REPORT

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MCP INTERIM PHASE II REPORT FOR THE NEWELL STREET SITE

VOLUME I OF IV

General Electric Company

Pittsfield, Massachusetts

February 1992

BLASLAND & BOUCK ENGINEERS, P.C.
BLASLAND, BOUCK & LEE
ENGINEERS & GEOSCIENTISTS

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GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

FEBRUARY 1992

5932

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FOR THE NEWELL STREET SITE
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ACKNOWLEDGEMENT

This report has been prepared by Blasland & Bouck Engineers, P.C., of Syracuse, New York, on behalf of the General Electric Company. Certain sections of the report have been prepared with assistance from Geraghty & Miller, Inc., of Albany, New York. Specifically, Geraghty & Miller assisted in the preparation of report sections concerning the geologic/hydrogeologic characteristics of the site (Section 2.5), and recent MCP-related investigations (Section 5 and related data tables).

SECTION 1 - INTRODUCTION

1.1 General

Pursuant to a May 1990 Administrative Consent Order between the General Electric Company (GE) (Pittsfield, Massachusetts) and the Massachusetts Department of Environmental Protection (MDEP), GE initiated activities for the Newell Street Site in accordance with the requirements of the Massachusetts Contingency Plan (MCP). The Newell Street Site is within an area generally located south of the GE facility between Newell Street and the Housatonic River. This area originally consisted of land adjoining several oxbows of the Housatonic River and low-lying areas adjacent to the river. Rechannelization and straightening of the Housatonic River performed in the early 1940s separated these oxbows and low-lying areas from the active course of the river. The oxbows and low-lying areas were subsequently filled by GE and various unknown parties with fill materials.

Investigations performed by GE at the site since 1987 have revealed elevated levels of PCBs at certain locations within the fill material of these former oxbows and low-lying areas, and have prompted the site's inclusion in the MCP process. The MCP (310 CMR 40.000) establishes procedures for the implementation of remedial response activities at sites where the presence of oil or hazardous materials has been detected or is suspected. Based primarily on the extent of previous investigations performed at the site, the MDEP classified the site as within Phase II of the MCP process - Comprehensive Site Assessment.

In June 1990, Blasland & Bouck prepared two documents on GE's behalf: the "Newell Street MCP-Supplemental Phase II Scope of Work" (SOW) and the "Newell Street MCP Supplemental Data Summary" (SDS). These documents summarized the investigations that had been previously performed at the site, compared the extent of these activities with MCP Phase II requirements for a Comprehensive Site Assessment, and proposed additional activities to fulfill several MCP Phase II "data gaps". The SOW was conditionally approved by the MDEP in a letter dated August 24, 1990, and field activities were initiated shortly thereafter. The SOW and MDEP conditional approval letter are included in Appendix A; the SDS is included as Appendix B.

This document has been prepared to summarize the investigation activities performed at the site both prior to and as part of the MCP process. In addition, this document compares the data that have been generated to date with the MCP Phase II requirements and identifies some limited additional activities (based on this review) that would be appropriate to complete the investigation-related activities for a Comprehensive Site Assessment of the Newell Street Site.

1.2 Background Information

During the early 1940s, the Army Corps of Engineers performed a rechannelization of the section of the Housatonic River flowing through the city of Pittsfield. The intent of this rechannelization project was to straighten the meandering river and minimize the occurrence and impact of flood events. A number of river oxbows and low-lying marsh areas were separated from the river during the rechannelization and were subsequently filled by GE and unknown parties. The Newell Street Site, as it currently exists, is believed to be one such area. The site's proximity to the GE facility, and the detected presence of PCBs in the subsurface soils of the former oxbows and low-lying areas, indicates that one potential source of fill materials may have been the GE facility.

Since rechannelization of the Housatonic River, the area comprising the Newell Street Site has been developed and now consists of several industrial and commercial facilities. The presence of PCBs within the soils of the Newell Street Site was initially identified during a routine environmental assessment performed in 1987 for one of the property owners within the site. The detection of PCBs triggered additional investigations and activities performed by GE starting in 1987 and continuing to the present. These investigations and activities are summarized in later sections of this report.

1.3 Format of Document

The format of this document has been based on the MCP requirements for a Phase II investigation - Comprehensive Site Assessment (310 CMR 40.545). It should be noted that the June 1990 SOW for the site, as conditionally approved by the MDEP, did not include work activities associated with the characterization of risk of harm to human health [310 CMR 40.545 (g) and (h)]. Since these activities are required to complete the MCP Phase II investigation, this document is presented only as an "interim" report at this time. Upon completion of all field activities, fulfillment of "data gaps," and review of associated analytical data, a risk characterization of the site can be undertaken. Therefore, this report focuses on the results of site investigations performed to date and their capacity to fulfill many of the MCP Phase II requirements.

Section 2 of this report provides a summary of the physical characteristics and environmental setting of the site, while Section 3 presents information concerning the site history. Site investigations performed prior to the MCP are summarized in Section 4, and activities performed in accordance with the MCP SOW are discussed in Section 5. Section 6 provides a summary of MCP Short-Term Measures performed by GE to address MDEP concerns regarding the materials detected at the site. A discussion of the extent of the hazardous materials detected at the site and a characterization of those hazardous materials are provided in Section 7. Potential migration and exposure issues for the detected materials and media of concern are discussed in Section 8. This report concludes with a review of available data and an identification of field activities needed to fill MCP Phase II "data gaps" (Section 9), and a summary of remaining MCP Phase II activities (Section 10).

SECTION 2 - PHYSICAL AND ENVIRONMENTAL SETTING

2.1 General

This section summarizes the physical and environmental characteristics of the Newell Street Site located in Pittsfield, Massachusetts. Characteristics including topography, surface drainage, vegetation, surface water, wetlands and critical habitat, geology/hydrogeology, land use, climatology/meteorology, and utilities are described herein.

The Newell Street location encompasses an area of approximately 15 acres. The area subject to past investigations and recent MCP efforts is generally bounded to the north by the Housatonic River and to the south by Newell Street. Further, the site includes the GE Parking Lot (GE property) as its west boundary and is bounded to the east by Hibbard Playground. The site has been identified on the Pittsfield East and Pittsfield West 7.5 x 15 minute United States Geological Survey (USGS) topographic quadrangles; its general location is shown on Figure 2-1. The Universal Transverse Mercator (UTM) coordinates for the site are approximately 4,700,900m N, 645,500m E. The site is generally located at 42° 26' 40" N latitude and 73° 15' 20" W longitude. Figure 2-2 is a site plan detailing roadways, buildings, property boundaries and owners, and other pertinent surface features. Additional site characteristics are described further within this section.

2.2 Topography, Surface Drainage, and Vegetation

The topography of the Newell Street Site is generally characterized by gently sloping land northward to the Housatonic River. Directly adjacent to the river, the topography drops off steeply. Topographic information for the Housatonic River floodplain (2-foot contour intervals) is currently being developed by GE as part of its separate, ongoing MCP investigation of the Housatonic River. This information is not available at this time; however, the topographical information applicable to the Newell Street Site will be provided when available. Prior to the availability of the detailed survey, several alternative sources of topographical information have been obtained and reviewed. These sources include USGS mapping, as well as certain maps discussed later in this report, including an assessor's map from the City of Pittsfield showing elevation in 5-foot contour intervals (Appendix E-1), partial surveys for select properties within the site (Appendix F), and engineering drawings associated with a municipal sewer line project performed within a portion of the site (Appendix G-2). These sources of information confirm that the land surface slopes gently northward from Newell Street to the top of the Housatonic River bank. The river bank (or land surface) drops sharply from the top of the bank to the river.

There are three intermittent drainage swales that have been identified within or adjacent to the site: one on the former Quality Printing property (Appendix F-1), one within the Anthony Marchetto Contractors property (Appendix F-2), and a third, located west of the GE Parking Lot, that receives City of Pittsfield stormwater flows from the Newell Street area (Appendix G-3). All three of these swales drain toward the Housatonic River. The surface drainage over the remainder of the Newell Street Site is generally perpendicular to the surface contours (i.e., toward the Housatonic River).

The vegetation of Newell Street is comprised of a combination of lawns, shrubs, and trees. Figure 2-3 shows general information on the Newell Street area vegetation in terms of grass, trees, and bare soil. Paved areas are also indicated on Figure 2-3. A wetlands inspection performed by Associated Environmental Scientists, Inc., for GE in July 1991 identified several vegetative species along the Housatonic River. Typical tree species in the Newell Street area include Cottonwood and Ashleaf Maple. Other vegetation in the area of the Newell Street Site include: Wild Strawberry, Cypress Spurge, Spotted Knapweed, Black Raspberry, Rough Cinquefoil, Yarrow, Trembling Aspen, Riverbank Grape, Honeysuckle, Dames Rocket, Red Osier Dogwood, and American Elm.

2.3 Surface Water/Flooding Potential

Surface water locations within or adjacent to the Newell Street Site are limited to the Housatonic River. The river, bordering the Newell Street Site on its northern edge, has been the subject of numerous investigations and is currently the subject of a separate MCP Phase II Comprehensive Site Assessment being performed by GE. Potential surface water impacts to the Newell Street Site would occur if the Housatonic River were to overtop its embankments, thereby flooding the site. The potential for flooding associated with the Housatonic River has been documented by the Federal Emergency Management Agency (FEMA). FEMA flood mapping corresponding with portions of the Housatonic River along the Newell Street Site includes flood elevations corresponding to flood flows with 10-, 50-, 100-, and 500-year recurrence intervals. The FEMA flood profile for the Newell Street Site has been included in Appendix C.

The water surface elevations for the 100- and 500-year recurrence floods have been plotted by FEMA on a Flood Insurance Rate Map (FIRM). The FIRM for the Newell Street area has also been included in Appendix C. As indicated by the FIRM, the entire Newell Street Site lies within the 100-year floodplain of the river.

2.4 Wetlands and Critical Habitats

The Massachusetts Wetlands Protection Act identifies specific resource areas as wetlands subject to protection. Applicable resource area designations associated with the Newell Street Site include "land subject to flooding" (i.e., floodplain), river bank, and a 100-foot buffer zone from the river bank. The National Wetlands Inventory performed by the United States Department of the Interior Office of Biological Services has not classified any portion of the Newell Street Site as wetlands (with the exception of the adjacent Housatonic River, which is classed as riverine, lower perennial, open water). The National Wetlands Inventory map has been included as Appendix D.

The Natural Heritage and Endangered Species Program, an agency of the Commonwealth of Massachusetts Division of Fish & Wildlife, has indicated that the Wood Turtle (<u>clemmys insculpta</u>), the American Bittern (<u>botaurus lentiginosus</u>), and the Least Bittern (<u>ixobrychus exilis</u>) could inhabit areas along the Housatonic River in the Newell Street area. The Massachusetts Division of Fish & Wildlife lists these species as Special Concern, Special Concern, and Threatened, respectively.

2.5 Geologic/Hydrogeologic Characteristics

2.5.1 Regional Characteristics

Pittsfield is situated in the Housatonic River Basin between the Berkshire Hills to the east and the Taconic Range to the west. The geologic framework of the area around Pittsfield, as for Berkshire County in general, consists of several key elements. Bedrock in the Pittsfield area consists of an assemblage of north-south trending metamorphic units (mainly gneiss, schist, and marble), which has resulted from early

Proterozoic through early Paleozoic mountain-building episodes which occurred between 2 billion and 480 million years ago. The bedrock is overlain by a series of unconsolidated materials formed by glacial scouring and deposition, as well as pre- and post-glacial fluvial modification of the landscape.

