	There are no significant constraints to shutting down the groundwater extraction and treatment system. Administrative effort will be needed to implement deed, development, and groundwater use restrictions.	Capital: $89,200 O&M: $0/yr Present Worth: $90,000
ALTERNATIVE 2: Stop Interim Extraction and Treatment Program/ Connect to Public Water Supply/ Monitor Natural Attenuation	Protects human health by providing a reliable source of potable water to homes and by eliminating the exposure route of human ingestion of groundwater. Provides minimal protection to the environment as no active groundwater remedy is undertaken. Does not control contaminant plume from traveling to off-site locations, such as streams.	Achieves drinking water standards for downgradient homeowners. Relies solely on natural attenuation to achieve site SCGs. May not achieve. groundwater SCGs within a reasonable time frame.	Relies on natural attenuation to reduce toxicity, mobility, and volume of the groundwater contaminant plume.	Connection of homes to the public water supply will temporarily disrupt homeowners. Activities should not cause short term exposure to site contaminants.	By connecting homes to public water, the human ingestion exposure route is permanently eliminated. The contaminant plume will not be controlled and contaminants will remain in the environment.	There are no significant constraints to shutting down the groundwater extraction and treatment system or connecting homes to the public water supply. Monitoring is also readily implementable. Property owners must grant permission.	Capital: $ 8,000 O&M: $21,900/yr Present Worth: $345,000
ALTERNATIVE 3: Continue Extraction and Treatment Program/ Connect to Public Water Supply	Protects human health by providing a reliable source of potable water to homes. Protects the environment by extracting contaminated groundwater from aquifer and controlling contaminant migration to other areas.	Achieves drinking water standards for downgradient homeowners. Achieves applicable groundwater standards over time. Satisfies requirements of sewer discharge agreement established with the Arlington sewer district.	Reduces volume and mobility of groundwater contaminant plume via extraction. Toxicity of extracted groundwater reduced by the POTW.	Connection of homes to the public water supply will temporarily disrupt homeowners. Alternative utilizes remediation equipment that is already present at the site. Activities should not cause short term exposure to site contaminants.	The estimated operating time for the pump and treat system is 30 years. Technology permanently removes captured groundwater contaminants. By connecting homes to public water, the human ingestion exposure route is permanently eliminated.	Implementation constraints are minimal as this remediation strategy has been successfully implemented for over 10 years. There are no significant constraints to connecting homes to the public water supply. Property owners must grant permission.	Capital: $0 O&M: ~~$40,000/yr~~ $38,500/YR. Present Worth: ~~$719,000~~ $592000
ALTERNATIVE 4: Continue Extraction Program and treat groundwater on-site/ Connect to Public Water Supply	Protects human health by providing a reliable source of potable water to homes. Protects the environment by extracting contaminated groundwater from aquifer and controlling contaminant migration to other areas.	Achieves drinking water standards for downgradient homeowners. Achieves applicable groundwater standards over time. Satisfies requirements of sewer discharge agreement established with the Arlington sewer district.	Reduces volume and mobility of groundwater contaminant plume via extraction. Toxicity reduced on-site using GAC treatment.	Connection of homes to the public water supply will temporarily disrupt homeowners. Alternative utilizes remediation equipment that is already present at the site. Activities should not cause short term exposure to site contaminants.	The estimated operating time for the pump and treat system is 30 years. Technology permanently removes captured groundwater contaminants. By connecting homes to public water, the human ingestion exposure route is permanently eliminated.	Implementation constraints are minimal as this remediation strategy has been successfully implemented for over 10 years. There are no significant constraints to connecting homes to the public water supply. Property owners must grant permission.	Capital: $36,700 O&M: $43,700/yr Present Worth: $709,000



Map source:
USGS 7.5-minute Quadrangle Map,
Pougkeepsie, N.Y., 1957, photorevised 1982.

\218USGS.dsf

Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Location of Harris Corporation Site** FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK	**Figure 1**



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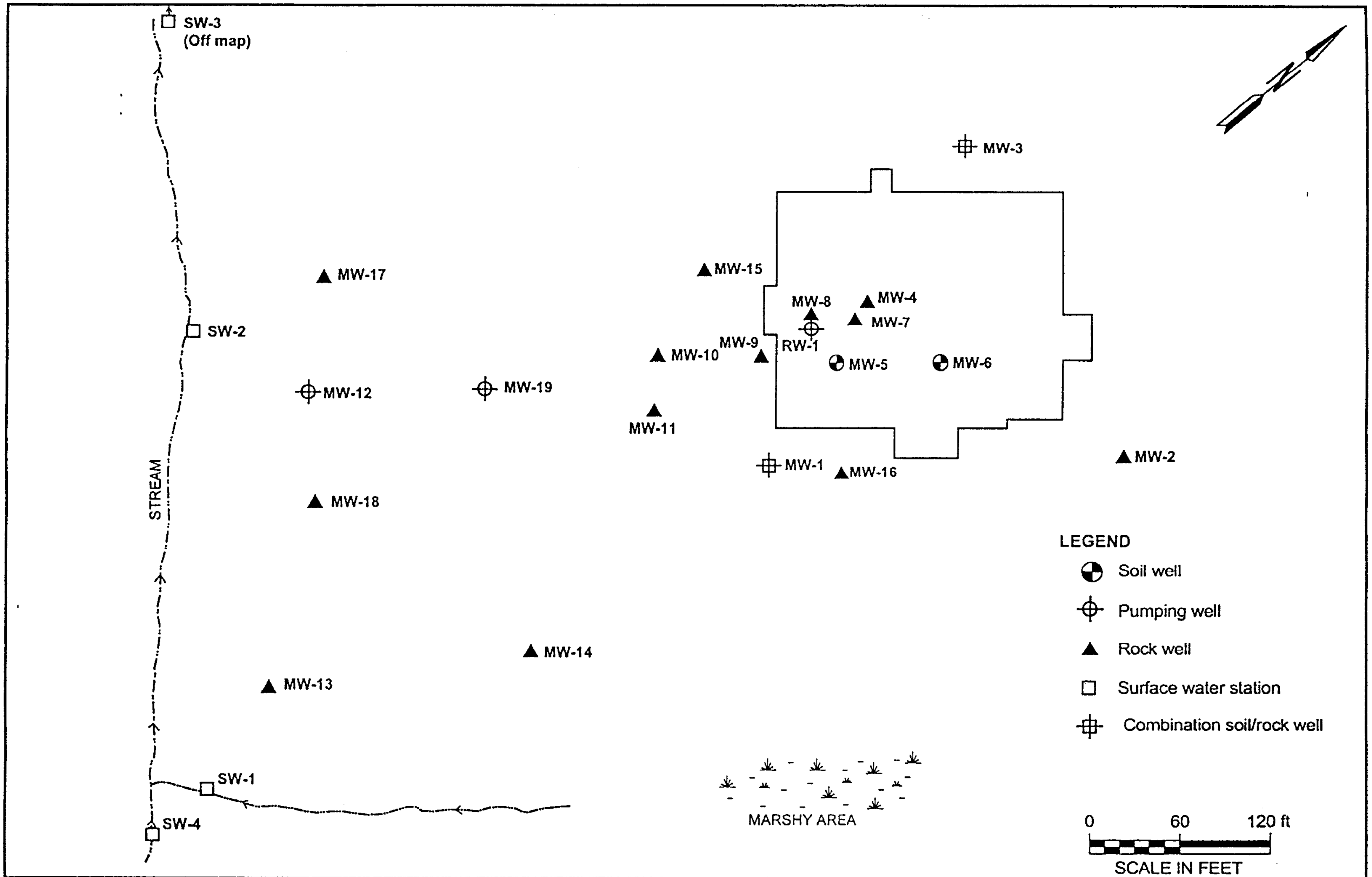
Surface Water Flow From Harris Corporation Site to Hudson River

FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK

Figure 2



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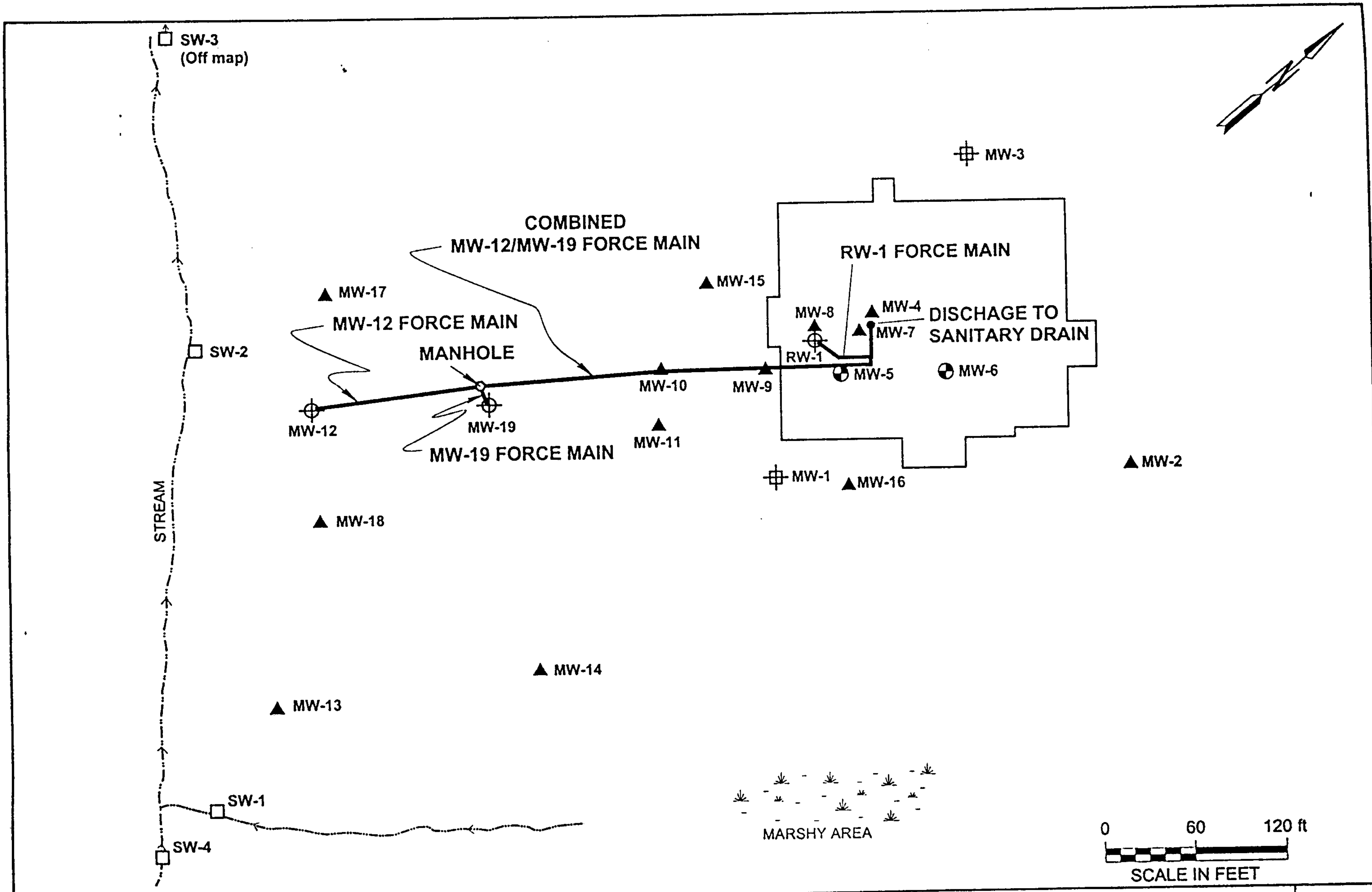
Location of Main Building and Monitoring Wells (20) at Harris Corporation Site

FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK

Figure 3

1180 ds4



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Schematic of Groundwater Recovery System at Harris Corporation Site

FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK

Figure 4

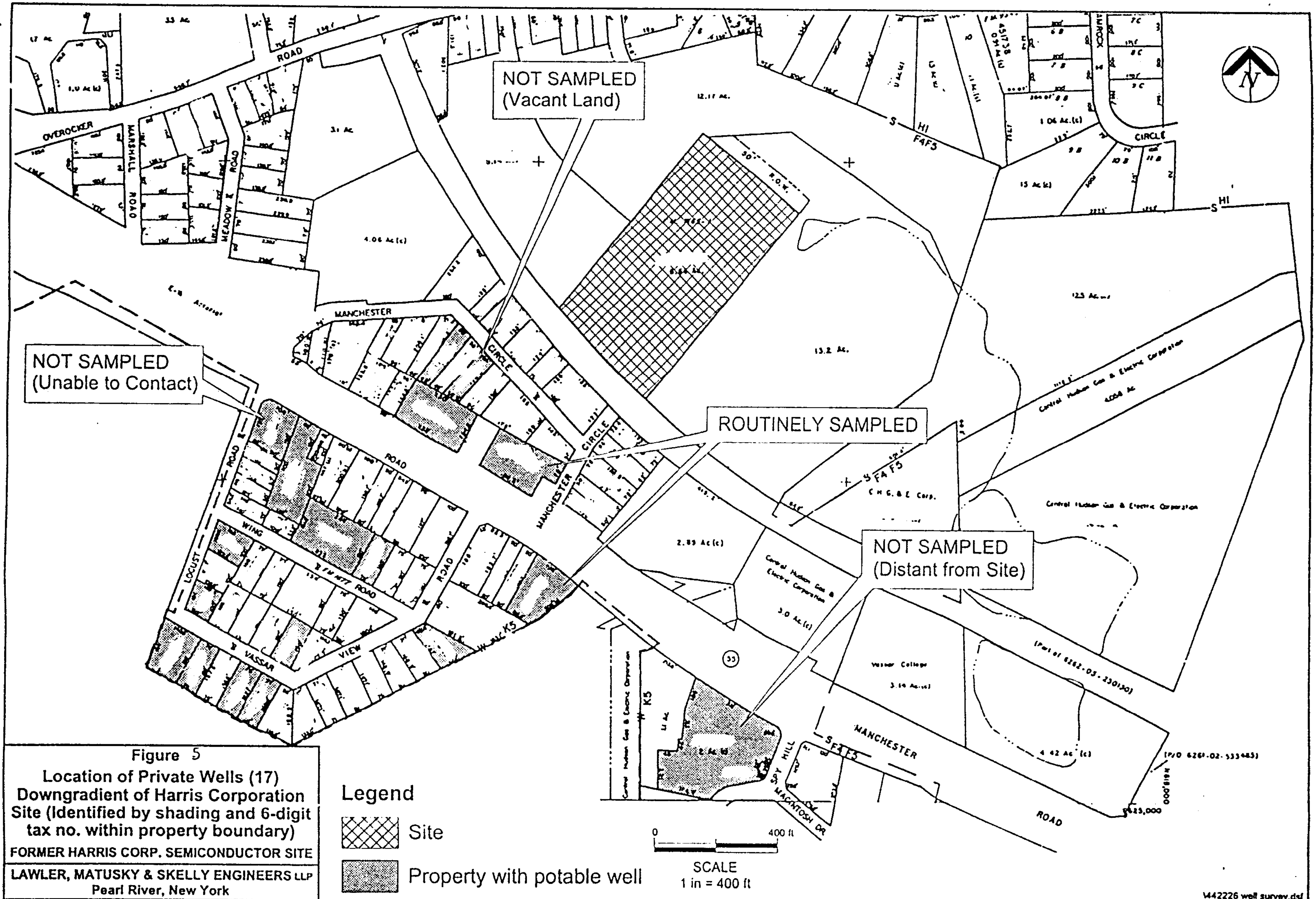

Figure 5

Location of Private Wells (17) Downgradient of Harris Corporation Site (Identified by shading and 6-digit tax no. within property boundary)