The main axis of the Housatonic River Valley is underlain by carbonate rock (marble, limestone, and dolomite) of the Cambrian - Ordovician Stockbridge Group. These rock types are more easily eroded than the schists and phyllites of the Taconic Range or the gneisses and schists of the Berkshire Highlands which are more resistant due to their overall hardness.

The unconsolidated surficial geologic deposits within the basin (excluding swamps and alluvium) are of Pleistocene (1.6 million to 10,000 years ago) glacial origin and are classified as either stratified (glaciofluvial and glaciolacustrine) or nonstratified (till) deposits. Known thicknesses of stratified and till deposits have been documented at 240 feet and 90 feet, respectively (Norvitch et al. 1968). Till predominates in the upland areas, and stratified deposits occur primarily along the lower slopes. Holocene (10,000 years ago to the present) alluvial and swamp deposits are found mainly in the valley bottoms.

Aquifers and water bodies within the basin are recharged by *precipitation (rainfall plus snowfall). The nearest mapped aquifers are* within the Hoosic River Basin to the north and the Connecticut River Basin to the southeast, as indicated on the Pittsfield East quadrangle. According to the Pittsfield Department of Public Utilities, the city obtains its industrial and municipal water supply from the following surface water bodies located several miles to the south and to the east: Sand Washington Reservoir, Cleveland Reservoir, Farnham Reservoir, New Sackett Reservoir, Lake Ashley, and the Lower Ashley Intake. In the past, Onota Lake (approximately 3 miles to the north) has been used as an emergency municipal and recreational water supply.

The stratified and nonstratified surficial deposits are not considered productive aquifers (Norvitch et al. 1968), and the carbonate bedrock will provide sufficient water for domestic and industrial use only if a well is installed within a solution or fault zone.

2.5.2 Site-Specific Characteristics

The soils encountered during the investigations performed at the Newell Street Site indicate that the area is underlain by an assemblage of silty, fine to medium sand, with lesser amounts of clay and gravel. From the land surface to depths of between 2 and 14 feet below the surface a fill unit is present in a portion of the site. This fill unit consists of sands and gravels with varying percentages of anthropogenic and vegetative matter, and the unit overlies the glacial and alluvial deposits.

At some locations, a thin layer of peat and/or silt, rich in decomposing organic matter, was encountered below the fill. This layer varied in thickness from 0 to 3 feet. In places where it was not encountered, the layer may have been artificially removed. Underlying the layer is a heterogeneous assemblage of gravel, sand, silt, and clay.

Available boring logs indicate that the percentage of each fill/soil component is variable from boring to boring. The presence of these materials varies in depth between borings, a finding consistent with the variability inherent in an alluvial (river) deposition environment. Currents of varying velocity in the river channel itself as well as in flood waters cause the deposition of different soil types in different portions of the floodplain. Sands and gravels are generally deposited near the channel itself and may form local ridges known as natural levees. Over bank deposits consisting of fine sands and silts which settle on the floodplain during flooding episodes. Finally, clay can be deposited in low areas where standing water remains after a flood. This whole scenario is complicated by the fact that the river has meandered across its floodplain through geologic time. Bedrock has not been encountered at the Newell Street Site, as the MCP Phase II and previous investigations have focused on fill areas adjacent to the Housatonic River, as well as impacts that the fill material has had on the local hydrogeologic system.

As determined from a review of the DEP's "Water Supply Protection Atlas" and discussions with GE personnel, public or private water supply wells used for drinking water purposes are not located within one-half of a mile of the site. However, GE and Altresco, Inc. have deep bedrock wells which are located at the GE facility across the river to the north of the Newell Street Site which provide cooling water for industrial use.

A complete set of ground-water elevation data was collected on June 7, 1988, from the eight wells in the Newell Street area that existed at that time. This data is presented in Table 8 of the SDS (Appendix B). From the data, a ground-water contour map was prepared and presented as Figure 7 of the SDS (Appendix B). These ground-water elevations indicate that the ground-water flow direction is generally toward the Housatonic River (from the south to the north).

The ground-water gradient ranges from 0.037 on the west side of the site (based on ground-water elevation data for wells MW-1 and MW-2) to 0.012 on the east side of the site (based on ground-water elevation data for wells SZ-1 and SZ-3).

As part of the recent MCP Phase II activities, ground-water elevation data were collected for the western portion of the site in the vicinity of the GE Parking Lot. These data confirm the June 1988 findings pertaining to shallow ground-water flow at the site. All ground-water elevation data are summarized in Table 2-1, and in an updated ground-water contour map (showing the locations of the wells listed in Table 2-1 and the ground-water contours based on these elevations) is provided in Figure 2-4. The ground-water gradient estimated for this portion of the site is 0.008 (based on ground-water elevation data for Wells NS-10 and NS-9).

2.6 Land Uses

The land comprising the Newell Street Site has historically been used as a commercial area following the river rechannelization project of the early 1940s. Land at the Newell Street Site is currently zoned as commercial, warehouse, and storage (C-W-S), as indicated on the Pittsfield Zoning Map (Appendix E-2). Commercial properties comprise the majority of the site. These include properties owned by Moldmaster, Italian American Club, Ravin Auto Body, Vincent J. Stracuzzi, Anthony Marchetto Contractors, F.W. Webb Company, Pittsfield Transmission Company, Inc., and Allegroni Construction Company, Inc. GE purchased the former Quality Printing property in November 1988. GE also owns a parking lot on the western portion of the site and land along the river bank abutting the commercial properties. The eastern portion of the site includes the City-owned Hibbard Playground. Considering that the Newell Street Site has been used primarily as a commercial area following the river rechannelization project, there are no reasonably foreseeable changes in land use.

2.7 Climatological and Meteorological Information

Information on the climate in the general vicinity of the Newell Street Site was obtained from the "Upper Housatonic River Basin Study, Berkshire County, Massachusetts" document prepared by the United States Department of Agriculture. The climate in the area is characterized as humid, with a mean annual temperature of about 46°F. Record temperatures recorded at the Pittsfield airport include a high of 95°F and a low of -25°F.

The average precipitation varies from a low of 2.5 inches per month during the winter months, to a high of about 5 inches per month in the summer months. The average annual precipitation near Pittsfield for the past six years (excluding 1986) is 45.28 inches.

Historically, the frost-free period is from late May until late September, with the growing season lasting from 120 to 140 days.

A May 1989 report prepared by Geraghty & Miller, Inc. evaluated the potential risks associated with the site. This report indicated that the predominant wind direction in spring, summer, and fall in Pittsfield is from the west or southwest. Specific to the Newell Street Site, the ongoing, air monitoring program discussed in Section 5.5 will confirm or modify this general characterization.

2.8 Utilities

Underground and overhead utilities servicing the buildings within the Newell Street Site include electric, water, telephone and sewer. Engineering drawings for the underground utility lines are presented in Appendix G.

Drawings for the water distribution mains are presented in Appendix G-1. These figures indicate that 16-inch and 10-inch water mains are present beneath Newell Street; however, no water mains pass through the Newell Street Site. Sewerage and drainage drawings are presented in Appendix G-2, and Appendix G-3, respectively. As shown on these figures, sanitary sewer and stormwater drainage lines are present beneath Newell Street. In addition, these figures indicate that one sewer and one drain line pass through a portion of the Newell Street Site and a second drain line discharges to an open ditch west of the GE Parking Lot. A 48-inch reinforced concrete sanitary sewer pipe runs through the northern portion of the site along the bank of the Housatonic River (Appendix G-2). The sewer line was likely constructed some time during the early 1960s, based on the date of the engineering drawings. The line is located approximately 6 to 10 feet below the ground surface and is partially below the water table (according to the construction test borings).

A stormwater drainage line runs north from the Michigan Street and Newell Street intersection through the Newell Street Site and discharges to the Housatonic River (Appendix G-3). This line is comprised of a 27-inch vitrified clay pipe and a 30-inch concrete pipe, and is 4 to 6 feet below ground surface and is above the water table. These drain lines are situated within the property currently owned by Ravin Auto Body. A second stormwater drain line discharges to an open ditch west of the GE Parking Lot which discharges to the Housatonic River (Appendix G-3).

SECTION 3 - SITE HISTORY AND SOURCE IDENTIFICATION

There are no detailed records concerning the history of activities at, or associated with, the Newell Street Site. As a result, it has been necessary to rely on information obtained from various aerial photographs and site plans for an account of historic activities. This section summarizes the significant observations made during the review of available historic documentation. From this review, a general chronology of site activities has been developed.

The most significant event in the "history" of the Newell Street Site is considered to be the rechannelization of the Housatonic River in the early 1940s. The rechannelization project, performed for the section of river that flows through the city of Pittsfield, was undertaken as a flood prevention and mitigation project. The straightening of the river eliminated several river oxbows and low-lying marshy areas along the river. Two of these areas were located within the current study limits of the Newell Street Site. These two areas, and several other areas along the river, have been identified by GE for inclusion within the MCP process. Each of the oxbow areas has been given a letter designation by GE and included (for investigation purposes) in the appropriate GE MCP investigation. Figure 3-1 identifies the former oxbow areas along the Housatonic River. As can be seen, former Oxbows I and G are within the Newell Street Site. The area of former Oxbow I is encompassed by several of the commercial properties located along Newell Street, while Oxbow G is now occupied by the GE Parking Lot. Figure 3-2 shows the approximate limits of the former oxbow areas within the current site.

Several aerial photographs for the site dating back to 1942 have been obtained. Table 3-1 presents a summary of these photographs by date.

Several of these photographs have been reproduced and included within this document as Appendix H. In addition, several site plans dating back to 1940 have been obtained from the City of Pittsfield and GE to provide additional historic references.

The figure included in Appendix I is a portion of a 1940 City of Pittsfield map which identifies the location of the Housatonic River, the proposed river rechannelization limits, and the two areas (i.e., Oxbows I and G) lying within the Newell Street Site that were subsequently subject to the placement of fill materials.

Aerial photographs for the Newell Street Site (Appendix H) indicate that the rechannelization project had been completed in this area by 1942. The recent rechannelization is evident in the 1942 photograph by the lack of trees along the new river bank and evidence of bare, unvegetated surfaces in the former oxbow areas. The 1942 photograph shows no structures on the Newell Street Site, and most of the area appears to be either bare ground or grass-covered. Tree-covered areas at this time included the middle portions of the current Anthony Marchetto Contractors, F.W. Webb, Pittsfield Transmission Company, and Allegroni Construction properties. The historical photographs indicate that the majority of the present commercial structures on the site had been constructed by 1956. Minor construction additions and demolitions occurred over the next few years until 1974, and from that point to the present, the commercial properties have remained essentially unchanged. Review of the photographs indicates that by 1960 the off-site area east of the site was being used as a playground (Hibbard Playground). The western portion of the site remained unchanged until some time between 1960 and 1969, when the GE Parking Lot was constructed in its current configuration.

In its conditional approval letter of August 24, 1990, the MDEP stated that GE's Phase II report should discuss the disposal history of the "former pond" area as referred to in the Phase II SOW and the "disposal area" as referred to in Figure 2 of an October 27, 1989 letter from GE to the MDEP, and should include, if available, records and a description of the materials disposed of in this area. As mentioned above, there are no records available that describe the placement of fill material in the "former pond" area (i.e., former Oxbow G area). Information regarding the fill material placed in this and other low-lying areas is based on visual observation of recovered samples and the results of subsequent analytical efforts.

This information has essentially identified the fill material as the primary "source" of hazardous materials at the site. As a result, investigation activities have been primarily directed toward further characterization of the presence and extent of the fill material. These efforts indicate that the fill materials generally consists of sands and gravel with assorted industrial fill, including fragments of brick, glass, steel, copper, assorted metal debris, cinders, ceramic, paper, and concrete.

Chemical constituents detected within the fill materials (but not at all locations and depths) include PCBs and low concentrations of certain VOCs, SVOCs, metals, cyanide, phenols, and dioxin/furan compounds. Sections 4, 5, and 7 of this report further describe the fill material at the Newell Street Site.

In addition to the fill materials that were placed within the site, it is possible that there are other contributing sources of hazardous materials to the various media at the site. While it is not expected that these potential sources are significant in comparison to the fill materials, they may impact the scope of subsequent Phase II activities. Potential sources may include the commercial/industrial operations that have occurred in the western portions of the site since the 1940s. These include printing operations, automobile parts and service-oriented activities, and contractor facilities. Each of these activities potentially creates a situation where the release of oils or hazardous materials may occur to the site media. Section 4.5 discusses investigations that have occurred at several specific properties within the Newell Street Site.

In the GE Parking Lot area, a potential source of hazardous constituents (in addition to the subsurface fill materials) is the presence of two 3000-gallon above-ground storage tanks in the northwest corner of the parking lot. In 1970-1971, GE, with the approval of the City of Pittsfield, conducted a pilot test concerning the metering of GE-generated, phenol-containing wastewater into the City-owned wastewater treatment facility. The pilot facility consisted of two storage tanks installed within a diked area and located within an enclosed structure. This structure was separately fenced and provided with heat to prevent freezing. The wastewater was metered into the City sanitary piping system and subsequently entered the City's treatment facility. Based on the results of the pilot test, GE entered into an agreement which allowed GE to discharge a metered volume of the wastewater stream to the City's treatment facility. Within 6 to 12 months, use of the pilot study facility was discontinued due to plant modifications within the main facility.

The facilities associated with this pilot test structure were re-identified in early 1992 when a routine security inspection of the GE facility detected a broken pipeline in the northwest corner of the GE Parking Lot. The line was traced to the small building where the two inactive storage tanks are located. One tank was observed to be empty, while the second tank contained approximately 700 gallons of liquid. Laboratory analysis indicated the presence of total phenols in this liquid at a concentration of approximately 500 ppm.

Since the building has not been used for over 20 years, it is planned to immediately verify the security of the dike and prepare a scope of work for a removal plan. The scope of work would be implemented as soon as weather permits a complete sampling of the liquid so as to allow proper disposal.

SECTION 4 - SUMMARY OF PREVIOUSLY REPORTED SITE INVESTIGATIONS

4.1 General

This section provides summary information regarding various investigations that have been performed at the Newell Street Site since 1987. The majority of these investigations were performed between 1987 and 1989; results of these investigations (which have been previously reported to the MDEP) are presented below in terms of three site media: subsurface soils, surficial soils, and ground water. Several additional limited sampling and analysis activities performed at various commercial properties within the site since 1988 are also summarized in this section.

The Newell Street MCP Phase II *Supplemental Data Summary* (SDS) was submitted to the MDEP in June 1990 to accompany the SOW. The SDS was prepared to summarize the scope of prior investigations conducted at the site between 1987 and 1989 and the results obtained from those various field activities. Several figures, tables, and appendices were provided in the SDS to summarize the results of these prior investigations. The SDS has been included in this document as Appendix B; numerous references to specific portions of the SDS will be provided as appropriate within this section.

Table 1 of the SDS (Appendix B) provides a summary of field investigations performed at the site between 1987 and 1989. The information contained in this table, together with Figure 1 of the SDS (Appendix B), provides a chronology of field activities and a summary of sample locations. Information obtained from the performance of these field activities is presented below.

4.2 Chronology of Prior Investigations

Elevated levels of PCBs in the fill materials at the Newell Street Site were detected during a 1987 environmental assessment of one of the commercial properties. The assessment was conducted by O'Brien & Gere, Inc., for Quality Printing. Based on this initial assessment, further sampling and analysis of fill materials and ground water was conducted by GE for the purpose of site characterization.

An investigation of the Newell Street Site was conducted for GE by Geraghty & Miller, Inc. in 1987. The purpose of the investigation was to identify areas of PCB-containing fill material. Findings were summarized in a Geraghty & Miller report entitled "Investigation of Soil Conditions in the Vicinity of Newell Street - Interim Report". This report was submitted to the MDEP for review in July 1987.

The MDEP reviewed the Geraghty & Miller report and, as a result, requested that additional investigative work be done to determine the quality of surficial soils and ground water at the site and to further define the extent and quality of subsurface materials. On March 14, 1988, GE submitted a work plan prepared by Geraghty & Miller to perform further investigation activities in response to MDEP's comments. This work plan was approved by the MDEP in April 1988 and subsequently implemented by Geraghty & Miller. In July 1988, Geraghty & Miller submitted a report summarizing the results of the additional investigation. The report, titled "Investigation of Soil and Ground-Water Conditions at the Newell Street Site," was submitted to the MDEP for review.

In September 1988, Blasland & Bouck prepared a Feasibility Study report for the Newell Street Site based on Geraghty & Miller's two earlier reports. This report, titled "Newell Street Site, Analysis of Potential Remedial

Measures," was also submitted to the MDEP for review. The MDEP reviewed both Geraghty & Miller's and Blasland & Bouck's reports and submitted its comments to GE in a December 14, 1988 letter. The letter stated that additional information would be necessary to complete an MCP Phase II Comprehensive Site Assessment and that an evaluation of remedial alternatives would not be possible until the MCP Phase II work was completed.

In response to the MDEP's December 14, 1988 letter, GE submitted a proposal to the MDEP on January 16, 1989, outlining additional field activities at the Newell Street Site. The proposal described a three-task field program consisting of soil borings, ground-water sampling, and surficial soil sampling. These activities were performed in February and March of 1989. The results of the soil boring and ground-water analyses were summarized in the "Supplemental Investigation of Soil and Ground-Water Conditions at the Newell Street Site". The surficial soil sampling results were described in a May 1, 1989 letter from GE to the MDEP. The results of these 1989 field activities were incorporated in a Newell Street Risk Assessment which was prepared by Geraghty & Miller and submitted to the MDEP in May 1989.

During August 1989, Geraghty & Miller drilled four soil borings along the northern edge of the GE Parking Lot. Soil samples from these borings were analyzed for PCBs, volatile organic compounds (VOCs), and base/neutral organics. One boring (NS-1) was completed as a monitoring well; the ground water from this well was analyzed for dissolved PCBs, VOCs, and base/neutral organics. During October 1989, Geraghty & Miller drilled four additional soil borings at the Newell Street Site, two on Quality Printing property and two on F.W. Webb Company property. The soil samples from these borings were analyzed for priority pollutant metals. The results of these investigations are included in the SDS (Appendix B).

Subsequent investigations at the site have included the MCP Phase II activities performed in accordance with the June 1990 SOW and described in Section 5 of this document, as well as limited site investigations at certain specific commercial properties at the site, as described in Section 4.5.

4.3 Subsurface Soil

The overall objectives of subsurface soil investigations were to delineate the extent of fill materials placed in the former oxbows during river rechannelization activities, characterize the site geology, and obtain chemical data for PCBs, VOCs, semi-volatile organic compounds (SVOCs), and metals in the fill material and native soils. Table 1 of the SDS (Appendix B) summarizes by date, and by sample location and number, the extent of subsurface soil investigations at the site. These investigations included a total of 71 soil borings, their locations are shown on Figure 1 of the SDS (Appendix B). The performance of these subsurface borings throughout the site generated the following data toward fulfillment of the objectives identified above:

- 268 samples for laboratory analysis;
- Soil boring logs summarizing drilling operations, visual classifications of the recovered subsurface materials, and depth to ground water (if encountered);
- Photoionization Detector (PID) readings to qualitatively detect the presence of VOCs.

Section 2.2 of the SDS (Appendix B) summarizes the methods utilized during the performance of the subsurface soils investigation. Also included in the SDS are soil boring logs and laboratory data associated with the analysis of soil samples for the various chemical constituents identified above.

A summary of results pertaining to the investigation of the subsurface soils, as well as specific references to the SDS, are presented below in two parts: Soil/Fill Material, and Chemical Data.

4.3.1 Soil/Fill Material

Of the two former oxbows associated with the site (Oxbows G and I), the majority of prior investigations focused on Oxbow I. Of the 71 subsurface soil borings advanced in the Newell Street Site between 1987 and 1989, approximately 65 were associated with the former Oxbow I. The lack of a comparable subsurface soil data base for Oxbow G (i.e., the GE Parking Lot) prompted the performance of additional subsurface soil investigations as part of the MCP Phase II SOW. A discussion of the recent MCP investigations is included in Section 5.

A comparison of the available soil boring logs for Oxbow G (six locations) with those associated with Oxbow I, suggests that the nature of the respective fill materials is similar. This is further supported by the common time frame during which these oxbows were filled (i.e., following river rechannelization activities in the 1940s).

Visual descriptions of the subsurface soils were made in the field during advancement of the soil borings. Appendix A of the SDS contains soil boring logs for the subsurface activities. These soil boring logs show that the fill materials consist primarily of sand and gravel. Varying percentages of glass, cinders, wood, bricks, vegetation, concrete, ceramic fragments, foil, paper, and wire are mentioned on the boring logs. In the area of Oxbow I, the depth of fill material ranged from 0 to 14 feet below grade. Table 2 of the SDS (Appendix B) contains a summary of depth to fill and fill thickness. In addition, Figures 3 and 4 of the SDS (Appendix B) show geologic cross-sections of the fill material and native soils in general east-west and north-south directions.

At some locations, a thin layer of peat and/or silt, rich in decomposing organic matter, was encountered below the fill. This layer varied in thickness from 0 to 3 feet. In places where it was not encountered, the layer had probably been artificially removed. Underlying the layer, which represents an old marsh deposit, is a heterogeneous assemblage of gravel, sand, silt, and clay. Ground water was not encountered in the fill during advancement of the soil borings within the former Oxbow I area. However, this was not the case for soil borings that were advanced in the former Oxbow G area, as discussed below.

For the area of Oxbow G (the GE Parking Lot), prior information regarding the presence and extent of fill materials was based on data from the completion of six soil borings (NS-1 through NS-4, GE-6, and GE-7). These six borings were advanced to depths ranging from 6 to 18 feet below grade. Of these six borings, only NS-1 through NS-4 detected the presence of fill materials. Boring NS-1 provided the most significant observations: fill material present from land surface to the bottom of the boring at approximately 18 feet below grade; ground water present at approximately 10 feet below grade; and an oil sheen present on several recovered soil samples. The information obtained from this and the other soil borings was not considered sufficient to characterize the extent of fill material in the GE Parking Lot. Therefore, as discussed in Section 5, additional activities were undertaken to address this issue.

The majority of subsurface soil samples collected as part of these investigations were submitted for laboratory analysis for PCBs. This action responded to the initial, primary objective of determining the presence and extent of PCB-containing fill materials. However, as the scope of site investigations has expanded, the parameters subject to laboratory analysis have also increased. From the prior site investigations, information regarding the presence of PCBs, VOCs, SVOCs, and metals in the subsurface soils has been obtained. A summary of the chemical characteristics of the subsurface soils is presented below.