FORMER HARRIS CORP. SEMICONDUCTOR SITE

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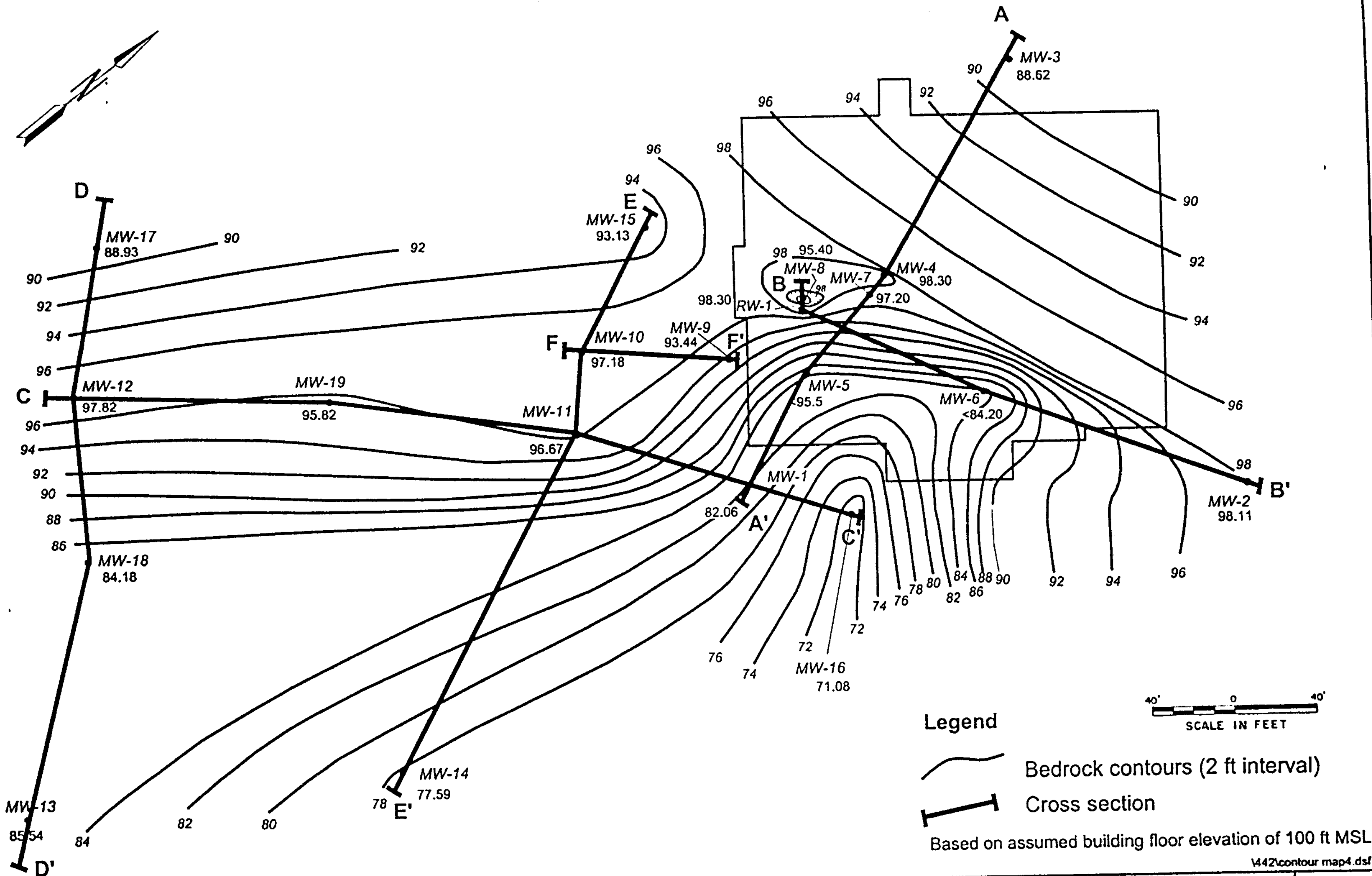
Pearl River, New York



Legend

Bedrock contours (2 ft interval)

Cross section

SCALE IN FEET (40' 0 40')

Based on assumed building floor elevation of 100 ft MSL.

\442\contour map4.dsf

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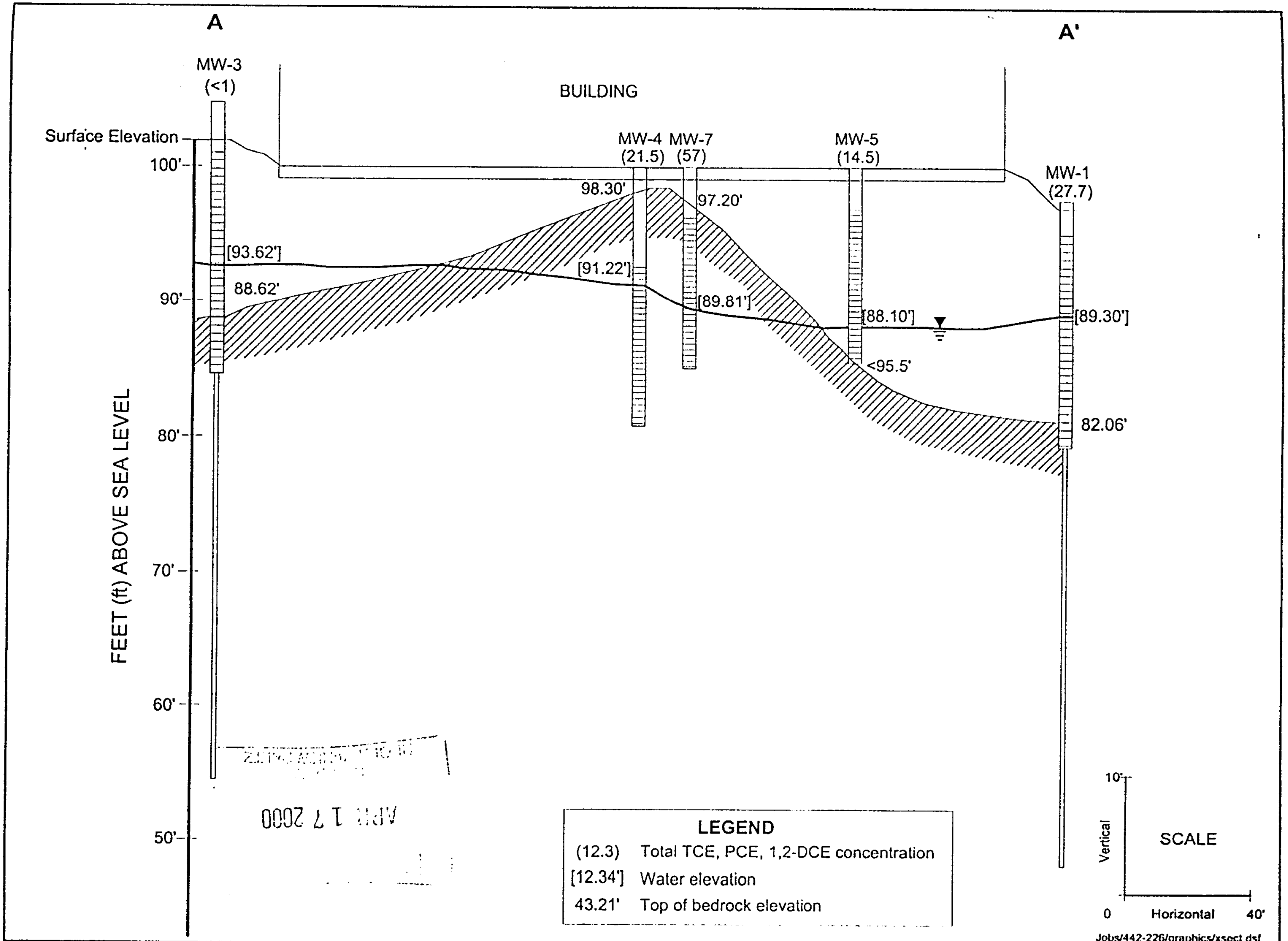
Plan View of 6 Cross-Sectional Views of the Harris Corporation Site (showing surface, groundwater, and bedrock elevations, as well as soil and monitoring well profiles)

FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK

Figure 6



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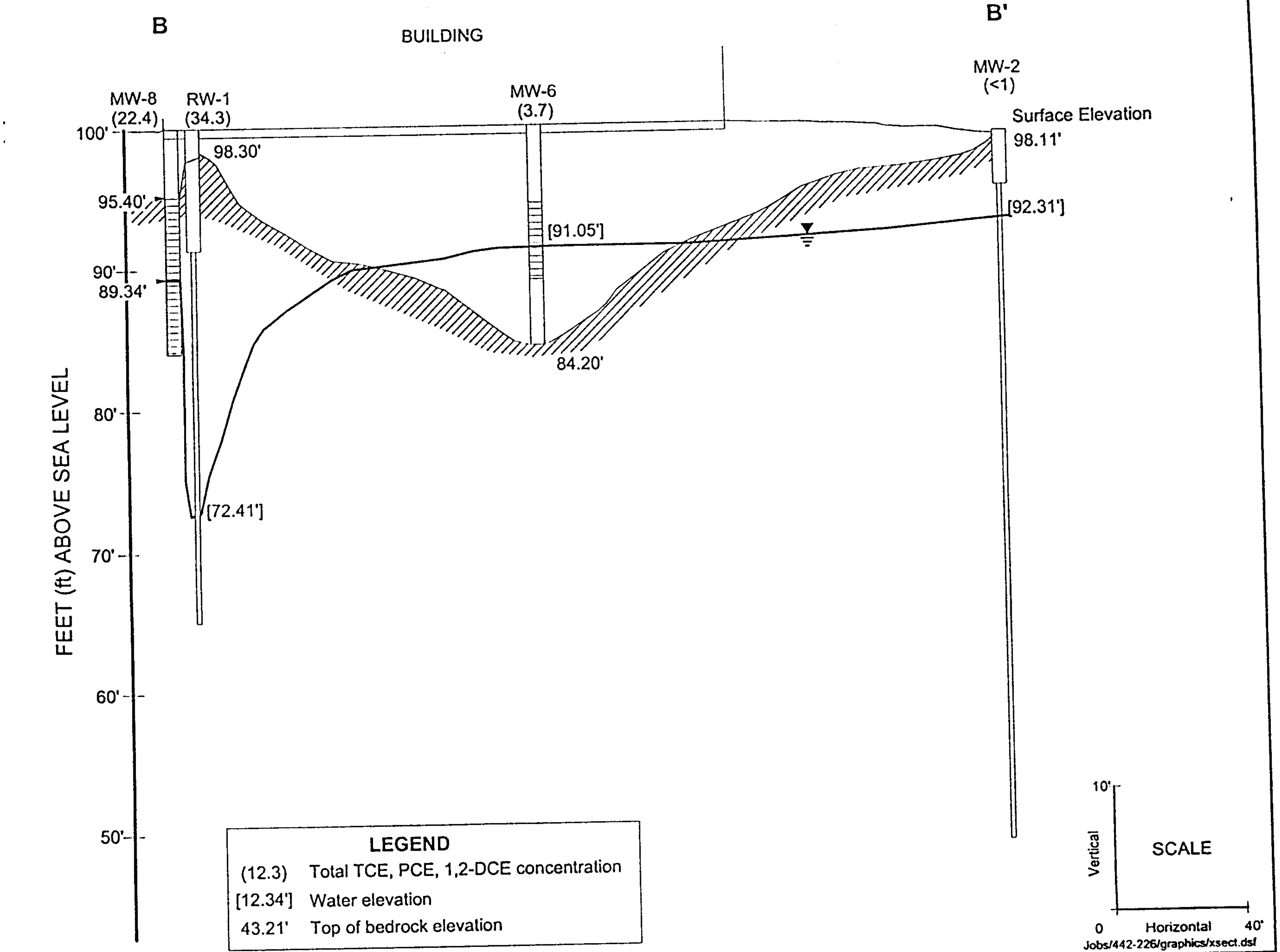
Cross Section A-A'

FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK

Figure 6A



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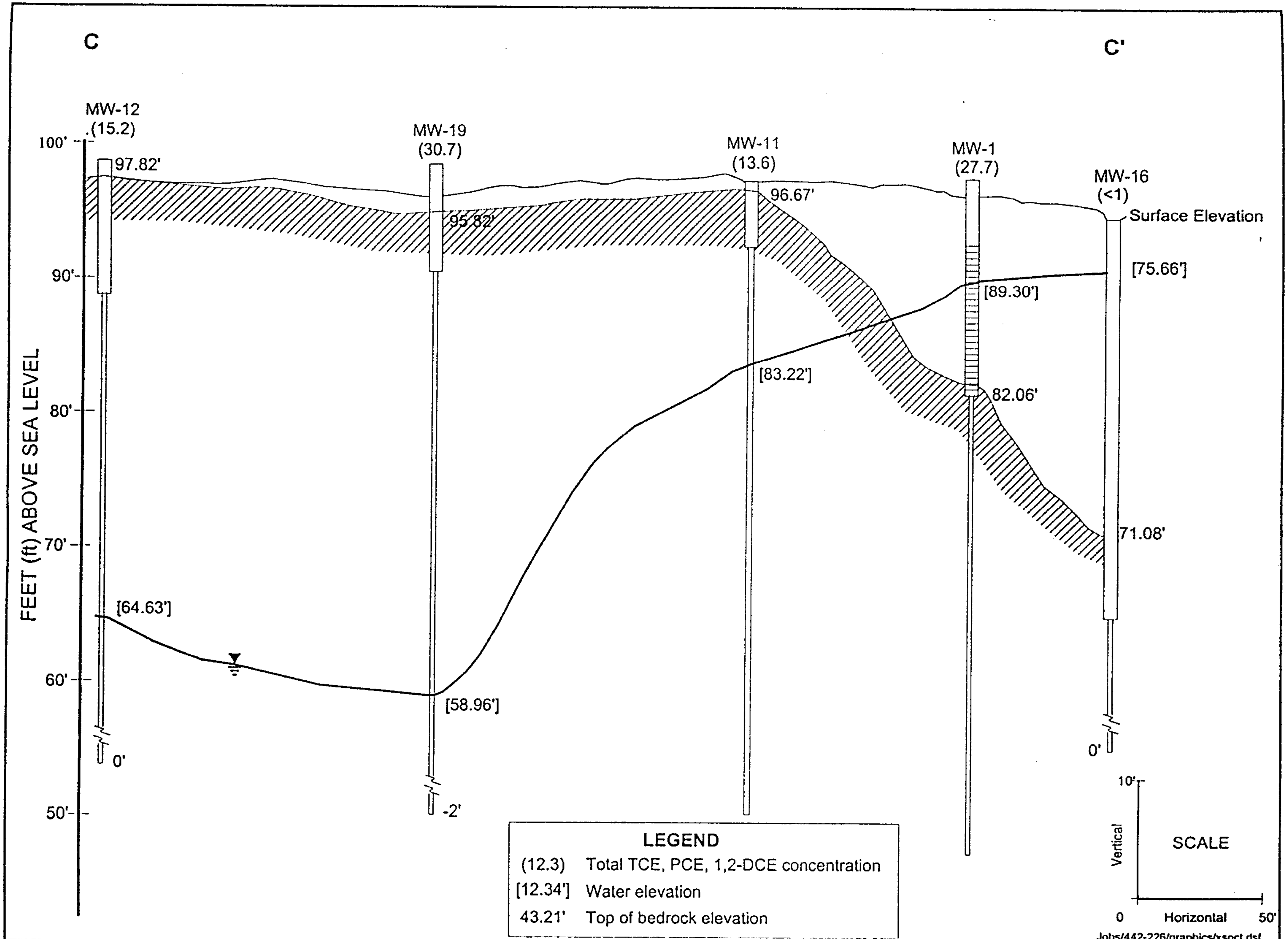
Cross Section B-B'

FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK

Figure 6B



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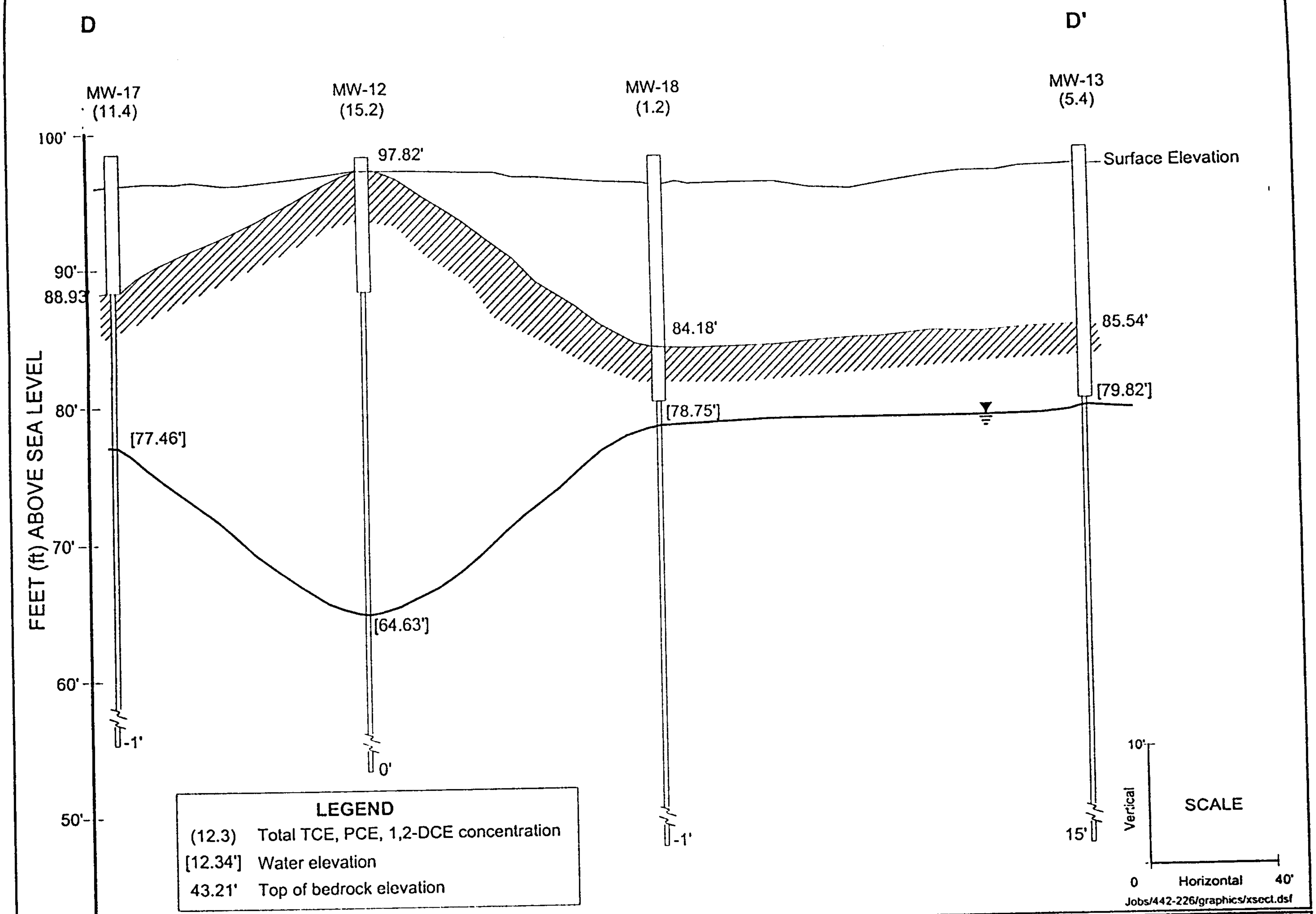
Cross Section C-C'

FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK

Figure 6C



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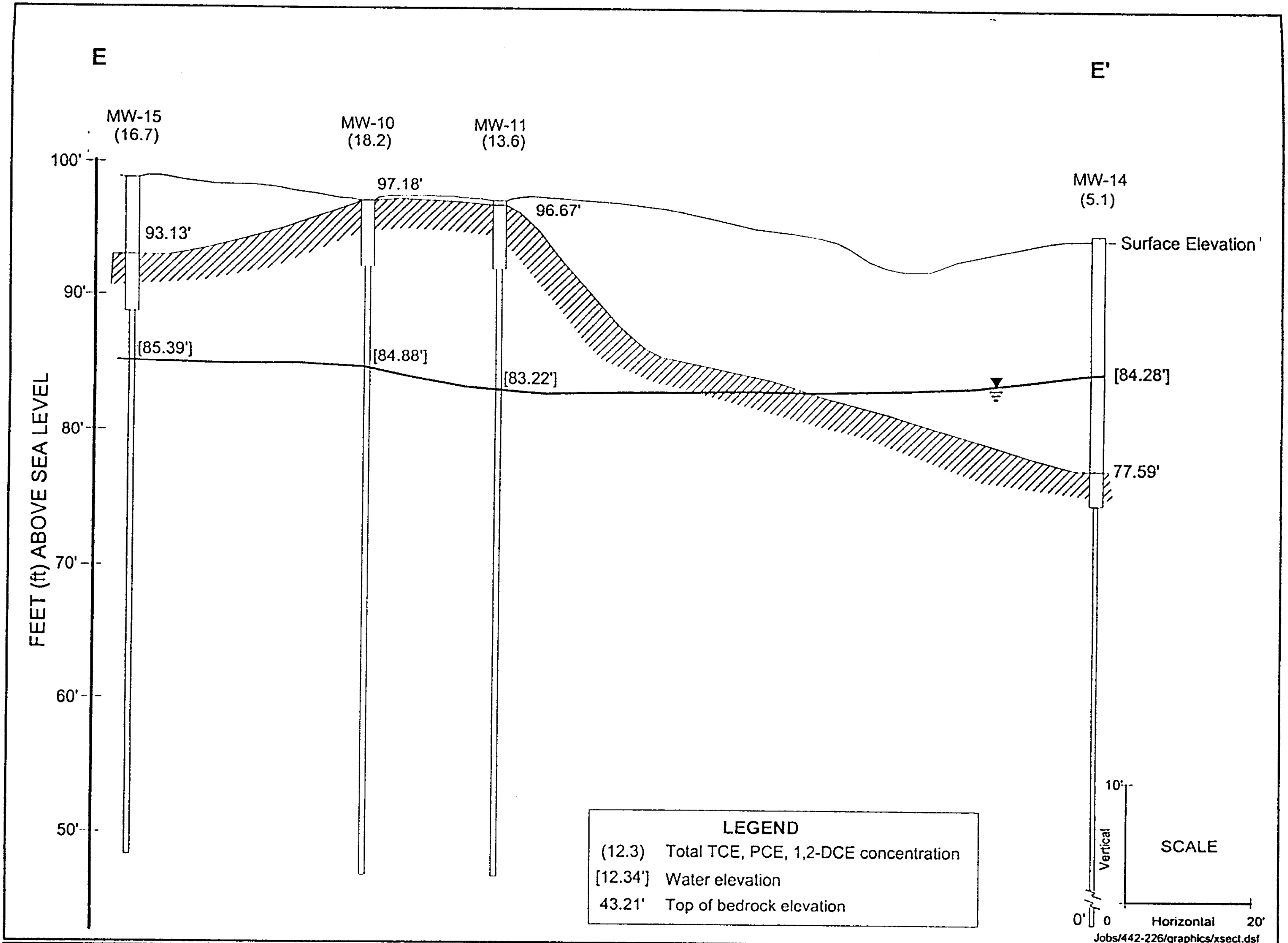
Cross Section D-D'

FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK

Figure 6D



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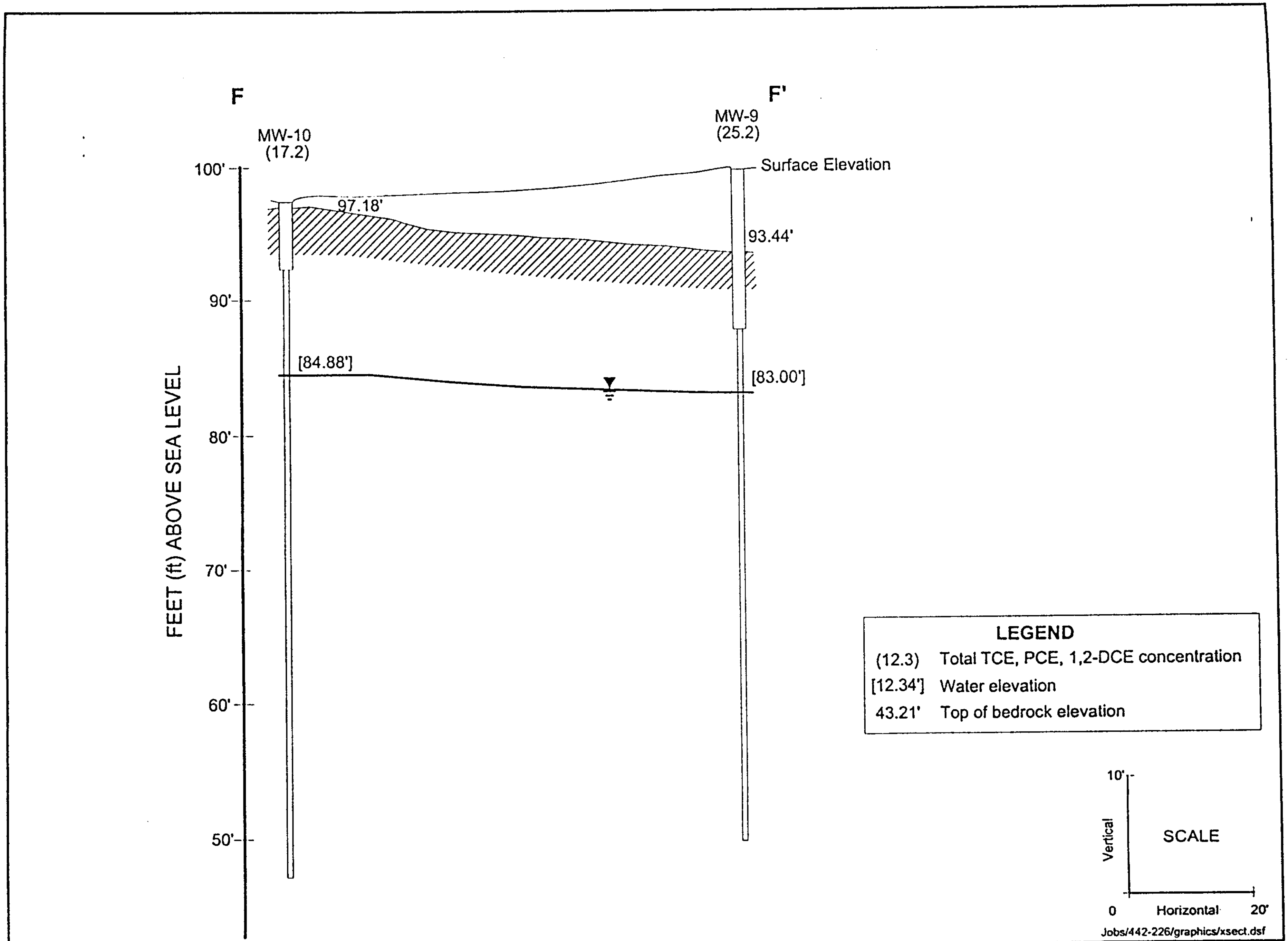

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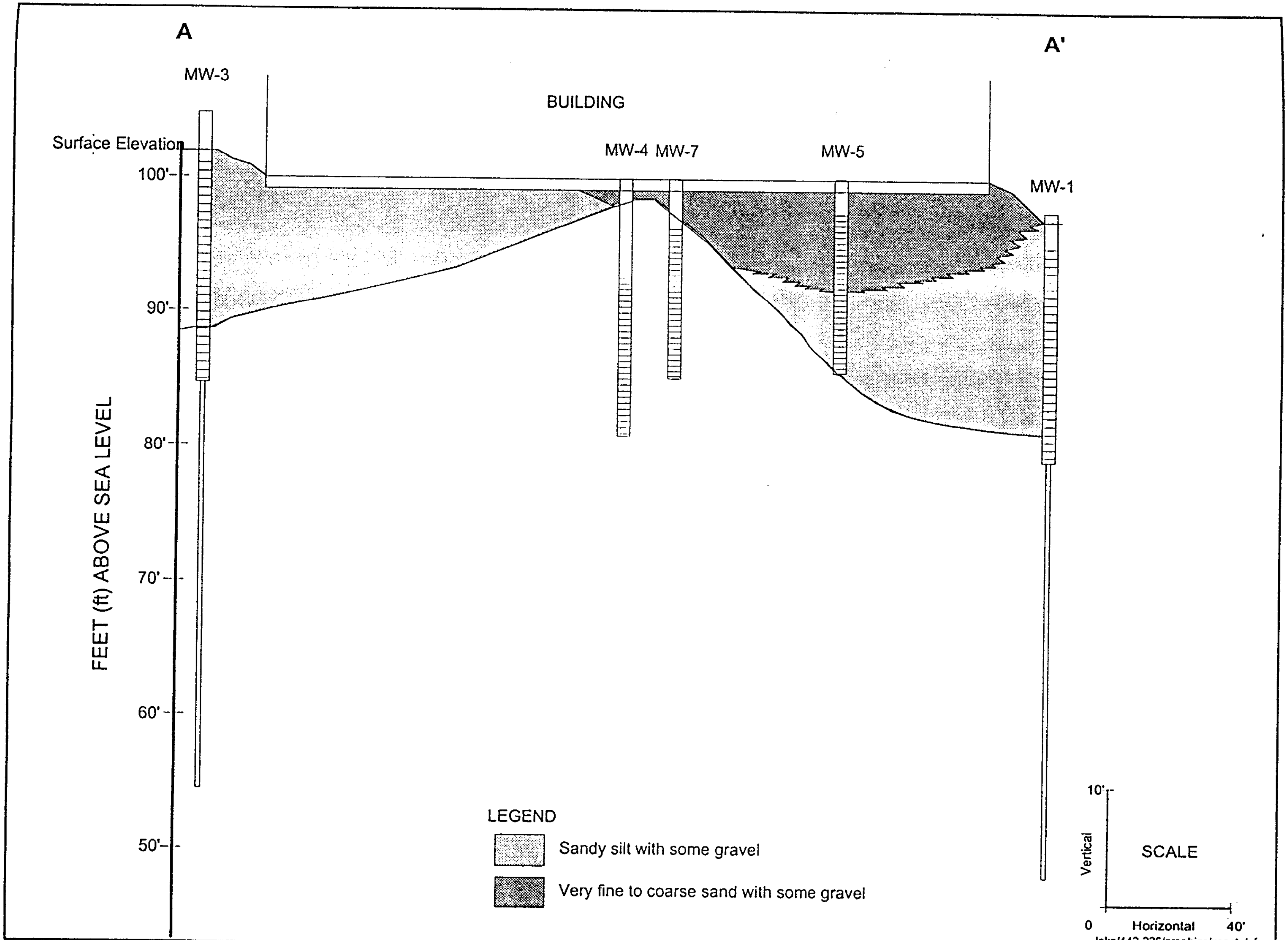
Cross Section F-F'

FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK

Figure 6F



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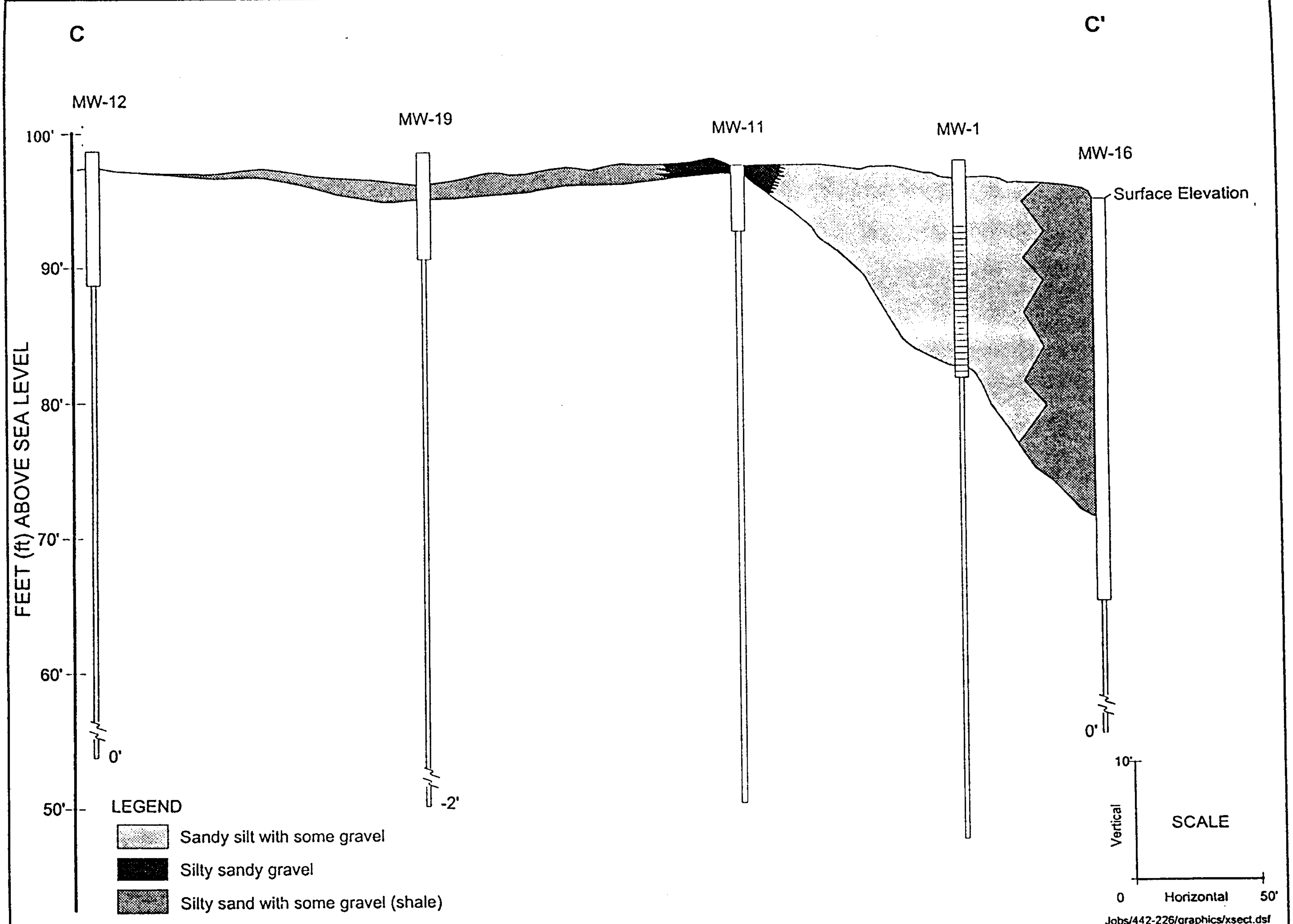
Cross Section A-A'

FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK

Figure 6G



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Cross Section C-C'

FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK

Figure 6H

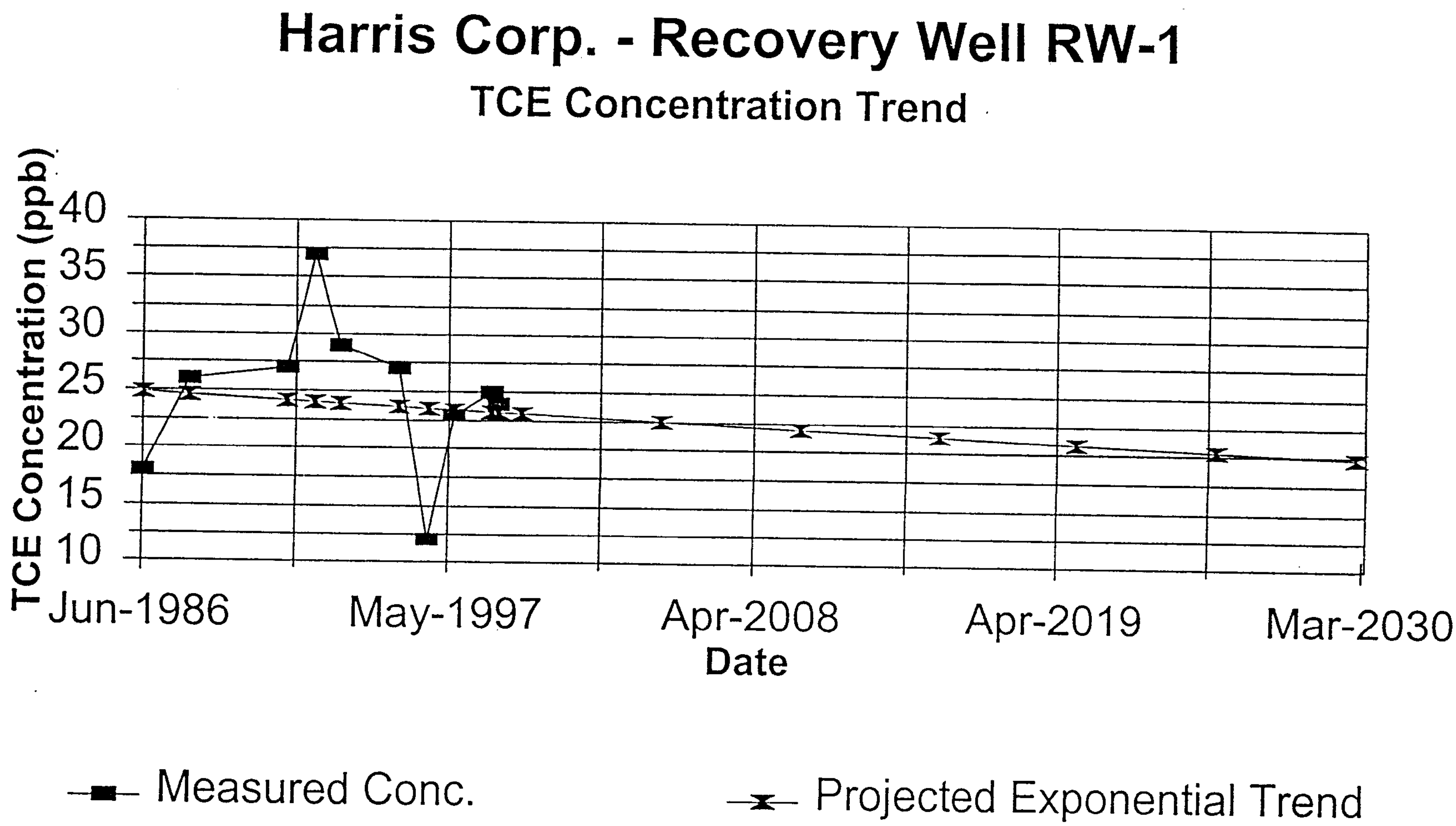
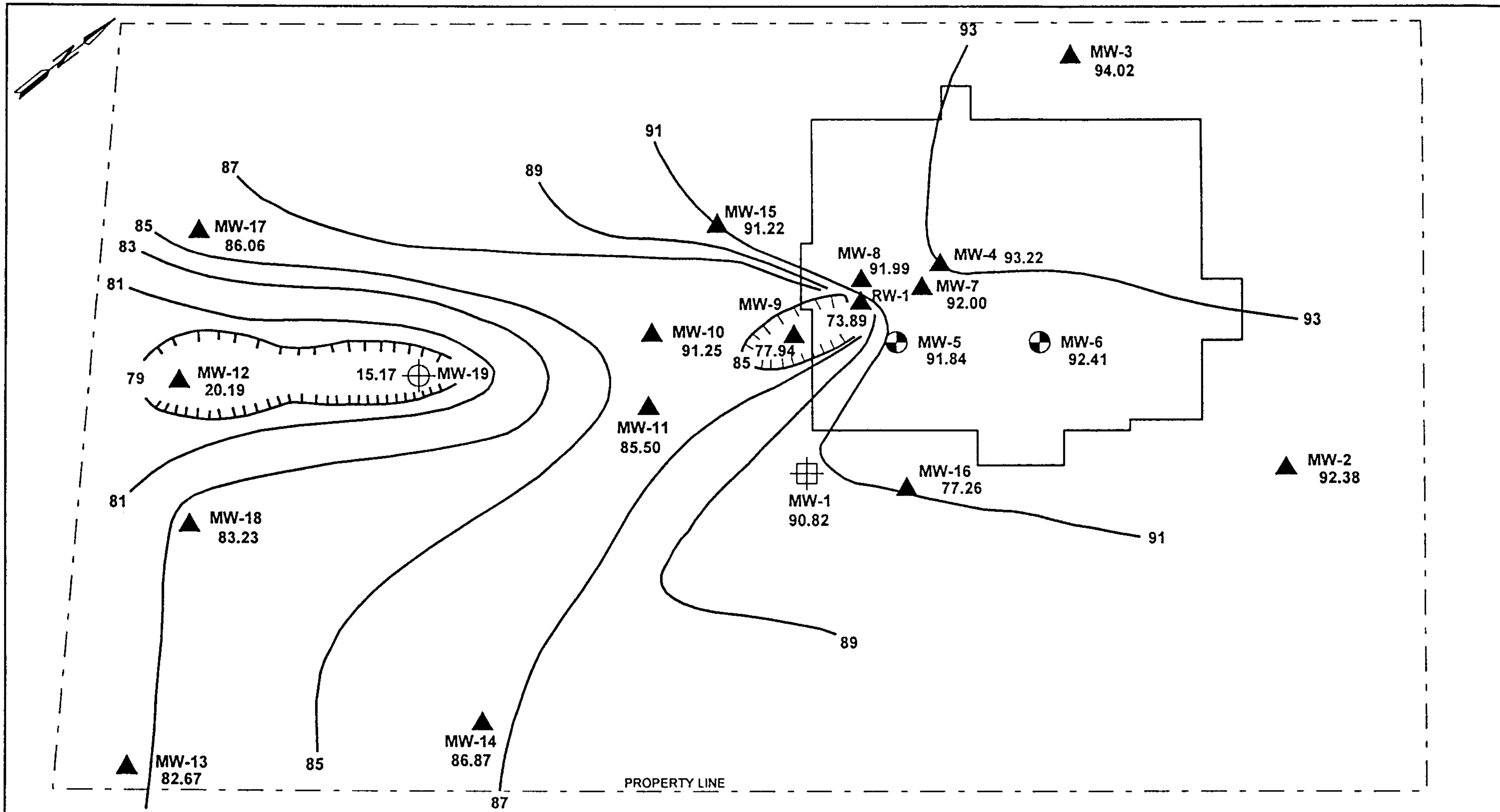