4.3.2 Soil Chemistry

From the 71 soil borings that were drilled at the site between 1987 and 1989, 268 subsurface soil samples were collected and submitted for the following laboratory analyses: 232 analyses for PCBs, 12 analyses for VOCs, 12 analyses for SVOCs, and 12 analyses for priority pollutant metals. A review of laboratory results for each "category" of analysis is provided below. Detailed information is contained in the SDS (Appendix B).

Subsurface PCB data were collected to represent 2-foot depth increments and larger depth increments of up to 12 feet. Table 6 of the SDS (Appendix B) provides the PCB data resulting from prior investigations for both subsurface and surficial soils. This table indicates that PCB results range from not detected to a value of 290,000 parts per million (ppm), of the 232 PCB analyses performed, 81 had a reported concentration of 50 ppm or greater total PCBs. The PCBs detected in the samples were primarily Aroclor 1254, with Aroclor 1260 present in some samples. The borings where elevated PCBs were detected were generally located within the areas formerly occupied by the oxbows and subject to fill placement. The vertical distribution of PCBs in the subsurface soils indicated the highest PCB levels in the 2- to 8-foot range. Figures 3 and 4 of the SDS (Appendix B) depict the vertical distribution of PCBs in the subsurface.

In August 1989, four soil borings were installed within the GE Parking Lot. Samples from each of these borings were collected in depth increments of 0 to 4 feet, 4 to 8 feet, and 8 to 12 feet below grade. Samples were submitted for laboratory analysis for the presence of VOCs and SVOCs. Several constituents were detected as a result of this effort; Table 9 of the SDS (Appendix B) summarizes the analytical results.

In October 1989, 4 soil borings were drilled and 12 soil samples collected for laboratory analysis of priority pollutant metals. Two of these soil borings were located on the property of the F.W. Webb Company (FW-20, FW-21), while the other two were located on the property of Quality Printing (QP-22, QP-23). Soil samples collected from borings QP-22 and QP-23 contained detectable levels of antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc, with trace levels of beryllium, as described in Table 7 of the SDS (Appendix B). Metals detected in Boring FW-20 included antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, and zinc. The metals content decreased by an order of magnitude in the deepest sample collected from the boring (8 to 10 feet). At Boring FW-21, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, and zinc were detected.

4.4 Surficial Soil

Surficial soil samples were initially collected at the site in May 1988 upon the detection of elevated PCB concentrations in the subsurface soils. Surficial soil samples were collected by compositing soils from a 3-foot by 3-foot by 4-inch deep area. Twigs, stones, pebbles, and any other foreign objects were first removed. The initial plan of sampling (based on grid spacing as requested by the MDEP) was modified during field operations due to the presence of paved parking lots, grassy areas, and buildings.

Between May 1988 and March 1989, a total of 77 surficial soil samples were collected with subsequent analysis for PCBs. Figure 6 of the SDS (Appendix B) identifies the location and results of this phase of investigation. The results of PCB analyses ranged from 0.06 ppm to 1500 ppm. Certain remedial responses have been performed by GE, or are in progress, to address several areas of the site where elevated PCB concentrations were detected in the surficial soil. Section 4.5 includes a discussion of activities completed to date, and Section 6 summarizes the short-term measures currently in progress.

4.5 Ground Water

A total of 8 ground-water monitoring wells were installed throughout the site between 1987 and 1989 at the locations shown on Figure 1 of the SDS (Appendix B). One complete set of ground-water elevation data was collected on June 7, 1988, from the eight wells in the Newell Street area that existed at that time. These data are presented in Table 5 of the SDS (Appendix B). From the data, a ground-water contour map was prepared indicating that ground-water flow direction is generally toward the Housatonic River (from the south to the north). It is included as Figure 7 of the SDS (Appendix B). Ground water occurs between 7 and 14 feet below grade.

Ground-water samples were collected from Wells MW-1, MW-2, and MW-3 in February 1989, from Wells FW-16, GE-3, IA-9, SZ-1, and SZ-3 in May 1988 and February 1989, and from Well NS-1 in August 1989. Samples collected in February 1989 were analyzed for priority pollutant VOCs, chlorinated hydrocarbons, and PCBs. The 1988 samples were analyzed for PCBs and VOCs. The sample from Well NS-1 was analyzed for PCBs, VOCs, and base/neutral organics. The ground-water quality data from these wells are presented in Table 8 of the SDS (Appendix B). Elevated levels of several constituents were detected in the ground water from Well NS-1, while the only constituents detected in ground water from the remaining wells were low levels of chlorobenzene and methylene chloride. Methylene chloride was detected in Well FW-16 (May 1988) at a concentration less than the detection limit of 5 ppb. The ground-water samples collected in May 1988 for PCB analysis were unfiltered. The range of PCBs in May 1988 was between <0.4 ppb and 5.2 ppb. No detectable concentrations of PCBs were reported in the filtered ground-water samples collected in February 1989, however, a PCB concentration of 17 ppb was detected in the August 1989 sample collected from Well NS-1.

4.6 Limited Site Investigations at Specific Properties

In addition to the sampling and analysis activities described above, certain limited sampling and analysis efforts have been carried out at specific commercial properties at the Newell Street site. These limited investigations are described in the following sections.

4.6.1 Activities at Former Quality Printing Property

Soil sampling and analysis for PCBs was performed in conjunction with a facility improvement/upgrade project for the property formerly occupied by Quality Printing and now owned by GE. Between November 1988 and April 1989, GE planned, obtained permits for, and implemented a series of activities designed to upgrade the building located on that property. A shipping/receiving door for delivery purposes was installed on the east side of the building, and asphalt pavement and perimeter fencing were installed for two purposes: to improve access to the new building door, and to minimize potential contact with the surficial soils in this area. An area of approximately 2500 square feet of 4-inch-thick asphalt pavement was installed along with approximately 100 linear feet of 6-foot-high chain-link fence.

Since the Newell Street Site is positioned within the 100-year floodplain of the Housatonic River (refer to Section 2.3 for additional details), the project was subject to regulation by the Massachusetts Wetlands Protection Act under the local jurisdiction of the Pittsfield Conservation Commission. To receive approval for this project, GE was required to provide flood storage compensation for the volume of the 100-year floodplain that would be occupied by the 4-inch-thick asphalt pavement. In response, GE excavated an equivalent depth of surficial soils (4 inches) within the limits of the proposed asphalt paving prior to its installation.

Based on the results for sampling and analysis previously performed for the soils in this area, the potential presence of PCBs in the surficial soils was recognized and appropriate health and safety protocols were implemented during construction. The surficial soils that were excavated to provide compensatory flood storage were stockpiled on the property and covered with plastic sheeting to minimize contact with the elements. This stockpile of material (estimated at approximately 50 cubic yards) was sampled in April 1989 by Blasland & Bouck. A total of six samples were collected from within the stockpile area and analyzed by OBG Laboratories for PCBs. Results of the PCB analyses ranged from 120 ppm to 930 ppm, with an average concentration of 390 ppm. As a result, GE arranged for transportation of these soils for disposal at a RCRA/TSCA-regulated landfill.

Appendix J contains a partial site plan that indicates the location of project activities discussed above. In addition, results of sampling and analysis performed for the excavated surficial soils are included in Appendix J.

The excavation, paving, and fencing project described above, sampling and analysis for PCBs was conducted at an existing soil pile located at the northern edge of the former Quality Printing property near the Housatonic River. A total of 12 samples were collected from this soil pile, with analysis for PCBs provided by OBG Laboratories. PCB results ranged from <5 to 1010 ppm, with an average PCB concentration of 263 ppm. Subsequently, these materials (approximately 120 cubic yards) were transported offsite to a RCRA/TSCA-regulated landfill.

4.6.2 Activities at Italian-American Club Property

An additional activity performed in the same general time frame as the facility upgrade activities on the former Quality Printing property involved the replacement of the horseshoe pits located on the Italian

American Club property. Surficial soil sampling performed by Geraghty & Miller during March 1989 included the collection of two samples (IA-20 and IA-15) from the sand material within each horseshoe pit. Results of laboratory analyses indicated elevated levels of PCBs, prompting GE to remove the sand materials and wood structure to a RCRA/TSCA-regulated landfill and provide a new horseshoe pit structure.

4.6.3 Activities at Marchetto Property

In October and November 1990, a surficial soil sampling program was carried out by Geraghty & Miller at the Anthony Marchetto Contractors property in order to better delineate the portions of the property subject to a Short-Term Measure (STM) required by the MDEP. The scope and results of this surficial soil sampling program were presented to the MDEP as part of the GE's STM proposal in December 1990 (included in Appendix K to this report) and are described, together with the proposed STMs, in Section 6.1.

4.6.4 Activities at Ravin Auto Body Property

In September 1991, Geraghty & Miller carried out a limited site investigation at the Ravin Auto Body property. This investigation included collection of soil and water samples for VOC and Total Petroleum Hydrocarbon (TPH) analyses. The intent of the sampling program was to provide an indication of the potential impacts associated with the use of the property for automobile storage and repair. Four soil borings (RV-7 through RV-10) were advanced to a depth of 8 feet and the entire depth composited and analyzed for VOCs and TPHs. In addition, Boring RV-10 was advanced an additional 7 feet following collection of the soil samples and a temporary well screen installed to collect a water sample for VOC and TPH analyses.

With the exception of acetone and methylene chloride, which were also detected in the laboratory blank sample, VOCs were not detected at concentrations above their method detection limits in the soil samples. The soils analytical data indicate elevated concentrations of TPH in the samples from Borings RV-8 (120,000 ppm) and RV-10 (7,600 ppm). The soil sample from Boring RV-9 produced a TPH concentration of 580 ppm, while its replicate (RV-9A) produced a TPH concentration of 1,400 ppm. TPH were not detected in the soil sample from Boring RV-7. The ground-water analytical data indicated that VOCs and TPH were not detected above their respective method detection limits in any of the samples.

The sampling locations and results from this limited site investigation can be found in a letter report dated November 24, 1991, prepared by Geraghty & Miller, which is provided as Appendix L.

SECTION 5 - MCP PHASE II INVESTIGATIONS

5.1 General

Between May 1991 and January 1992, Geraghty & Miller conducted field investigation activities as outlined in the June 1990 SOW for the Newell Street Site. These activities included the collection of surficial and subsurface soil samples, as well as ground-water samples, to further define the nature and extent of hazardous constituents present at the Newell Street Site. Figure 5-1 shows the locations within the Newell Street Site that were subject to sampling as part of the MCP Phase II investigation.

The activities proposed in the June 1990 SOW were designed to accomplish four objectives. First, the surficial soil sampling would further define the presence and extent of VOCs, PCBs, and metals in surficial soils for select areas within the site. Second, the sampling and analysis of subsurface soils from the GE Parking Lot would provide characterization of the extent of fill materials in this area of the site. Third, sampling of several monitoring wells in the GE Parking Lot would further define ground-water quality in this area. Finally, the sum of these efforts would aid in the determination of the extent and potential impacts (if any) of the various constituents and media of concern.

The results of the MCP Phase II activities performed in accordance with the SOW are summarized in the subsequent sections. The underlying analytical data summary sheets from the laboratories have already been submitted to the MDEP as part of GE's monthly status reports.

5.2 Subsurface Soils

A total of 18 soil borings were drilled in the western portion of the Newell Street Site between May and December 1991. Two of these borings were hand-augured along the northern edge of the GE Parking Lot, 12 were drilled in the GE Parking Lot with a truck-mounted hollow-stem auger rig, and the remaining four were drilled in the wooded lot between the GE Parking Lot and Moldmaster property with a portable, cathead-driven tripod system. The locations of these borings, shown on Figure 5-1, were selected to define the extent of fill material and the presence of hazardous constituents in this portion of the site. The soil boring logs are provided in Appendix M. All cuttings generated during the drilling activities were placed in appropriately labeled 55-gallon drums for disposal pending analytical results.

The soil borings were segmented into 2-foot increment samples, and the samples were screened in the field with a portable PID for the presence of VOCs and then submitted to the laboratories for the appropriate analyses. The PID measurements are presented in Table 5-1, the thickness of the fill material (if encountered) is shown in Table 5-2, and the analytical results are presented (by category of analytes) in Tables 5-3 through 5-8. (In those tables, samples labeled "RB" were taken from the hand-augured borings on the river bank north of the GE Parking Lot, those labeled "NS" were taken from the GE Parking Lot, and those labeled "GE" were taken from the wooded area between the parking lot and the Moldmaster property.) The results of this soil boring program are discussed in more detail, by area, in the following sections.

5.2.1 River Bank Borings

Borings RB-6 and RB-7, located along the northern edge of the GE Parking Lot, were advanced to a depth of 4 feet below land surface with a stainless steel hand auger. The augering and sampling procedures were performed by Geraghty & Miller on May 21, 1991, in accordance with the Phase II SOW and SAP. Fill materials were not encountered at these locations.

Soil composites were collected from the 0- to 2-foot and 2- to 4-foot depth intervals in each boring and were placed in laboratory-supplied containers prior to shipment via Federal Express priority overnight service to CompuChem. A portion of each of the four samples was field-screened with a PID for the presence of VOCs, however, none were detected (see Table 5-1). The samples were analyzed for the Appendix IX+3 constituents listed in Table 3-2 of the SOW (Appendix A).

The VOC data resulting from the Appendix IX+3 analyses indicate that, with exception of the 2- to 4-foot sample from RB-7, methylene chloride and acetone were reported at low concentrations in each of the four samples and their associated blanks. These compounds are common laboratory artifacts and are not discussed further. The VOC data are included in Table 5-3. The SVOC data are summarized in Table 5-4. Analytical data for metals detected in Borings RB-6 and RB-7 are shown in Table 5-5. Analytical data for the remaining Appendix IX inorganic constituents analyzed (phenols, sulfide, and cyanide) are included in Table 5-6. Cyanide was not detected in either of the borings, sulfide was detected only in Boring RB-6 at 20 ppm in the 0- to 2-foot sample, and total phenols were reported at low concentrations in each of the four samples submitted for analysis. Dioxin/furan data are included in Table 5-7, and PCB data are included in Table 5-8. Appendix IX herbicides and organochlorine and organophosphorus pesticides were not detected in any samples from RB-6 and RB-7.

5.2.2 GE Parking Lot

Between May 21 and December 10, 1991, Geraghty & Miller supervised the drilling of 12 soil borings, three of which were completed as ground-water monitoring wells, in the GE Parking Lot along the western edge of the Newell Street Site. This portion of the subsurface investigation was proposed to better define the extent of fill material containing hazardous constituents as well as to provide several additional ground-water monitoring points in the vicinity of former Oxbow G. The drilling activities were performed with a truck-mounted, hollow-stem auger rig by Clean Berkshires, Inc. (CBI) of Lanesboro, Massachusetts. The well construction logs are included in Appendix L.

As outlined in Table 5-2, Borings NS-1A and NS-2A were advanced to a depth of 24 feet below grade. The base of the fill was determined to be at nine feet below grade in NS-1A and at 11 feet below grade in NS-2A. Each of the remaining borings was advanced to a depth of four feet below the base of the fill unit. The base of the fill was encountered at 7 feet below grade in Boring NS-14; at 8 feet below grade in Boring NS-6; at 9 feet below grade in Boring NS-5; at 10 feet below grade in Borings NS-7, NS-8, NS-9, and NS-10; at 11 feet below grade in Boring NS-11 and NS-12, and at 12 feet below grade in Boring NS-13 (see Table 5-2). Soil samples were collected continuously in all 12 borings from grade to total depth, with visual observations recorded on soil boring logs by the field hydrogeologist. Each 2-foot sample was submitted to ITAS for PCB analysis by USEPA Method 8080. A portion of each sample was field-screened for the presence of VOCs with a PID; the PID data are included in Table 5-1. The sample exhibiting the highest PID reading from each boring was submitted to CompuChem for analysis of the Appendix IX+3 constituents listed Table 3-2 of the SOW (Appendix A). In addition to the sample submitted for Appendix IX+3 analyses, any samples exhibiting a PID reading of greater than 10 units was submitted to CompuChem for VOC analysis by USEPA Method 8240 and for 1,2,4-trichlorobenzene analysis by USEPA Method 8270.

The VOC data indicate that a total of 12 compounds were reported in the soil samples submitted for laboratory analysis, of which 7 were found in the blank sample or detected below the method detection limit. Of these 7 compounds, methylene chloride and acetone, two common laboratory artifacts, were detected in nearly all of the samples as well as the associated blanks. The remaining 5 compounds detected were as follows: 1,2-Dichloroethene, chlorobenzene, benzene, xylene, and trichloroethene. These data are presented in Table 5-3.

The SVOC data are summarized in Table 5-4. In addition to a number of other analytes detected in the soil samples, 1,2,4-trichlorobenzene was reported at concentrations ranging from 60 to 14,000 ppb. Metals data for borings from the GE Parking Lot are shown in Table 5-5 and phenols, sulfide, and cyanide data are summarized in Table 5-6. Phenols were reported at relatively low concentrations in each of the borings except NS-1A, where it was not detected. Cyanide was reported at 0.58 ppm in NS-5 and at 0.72 ppm in NS-11. Sulfide was reported at concentrations slightly above the sample quantitation limits in 4 of the 12 samples submitted for analysis. The data on dioxins and furans from these borings are included in

Table 5-7. They show concentrations of these compounds ranging from non-detect to approximately 93 ppb, with the highest concentrations detected in borings NS-6 and NS-13. The PCB data are presented in Table 5-8 and show elevated PCB concentrations in several of the soil boring samples. One organophosphorous pesticide compound (Sulfotepp) was reported at 0.1 ppm for the 10- to 12-foot sample in Boring NS-10. The duplicate sample, however, did not produce a detectable concentration of that compound. Appendix IX herbicides and organochlorine pesticides were not detected in any of the GE Parking Lot soil samples submitted for analysis.

Borings NS-9, NS-10 and NS-11 were completed as monitoring wells. Each well was constructed of 4-inch diameter, Schedule 40 PVC and set at 20 feet below grade. The 0.010-inch slotted well screens were set from 5 to 15 feet below grade so as to bridge the water table, which occurs at approximately 10 feet below grade in the area. A No. 2 graded sand pack was emplaced in the borehole annulus around each well screen to a depth of approximately 3 feet below grade, then sealed with a 1.5- to 2-foot thick pelleted bentonite seal and grouted to grade with a cement/bentonite slurry. The wells were fitted with locking caps and finished at grade with flush-mount curb boxes. After installation, the wells were developed with a bladder pump and the development water was placed in labeled, 55-gallon drums. Ground-water sampling and analytical data are described in Section 5.4.

Hill Engineers of Dalton, Massachusetts, surveyed the grade and top-of-casing elevations relative to the 1929 National Geodetic Vertical Datum (mean sea level) on January 29, 1992. Table 5-11 is a summary of well construction details for the newly-installed wells. The well construction logs are presented in Appendix N.

5.2.3 Wooded Lot Borings

Soil borings were drilled in the wooded lot between the GE Parking Lot and Moldmaster property at the four locations depicted on Figure 5-1. The locations were selected to assist in defining the extent of the western boundary of the fill and natural soils containing hazardous constituents (if any). These borings, designated as GE-9 through GE-12, were advanced to their respective total depths with a tripod-mounted, cathead-driven sampler provided by CBI. This method was chosen due to access restrictions for a truck-mounted rig and boring depths which potentially would have precluded hand auguring.

As outlined in the SOW, Borings GE-9 through GE-12 were advanced to the water table, which was deeper than four feet below the base of the fill in that area. The base of the fill unit was determined to be 2 feet below grade in Boring GE-10; 4 feet below grade in Borings GE-11 and GE-12; and 5 feet below grade in Boring GE-9. Sample screening and collection protocols were performed similarly to the work performed in the GE Parking Lot. Soil samples were collected continuously in all 12 borings from grade to total depth and logged in detail by the field hydrogeologist. Each 2-foot sample was submitted to ITAS for PCB analysis by USEPA Method 8080. A portion of each sample was field-screened for the presence of VOCs with a PID, the PID data are included in Table 5-1. The sample exhibiting the highest PID reading from each boring was submitted to CompuChem for analysis of the Appendix IX+3 constituents listed Table 3-2 of the SOW. In addition to the sample submitted for Appendix

IX+3 analyses, any sample exhibiting a PID reading of greater than ten units was submitted to CompuChem for VOC analysis by USEPA Method 8240 and for 1,2,4-trichlorobenzene analysis by USEPA Method 8270.

The VOC data, presented in Table 5-3, indicate that methylene chloride was reported for the four samples at concentrations of between 30 and 61 ppb and that acetone was reported for three of the four samples at concentrations of between 20 and 56 ppm. These compounds are commonly used in laboratory extraction procedures and their existence in site soils is suspect. The SVOC data for the wooded lot borings are included in Table 5-4. They indicate that a total of seven compounds were reported at concentrations less than their respective quantitation limits in the four samples; 1,2,4-trichlorobenzene was not detected in any of these soil samples. Metals data are included in Table 5-5. In addition to the more common metallic analytes, arsenic and lead were reported in each of the four samples; however, cadmium and mercury were not detected in any of the samples. In the analyses for phenols, cyanide, and sulfide (Table 5-6), none of these constituents were detected in the wooded lot soil boring samples. Appendix IX dioxin/furan data are shown in Table 5-7. None of these compounds were detected in Borings GE-9 or GE-12 and only one (HxCDF at 0.028 ppb) was detected in Boring GE-10. The PCB soils data are presented in Table 5-8. With the exception of the 0- to 2-foot sample in Borings GE-10 and GE-11, which contained 930 ppm and 3,800 ppm total PCBs, respectively, the highest reported PCB concentration for the wooded lot boring samples was 10.0 ppm at the 2- to 4-foot interval in Boring GE-9.

5.3 Surficial Soil

Surficial soil samples were collected by Geraghty & Miller at 28 of the 29 proposed locations depicted on Figure 1 of the June 1990 SOW (Appendix A). These 29 proposed locations were divided into two analytical categories; 19 samples were designated for analysis of the metals listed in Appendix IX of 40 CFR Part 264, and 10 samples were designated for PCB analysis by USEPA Method 8080. The sample locations are identified on Figure 5-1. Access to one of the proposed metals sampling locations (LA-6) was denied by the owner of the property. All but three of the 28 surficial soil samples were collected on May 8 and 9, 1991; sample PK-14 was collected on May 23, 1991; sample GE-8 was collected on November 20, 1991; and sample RB-5 was collected on December 10, 1991. The samples were collected by compositing the surficial soil in a 3-foot by 3-foot by 4-inch deep area. Each sample was field-screened for VOCs with a photoionization detector (PID). None of the samples produced a PID reading, therefore, none were submitted for VOC analysis (VOC analysis was required if a PID reading of 10 units or greater was detected). The samples collected for PCB analysis were shipped in iced coolers via Federal Express priority overnight service to IT Analytical Services (ITAS) in Knoxville, Tennessee, and those collected for Appendix IX metals analysis were shipped in iced coolers via Federal Express priority overnight service to CompuChem Laboratories (CompuChem) in Research Triangle Park, North Carolina. Chain-of-custody and decontamination procedures were followed as described in the MDEP-approved Sampling and Analysis Plan (SAP) (Blasland & Bouck, September 1990).