Harris Corp. - Recovery Well RW-1
TCE Concentration Trend
TCE Concentration (ppb)
40
35
30
25
20
15
10
Jun-1986
May-1997
Apr-2008
Apr-2019
Mar-2030
Date
Measured Conc.
Projected Exponential Trend

Figure 7



LEGEND

Soil well

Pumping well

Rock well **Legend**

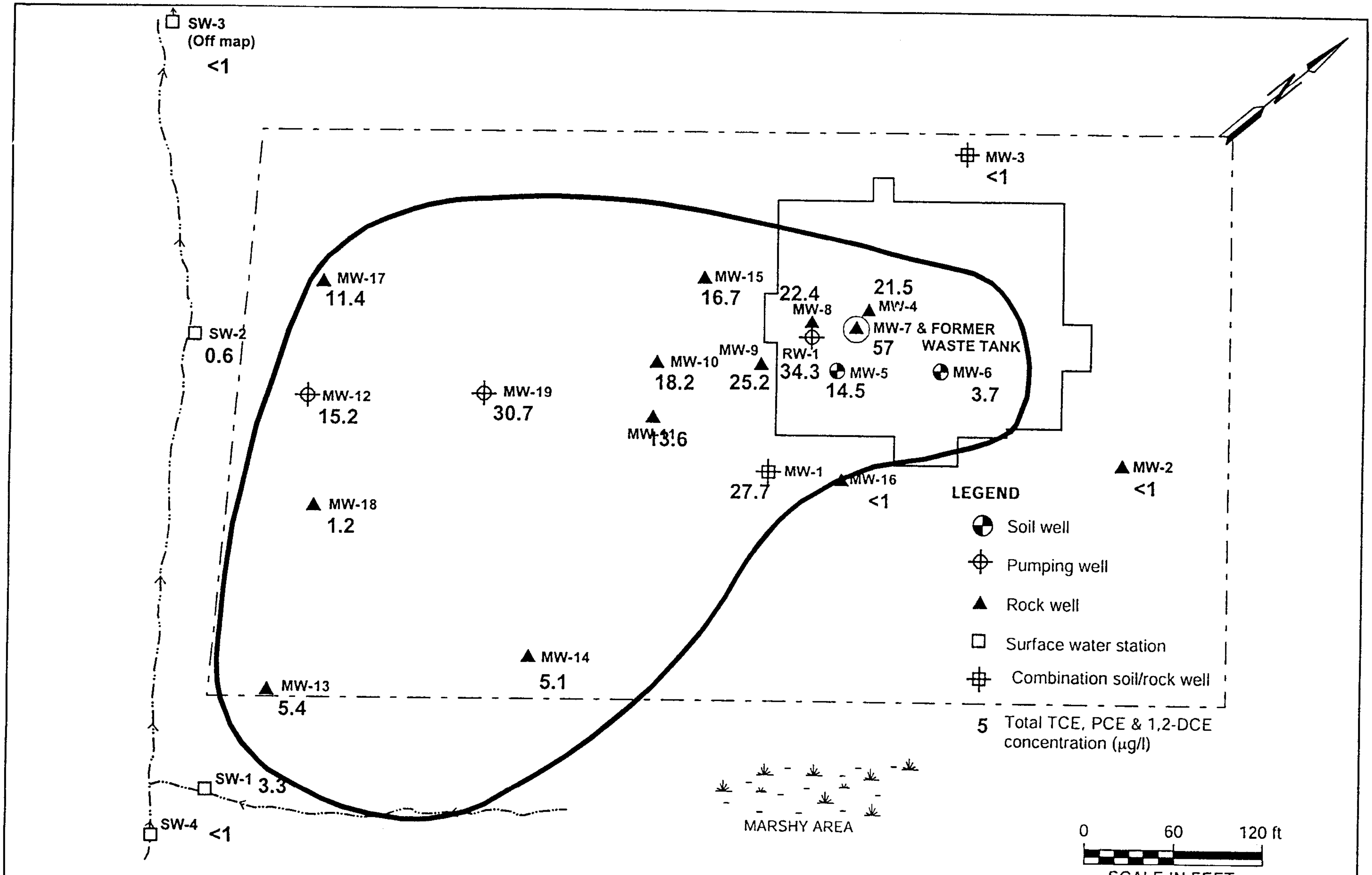
Combination soil/rock well

89 Water table elevation contour (ft MSL)

Based on assumed building floor elevation of 100 ft MSL.

\442\contour map5.dsf

LMS Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Water Table Elevation: March 1999** FORMER HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK	Figure 8



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Estimated Non-Detect Line for VOCs in Groundwater

HARRIS CORPORATION SITE, POUGHKEEPSIE, NEW YORK

Figure 9

1180.ds4