The 10 surficial sampling locations designated for PCB analysis were chosen to better delineate the extent of PCBs in surficial soils at the site. The analytical results for the surficial PCB soil samples are presented in

Table 5-9 and indicate a range of total PCB concentrations from 0.18 to 5.7 ppm. With the exception of sample location IA-22 (5.7 ppm), all the samples produced PCB concentrations less than 2 ppm.

The surficial soil sampling locations designated for Appendix IX metals analysis were selected to better understand the presence of metals at the site. Analytical data for the surficial soil samples subject to metals analysis are presented in Table 5-10.

5.4 Ground Water

The three newly-installed monitoring wells (NS-9, NS-10, and NS-11) and two pre-existing wells (NS-1 and MW-3) were sampled by Geraghty & Miller in December 1991 and January 1992, as outlined in the SOW. Wells NS-1, NS-9, NS-10, and NS-11 were sampled and analyzed for the Appendix IX+3 constituents listed on Table 3-2 of the SOW to confirm the results of previous ground-water sampling and to determine the potential source and extent of ground-water quality impacts in the area. Well MW-3, located on the former Quality Printing property, was sampled and analyzed for Appendix IX metals, as previous sampling activities identified elevated concentrations of several metals in soils and ground water in this location. The sampling, decontamination, and chain-of-custody procedures were strictly adhered to as outlined in the SAP.

The ground-water analytical data are presented (by category of analytes) in Tables 5-12 through 5-16. The VOC data, presented in Table 5-12, indicate that chlorobenzene was detected in Well NS-9 at 13 ppb and that total xylenes were detected at 21 ppb in Well NS-10. The sample from Well NS-1 showed concentrations of vinyl chloride at 2,400 ppb and chlorobenzene at 350 ppb, confirming the results of the August 1989 sampling. Several other VOCs detected in the August 1989 sampling (ethylbenzene, toluene, trichloroethene) were not detected during this sampling round. The reported concentration of 1,2-dichloroethene in Well NS-1 was higher than that reported for the August 1989 sampling (210 ppb vs. 7 ppb). Benzene and 1,1,1-trichloroethane were reported at concentrations below their respective sample quantitation limits. With the exception of methylene chloride, a common laboratory artifact which was detected in the method blank as well as in the sample from each well, the remaining VOCs listed on Table 5-12 were reported at estimated concentrations less than their respective sample quantitation limits. The SVOC data are summarized in Table 5-13. They indicate reported concentrations of 1,4-dichlorobenzene at 39 ppb in Well NS-10 and at 80 ppb in Well NS-1. A concentration of 24 ppb of 1,3-dichlorobenzene was reported for the sample from Well NS-1 and 1,2,4-Trichlorobenzene was reported at a concentration below the sample quantitation limits. By comparison, the August 1989 sampling reported similar concentrations for these same constituents in Well NS-1 (1,3-dichlorobenzene at 17 ppb, 1,4-dichlorobenzene at 60 ppb, and 1,2,4-trichlorobenzene at 12 ppb). Several other analytes are reported at estimated concentrations which are below their respective sample quantitation limits. Metals data for the ground-water samples are shown in Table 5-14. None of the detected analytes exceed federal primary drinking water standards. A summary of cyanide, dioxin/furan compounds, and sulfide data is presented in Table 5-15. These analytes were not detected in Wells NS-9 and NS-10. Several dioxin/furan compounds were detected in Well NS-1 at concentrations ranging from 1.6 ppb to 35.1 ppb, and one dioxin (OCDD) was detected in Well NS-11 at 4.1 ppb. Low levels of sulfide were reported for Wells NS-1 and NS-11, and cyanide was reported in Well NS-11 at 25.3 ppb. The cyanide data for NS-1 have not yet been processed by the laboratory. The data on organochlorine pesticides and PCBs in the ground water are shown in Table 5-16. PCBs were detected in only one well (Well NS-1, at 520 ppb) and only one pesticide (aldrin) was detected in one well (Well NS-11, at 0.18 ppb).

5.5 Ambient Air Monitoring

Prior to the initiation of the MCP activities defined in the June 1990 SOW, there had been no specific air monitoring activities conducted at the Newell Street Site, although the SDS (Appendix B) included information concerning PCB air monitoring that was performed on GE property across the Housatonic River from the site in 1981. As part of MCP Phase II activities, GE has begun a year-long Facility Air Monitoring Program to quantify levels of PCBs in the ambient air at and near its Pittsfield facility. The Newell Street Site is included in this program, with an ambient air monitoring station located on the former Quality Printing property at that site. The year-long air monitoring program began on August 20, 1991, and involves the collection of air samples every 12 days. Final samples will be collected in August 1992. The results of the air monitoring program, as applicable to the Newell Street Site, will be included in a Supplemental Phase II Report on this site.

5.6 Summary of Oxbow F Area Investigation

As previously discussed, and as shown on Figure 3-1, there are several former river oxbows and low-lying marshy areas that are not currently associated with the active portion of the Housatonic River. Former Oxbows Areas G and I are within the study limits of the Newell Street Site.

The MDEP's conditional approval letter of August 24, 1990, pertaining to the June 1990 SOW stipulated that two borings and two monitoring wells, installed to the west of the GE Parking Lot, would be required to further define the western boundary of the Newell Street Site. However, based on discussions between GE and the MDEP in the fall of 1990, the MDEP agreed that investigatory fieldwork being performed as part of the Housatonic River MCP Phase II SOW would satisfy that requirement. Specifically, it was agreed that field and analytical data from two soil borings and one monitoring well in the area designated as Oxbow F (see Figure 3-1) would be included in the framework of the Newell Street Phase II assessment. This approach was reiterated in a letter from the MDEP to GE dated December 17, 1991.

The area comprising the former Oxbow F has been identified based on a review of several historic aerial photographs (Appendix H) and available site mapping (Appendices G and I). Appendix G-2 contains a 1960 record drawing associated with the installation of a 48-inch sanitary sewer line parallel to the south bank of the Housatonic River. This plan and profile drawing identifies what is considered to be a low-lying area connected to the former Oxbow F area. This area is located approximately 250 feet west of the current GE Parking Lot and consists of an area approximately 4 to 6 feet below the normal land surface. Oxbow F is the subject of separate MCP investigations currently being performed by GE for the former oxbows of the river.

As part of those investigations, two soil borings (F-1 and F-2) were drilled in Oxbow F on November 14, 1991, with one of the borings (F-1) completed as a ground-water monitoring well. Appendix O provides information concerning the MCP Oxbow F investigations. A site plan showing sampling locations within the former Oxbow F area is not currently available but will be provided as part of the oxbow report currently being prepared by GE. Soil and ground-water samples were collected for laboratory analyses as described herein. These activities were proposed to evaluate the materials used to fill this former localized depression adjacent to the Housatonic River.

Borings F-1 and F-2 were advanced to total depths of 18 and 12 feet below grade, respectively. The base of the fill was determined to be at 10 feet in F-1 and at 9 feet in F-2. The water level in both borings was reported at approximately 8 feet below grade. Well F-1 was constructed of 4-inch diameter, Schedule 40 PVC and set to a total depth of 18 feet below grade. The 0.010-inch slotted screen was set between 3 and 18 feet below grade, so as to bridge the water table. A No. 2 graded sand pack was emplaced in the borehole annulus around the well screen to a depth of 2 feet below grade, then sealed with a one-foot thick pelleted bentonite seal. The annulus was then grouted to grade with a cement/bentonite slurry. The well was completed with a cap and 3-foot high locking protective casing. After installation, the well was developed with a bladder pump and the development water was sealed in a labeled, 55-gallon drums. The soil boring and well construction logs are included in Appendix O.

Soil and ground-water sampling procedures for the Oxbow F borings and monitoring well were carried out in accordance with the Housatonic River MCP Phase II SOW and the DEP-approved SAP. Soil samples were collected continuously in Borings F-1 and F-2 from grade to total depth and logged in detail by the field hydrogeologist. Each 2-foot sample was submitted to ITAS for PCB analysis by USEPA Method 8080. A portion of each sample was field-screened for the presence of VOCs with a PID; the sample exhibiting the highest PID reading from each boring was submitted to CompuChem for analysis for the Appendix IX+3 constituents listed on Table

3-2 of the SOW. As none of the samples exhibited a PID reading greater than 10 units on the PID, no samples beyond the Appendix IX+3 sample were submitted for VOC analysis. A summary of PID measurements, as well as all analytical data is presented in Appendix O.

The PCB analytical data for the Oxbow F soil boring samples indicate total PCB concentrations in Boring F-1 range from non-detect in the 10- to 12-foot sample (the field duplicate sample was reported at 0.12 ppm) to 26 ppm in the 14- to 16-foot sample, and in Boring F-2 ranging from non-detect below 12 feet to 1,800 ppm in the 2- to 4-foot sample.

Analytical results for the soil samples collected from Borings F-1 and F-2 for Appendix IX+3 analyses are summarized in Appendix O. The dioxin/furan data indicate that none of these compounds were detected in Boring F-1, however, 10 of the compounds were detected in Boring F-2 at concentrations ranging from 0.29 ppb to 11.9 ppb. Ground-water analytical data from Well F-1 indicate that, with the exception of methylene chloride, which was detected in the method blank as well, no VOCs were detected. The SVOC data show that two phthalate compounds were reported at estimated concentrations below their respective sample quantitation limits and that one was reported at a low concentration. Cyanide, dioxin/furan compounds and PCBs were not detected in Well F-1; Appendix IX herbicides and pesticides were not analyzed, per agreement between GE and the MDEP.

One of the elements outlined in the MDEP's conditional approval letter for the Newell Street Site Phase II assessment was a delineation of the western boundary of the site. Toward that end, a comparison of the field and laboratory analytical data from Oxbow G (GE Parking Lot) and Oxbow F was made to determine whether the two areas are distinguishable in terms of fill material (if any) and analytical characterization.

The depths to which fill was encountered in the Oxbow F and Oxbow G soil borings were roughly similar (9 to 12 feet); however, their respective fill materials appear to differ somewhat. The fill materials encountered in Oxbow F (wood, nails, glass) do not readily correspond with those encountered in Oxbow G during this and previous investigations (e.g., wire, concrete, and brick). In addition, there appears to be some lithologic variability between the soil samples from the two former oxbows. In general, the shallower (vadose zone) soils encountered in Oxbow F appear to be finer-grained and more darkly-colored than those in Oxbow G. The analytical data for Oxbow F indicate several chemical differences between the soils and ground water in the two former Oxbows. The concentrations of PCBs in soil samples from Borings NS-1A and NS-13 (along the western edge of Oxbow G) are much higher than those reported for the Oxbow F samples. The metals data for ground-water samples show a larger suite of metallic analytes reported in Oxbow G than in Oxbow F.

Thus, the results of the Oxbow F investigation do not allow a definition of the western boundary of the Newell Street Site. Additional activities to define the western boundary of the Newell Street Site are discussed in Section 9.2.2.

SECTION 6 - MCP SHORT-TERM MEASURES

6.1 Description of Proposed Measures

In its August 24, 1990 letter providing conditional approval for the SOW, the MDEP identified the presence of elevated levels of PCBs in surficial soils on the Marchetto and former Quality Printing properties as an "imminent hazard" requiring a Short-Term Measure (STM) under the MCP (310 CMR 40.542). The MDEP thus directed GE to submit a proposal for a STM for these areas.

While GE did not agree with the MDEP's conclusion that these areas represented an imminent hazard, it agreed to propose measures to comply with the MDEP's requirement for a STM proposal. As proposed by GE and approved by the MDEP, additional surficial sampling was performed for the Marchetto property in October and November 1990 to delineate the extent of surficial soil PCB concentrations greater than 22 ppm (a level proposed by GE solely for the purpose of this STM).

The locations for additional surficial soil sampling were based on the results of surficial soil sampling data from samples collected in 1988 and 1989 (sample locations MO-3, MO-4, MO-5, MO-6 and MO-7). At each of these locations, soil samples were collected at locations five, ten and fifteen feet, and for some locations, 20 feet to the north, west, east and south of the five points originally sampled. Locations where surficial soil samples were collected are identified in a report submitted to the MDEP in December 1990 (included in Appendix K to this document). Locations were labeled based on the distance away from the original point and their direction from the original point (e.g., MO-3N1 denotes a sampling location five feet north of location MO-3). Samples collected from five feet away from the original point were analyzed first, and if results indicated a PCB concentration of 22 ppm or greater for that sample, the sample from the next location (ten feet away from the original location) was analyzed for PCBs. If necessary, this was continued up to 15 to 20 feet from the original point. The samples consisted of soil from a one-foot by one-foot by four-inch deep area. In addition to the samples collected from around these points, two samples from the north and south ends of the surface water drainage ditch were collected (sample locations DD-N and DD-S), located on the eastern border of the Marchetto property and extending from the southeastern corner of the on-site "speed shop" building, northward to the Housatonic River. Two samples were also collected from the two on-site soil piles.

PCBs were detected in the top four inches of soil at concentrations greater than 22 ppm at seven locations on the property: locations MO-3 through MO-7 and DD-S and DD-N. The highest PCB concentration found in the surficial soil was 207.7 ppm (from MO-6N3). Results for samples collected from the soil piles indicated the presence of PCBs at concentrations up to 5.7 ppm for the soil pile located at the northeast edge of the property (soil pile number 1), and up to 0.56 ppm for the soil pile located at the western edge of the site. All the samples were screened for VOCs using a PID. PID readings of 10.3, 2.2 and 8.1 were obtained for samples from locations MO-4N1, MO-6W1, and MO-7N3, respectively. These three samples were analyzed for VOCs in addition to analysis for PCBs. Results indicated the presence of toluene in samples from locations MO-4N1 and MO-7N3 at 0.08 ppm and 0.039 ppm, respectively. The compound methylene chloride was also detected in these two samples at up to 0.033 ppm. The laboratory analyzing the samples, CTM Analytical, stated that the presence of methylene chloride was most likely due to laboratory contamination. No other VOCs were detected in the soil samples.

In December 1990, GE submitted to the MDEP a report presenting the results of the sampling and analysis activities at the Marchetto property, together with a proposal for STMs both at that property and at the former Quality Printing property. That submittal is included in Appendix K. Upon review of the information in that submittal, the MDEP required, in a letter dated February 5, 1991, that GE collect two additional surficial soil samples in the drainage ditch on the eastern border of the Marchetto property and three additional samples at the adjacent property to the east (the F.W. Webb property). GE did so, and the results (included in Appendix J) were presented to the MDEP in a letter dated October 24, 1991.

GE's proposed STMs for the Marchetto property were designed to minimize the potential for direct contact with surficial soils containing greater than 22 ppm PCBs. To accomplish this objective, a 6-foot high chain-link fence with warning signs was proposed for the site to encompass the area around sample locations MO-6 and MO-7. This new fence would tie-in to an existing fence located along the eastern edge of the property and also extend to include the portion of the stormwater drainage ditch located east of the speed shop building on the Marchetto property. The STM proposal also included provisions for the placement of 4 inches of asphalt over the remaining areas where surficial soils contain greater than 22 ppm PCBs. (i.e., MO-3 and MO-4).

For the former Quality Printing property, GE's STM proposal noted that, given the fact that GE had purchased the property, a portion of the property has been paved, the site is totally fenced, warning sings are posted, and access is completely restricted, the STM would consist of institutional controls.

Specifically, GE proposed to maintain the fence and warning signs and to monitor the site to ensure that unauthorized entry is restricted. GE pointed out that these institutional controls should adequately protect against any short-term hazards posed by PCBs in the surficial soils by preventing any direct contact of individuals with such soils.

On February 5, 1991, the MDEP sent a letter to GE conditionally approving the proposed STMs for the Newell Street Site and stating that GE was obligated to obtain approval from the Pittsfield Conservation Commission (PCC) and the MDEP under the Massachusetts Wetlands Protection Act for the proposed capping at the Marchetto property.

6.2 Status of Activities

On February 22, 1991, following receipt of the MDEP's conditional approval letter, GE submitted an application to the PCC and MDEP for the requisite wetlands approval for the activities at the Marchetto property. Following various communications between GE and both the PCC and the MDEP regarding this matter, as well as a public meeting, the MDEP, on September 24, 1991, issued a Superseding Order of Conditions for the proposed STM activities on the Marchetto property. GE subsequently responded to that order describing how it intended to comply with the special conditions in the order and, in particular, raising issues concerning Special Condition 27, which related to deed restrictions. On January 27, 1992, the MDEP sent GE a letter stating that Special Condition 27 was beyond the MDEP's authority and was therefore null and void. GE has subsequently requested the MDEP to reissue the Superseding Order of Conditions without Special Condition 27 so that the order can be filed with the Registry of Deeds and the STM implemented. Following receipt of that revised order, and as soon as seasonal conditions allow the acquisition and placement of asphalt on the Marchetto property, GE intends to implement the approved STM activities at that property.

SECTION 7 - EXTENT AND CHARACTERISTICS OF DETECTED HAZARDOUS CONSTITUENTS

7.1 General

This section of the Interim Phase II Report provides information concerning the presence, extent, and characteristics of the hazardous materials that have been detected at the Newell Street Site.

Site investigations performed since 1987 provide the information that has been utilized to delineate the presence and extent of detected hazardous materials. Section 7.2 discusses the current limits of the detected hazardous materials in terms of the following site media: subsurface soils, surficial soils, and ground water. It also presents an estimate of the volume of affected materials in the former Oxbow I area.

In addition to delineating the current extent of the site media that have been potentially impacted, this section also includes a characterization of the specific hazardous materials, including their physical and chemical characteristics, composition, and environmental fate and transport characteristics.

7.2 Extent of Detected Hazardous Materials

In accordance with MCP requirements, the source and extent of releases detected at a given site are to be addressed within the Phase II Comprehensive Site Assessment. The required information includes the source(s) of the releases, the extent of media potentially impacted by the hazardous materials, and the estimated volume of the impacted media. At the Newell Street Site, the primary "sources" of the detected hazardous materials are the fill materials that were placed in the abandoned river oxbows and low-lying areas during rechannelization of the Housatonic River in the early 1940s. In addition, as discussed previously in Section 3, the commercial activities that have occurred at the site since the 1940s may also have resulted in other sources of hazardous materials. Although not all of the fill material contains hazardous materials, the extent of releases is primarily related to the details associated with fill placement, specifically the chronological sequence of fill placement and the source(s) of fill materials.

The approach that GE has undertaken to identify the extent of the hazardous materials detected at the Newell Street Site has involved several interrelated activities. A brief description of each activity is presented below:

1. An initial review of historic documentation (i.e., aerial photographs and site mapping) provided the general limits of the area subject to investigation and served as the basis for defining the scope of initial field activities.
2. The range of activities undertaken since 1987 (including the recent MCP activities) have been performed in a sequential manner. The objectives and scope of a particular activity were based on the results of activities that had been completed at that time. This approach has allowed GE to focus and re-direct (if necessary) the site investigations in response to particular findings from completed efforts.
3. Extensive qualitative and quantitative information was obtained from these investigation efforts. Most significant was the apparent correlation between the presence of PCBs and the location of fill materials, the presence of other hazardous materials in areas where PCBs were detected, and a general confirmation that fill

materials were limited to the limits of the former oxbows and low-lying areas.

4. The correlations presented above are well documented for certain sections of the site. Where this correlation has not been confirmed (due to the lack of specific analytical data for a given area), the available information (i.e., historic photography, site mapping, or field observations) has been extrapolated to approximate the limits of the hazardous materials at the site.

5. Where available information is not considered sufficient, or is not complete, additional field activities may be necessary to provide further information.

The remainder of Section 7.2 will discuss the hazardous materials that have been detected at the site and the approximate limits of these detected hazardous materials. Figure 7-1 provides a summary of subsurface soil, surficial soil, and ground-water sampling locations associated with the site investigations performed both prior to and as part of the MCP Phase II investigation. (Sampling associated with the STMs at the site and other ancillary sampling and analysis activities are not included in this figure but are referenced elsewhere in this document.)

7.2.1 Subsurface Soils

Results of investigations previously described in Sections 4 and 5 of this document indicate that several hazardous materials have been detected within the subsurface soils of the site. The majority of analytical data relates to the presence of PCBs in the subsurface soils. Detected PCB concentrations range from non-detectable to a concentration of 290,000 ppm, of the 369 PCB analyses performed, 144 had a reported concentration of 50 ppm or greater total PCBs. PCB

Aroclor 1254 and, to a lesser extent, Aroclor 1260 were the aroclors detected. Figure 7-2 presents the PCB results for all the subsurface soil samples that have been collected and analyzed, and also includes estimated isoconcentration lines for a 50 ppm PCB concentration.

Other materials detected in the subsurface soils include several low-level constituents including VOCs (Table 5-3), SVOCs (Table 5-4), metals (Table 5-5) dioxin/furan compounds (Table 5-7), and several other constituents (phenols, sulfide, and cyanide, as shown in Table 5-6). Please note that although Tables 5-3 through 5-7 provide analytical results only for soil samples collected from the GE Parking Lot area (Oxbow G), the data available from other areas of the site (i.e., the former Oxbow I area) suggest that there is a general similarity between the detected materials within the subsurface soils at these two areas of the site.

Due to the nature of the primary "source" of hazardous materials at the site (i.e., the fill material), and the heterogenous mixture of industrial and natural fill materials constituting this "source", it is difficult if not impossible to accurately define the extent of each hazardous material within the overall fill deposit. However, the available data indicates that the potential presence of a given hazardous constituent is generally related to the presence of fill material.

The northern boundary of the site is at the contact of the river bank with the Housatonic River. A review of the 1942 aerial photograph for the site (Appendix H-1) and a 1940 site plan (Appendix I) identifies the limits of the re-routed Housatonic River and the adjacent areas subject to fill material placement. The analysis of several subsurface soil samples adjacent to and along the current river bank (FW-16, SZ-3, IA-9, GE-1, NS-9, RB-6, and RB-7) detected PCBs at concentrations ranging from 0.05 ppm to 2300 ppm. Limitations regarding equipment access along the river bank for the purpose of collecting subsurface soil samples have reduced the data available to further confirm this site boundary. However, surficial soils data (Section 7.2.2) and the adjacent Housatonic River, which is currently the focus of a separate MCP Phase II investigation by GE, justify this site boundary selection.

The southern and eastern limits of fill material, and thus the potential presence of PCBs and other hazardous constituents in the subsurface, have been defined through review of historic documentation, and confirmed in many instances by the results of analytical activities. For the former Oxbow I area (now comprised of the commercial areas along Newell Street), the presence of fill materials with elevated PCB concentrations is generally located in the area between the Housatonic River and the current structures and buildings that occupy the site. Based on the PCB results for the subsurface soil samples in this area and an interpolation of the 50 ppm PCB concentration for the subsurface soils (Figure 7-2), it can be seen that subsurface samples containing PCB concentrations of 50 ppm or greater were generally found north of the buildings currently occupying the site.

The southern and western limits of the site in the area around the GE Parking Lot (former Oxbow G area) are anticipated to correspond to the former oxbow limits as shown on Figure 3-2. However, while the data generated to date have characterized the fill material and the presence of PCBs and other hazardous constituents in the fill material, a delineation of the extent of fill material (to support the use of the former oxbow limits as the site boundary) is not currently available. In addition, as discussed in Section 5.6, the results of the investigation of the nearby Oxbow F do not allow a definition of the western boundary of the Newell Street Site. Hence, GE cannot, *at this time, present a definite delineation of the site's western* boundary, as required in the MDEP's letter of December 17, 1991. For present purposes, the former oxbow limits will be utilized to approximate site limits in this area. Section 9.2.2 identifies additional activities to be undertaken to confirm the western and southern site boundaries in this area.

The vertical extent of fill material has been well documented through soil boring logs, which can be utilized to characterize the depth of the fill materials. Figures 3 and 4 of the SDS (Appendix B) and Figure 7-3 of this document provides geologic cross-sections for the former Oxbow I and G areas, respectively. Figure 7-4 shows the locations of the cross-sections. This information indicates that for the former Oxbow I area, the depth of fill ranges from 0 to 14 feet and that elevated PCB concentrations are generally limited to this fill material. For the former Oxbow G area, the relationship between the depth of fill (ranging from 0 to 12 feet) and the presence of PCBs is not as well defined. Additional activities to determine the vertical presence of PCBs in the GE Parking Lot are discussed in Section 9.2.2.

7.2.2 Surficial Soils

The presence and extent of PCBs in the surficial soils within the former limits of Oxbow I have been well characterized through the collection and analysis of 87 surficial soil samples. These samples, collected as part of three separate field investigations, were collected in a phased approach with the overall objective of delineating the extent of PCBs in the surficial soils.

The initial sampling consisted of 53 locations in 1988. Twenty-four additional surficial soil samples were collected in 1989 to further define PCB concentrations on the Newell Street Site. The most recent sampling consisted of 10 surficial soil PCB samples collected as part of MCP Phase II investigations to further define the extent of PCBs present at the site (nine samples adjacent to Newell Street on the front portions of the commercial properties and one sample on the river bank).

The PCB sampling locations and corresponding results for all surficial soil samples have been plotted on Figure 7-5. The tabularized results for the previous samples can be found in Table 6 of the SDS (Appendix B), and the results of the MCP Phase II sampling for PCBs can be found in Table 5-9 of this report.

Figure 7-5 contains approximate delineations of the extent of surficial soils with PCBs greater than 2 ppm. A PCB concentration of 2 ppm has been arbitrarily selected for presentation purposes and is not the result of a site-specific, risk-based assessment. A comparison of this 2 ppm isoconcentration line with other figures previously presented in this report helps to confirm the extent of PCBs detected in the surface soils of the former Oxbow I area. The 2 ppm PCB isoconcentration line presented on Figure 7-5 corresponds fairly well to the delineation of the former Oxbow I area as presented on Figure 3-1 and the historic mapping. Further, the areas where elevated surficial levels were detected were in most cases contained within the 50 ppm PCB isoconcentration line developed for the subsurface soils (Figure 7-

2). The results thus reveal that, in the former Oxbow I area, the potential presence of elevated PCB levels in surficial soils can be generally correlated with the presence of elevated subsurface soil PCB concentrations. For this reason, the boundary of the elevated PCB levels in the surficial soils within this portion of the Newell Street Site will be considered as essentially equivalent to the horizontal limits of the elevated PCB concentrations in the subsurface soil.

For the area of the site occupied by the former Oxbow G, there is no surficial soil data currently available to provide a analytically-supported delineation of PCB-containing surficial soils. However, based on the correlations developed for the former Oxbow I area (i.e., the potential presence of elevated surficial PCB concentrations corresponding to the detection of elevated subsurface concentrations), the extent of PCB-containing surficial soils can be approximated. Again, at this time, the presence of subsurface soils with greater than 50 ppm PCBs (Figure 7-2) can be considered to represent the potential limits of elevated PCBs in the surficial soils. Additional surficial soil sampling in this area of the site is discussed in Section 9.3.2.

For the Appendix IX metals, the recent MCP Phase II activities included sampling of surficial soils across a majority of the former Oxbow I, with analysis for those metals. The analytical data from the surficial soils metals analyses are presented in Table 5-10. For comparison purposes, the metals data associated with the four samples collected from the Hibbard Playground (PK-12, PK-13, PK-14, and PK-15) have been assumed to represent "background" samples. This assumption is based on the geographical location (i.e., outside of the former oxbow limits), and lack of elevated PCB concentrations in the surficial soils of this same area. Omitting the naturally-occurring constituents found in the soils and focusing on the priority pollutant metals, a comparison of the values detected for the "background" samples and the remaining samples (which are all within the former Oxbow I limits) was performed. This review indicated that levels of arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver were greater than the "background" levels in several locations and consistently at Samples QP-25, QP-26, and MO-13. These sample locations are also in the areas where the highest levels of subsurface and surficial PCBs were found, again indicating a possible correlation between the presence of metals, PCBs and fill materials. It is also possible that the presence of elevated metals concentrations is related to the activities associated with the "recent" land uses. The use of certain areas of the site for commercial activities (unrelated to GE) may additionally influence the presence and extent of surficial metals or other constituents.

7.2.3 Ground Water

The extent that the ground water beneath the site has been impacted by hazardous constituents present in the fill materials has been assessed through the sampling and analysis of the 13 wells at the site. Data from the wells in the former Oxbow I area are included in Table 8 of the SDS (Appendix B), and data from wells in the GE Parking Lot area (Oxbow G) are included both in Table 8 of the SDS (Appendix B) and in Tables 5-12 through 5-16 of this document.

With respect to the former Oxbow I area, the data indicate that only Wells IA-9, FW-16, and SZ-3 had detectable constituents (chlorobenzene and PCBs in an unfiltered sample). One potential source of these constituents in these wells is the upgradient fill material. During advancement of the soil borings in this area, ground water was not encountered in the fill material. However, review of ground-water elevation data from June 7, 1988 [Table 5 of the SDS (Appendix B)] and the geologic cross-section of the site [Figures 3 and 4 of the SDS (Appendix B)] indicates that some of the lower-depth fill material may contact the ground water on some occasions. Further, where the ground water could contact these deep fill pockets, there are two areas where elevated PCB concentrations are present (SZ-4: 430 ppm at 10 to 12 feet, and IA-2: 70 ppm at 10 to 12 feet); both of these locations are upgradient of Wells IA-9 and SZ-3.

For the area occupied by the former Oxbow G, the relationship between the depth of fill material and the water table is different from that for the former Oxbow I area. Within the GE Parking Lot, soil borings indicate that the depth of fill extends to 12 feet below grade and that PCB-containing materials are present at depths extending to 24 feet below grade. Ground-water sampling performed for the wells within the parking lot (NS-1, NS-9, NS-10, and NS-11) indicate that the direction of ground-water flow is north toward the Housatonic River and at a depth of approximately 10 feet below grade. Unlike the former Oxbow I area, it appears that there is constant contact between the fill or soil materials containing PCBs (and other hazardous constituents) and the ground water in several areas in this portion of the site. This contact may be a reason for the detection of several constituents in the ground water during recent sampling and analysis activities.

Based on the available information concerning ground-water flow direction and ground-water quality, the limit of impacted ground water downgradient of the site occurs at the Housatonic River. Potential impacts of ground water discharge into the Housatonic River from the Newell Street Site (south of the river) and the separate MCP East Street Area 2 Site (north of the river) are being addressed as part of the Phase II investigation of the Housatonic River. Water column sampling upstream and downstream of the Newell Street Site at low flow conditions indicates the presence of one VOC (chlorobenzene) and a few inorganic metals at slightly higher concentrations downstream from the Newell Street Site (at the Lyman Street Bridge) than upstream of that site (at the Newell Street Bridge). See Table 5-6B of the MCP Interim Phase II Report/ Current Assessment Summary for the Housatonic River (Blasland & Bouck, December 1991). However, the levels of chlorobenzene were low at both locations (6 ppb at the Newell Street Bridge and 11 ppb at the Lyman Street Bridge), indicating an insignificant (if any) contribution from either the adjacent Newell Street or East Street Area 2 MCP sites. A similar conclusion may be drawn from the results of water column sampling at high flow conditions, which indicated only the presence of a few inorganic metals.

The upgradient limits of the impacted ground water in the former Oxbow I area occur prior to Well SZ-1. The upgradient limits of the impacted ground water in the former Oxbow G area have not been clearly defined, as the most upgradient well that currently exists in this area (NS-11) contained detectable concentrations of 1,4-dichlorobenzene (39 ppb) and xylenes (21 ppb) (see Tables 5-12 and 5-13). As a result, additional monitoring is necessary to better evaluate the extent of ground-water impacts in this area. This is further discussed in Section 9.4.2 of this document.

7.2.4 Estimated Volumes of Affected Materials

For the reasons discussed above, the estimated volumes of affected materials at the Newell Street Site are probably best determined by association with the fill material. In general, it has been shown that elevated levels of PCBs and other hazardous constituents occur primarily in the fill material. One exception is the GE Parking Lot, where elevated levels of PCBs and other hazardous constituents were also detected below the fill material. It should be noted, however, that the presence of fill material does not necessarily indicate the presence of PCBs or other hazardous constituents (i.e., some locations received "clean" fill).

The fill material in the area of the commercial properties (former Oxbow I area) ranges in depth from non-existent to a maximum of 14 feet below the ground surface, as indicated in Table 2 of the SDS (Appendix B). The SDS included the presentation of two geologic cross-sections through the site in this area (cross-sections A-A' and B-B') illustrating the spatial relationship of fill material and PCB concentration (Appendix B, Figure 3 and Figure 4). Utilizing this information, the volume of affected material within the commercial properties (Oxbow I area) may be estimated as 40,000 cubic yards (approximately 700 feet from QP-3 and FW-9 by an average depth of 10 feet by approximately 150 feet in width from the river bank to QP-2).

An attempt has been made to develop similar information for the GE Parking Lot (Oxbow G area). The depth of fill material is presented in Table 5-2, while geologic cross-sections C-C' and D-D' are presented in Figures 7-3 and 7-4. The depth of industrial fill ranges from non-existent to 12 feet below the ground surface in this area. However, as previously discussed, the horizontal and vertical limits of affected materials in this area have not been fully determined at this time. As a result, it would not be appropriate or accurate to estimate the volume of affected material located in the GE Parking Lot area at this time. This data gap is addressed in Section 9.2.2.

7.3 Characterization of Detected Hazardous Materials

Various chemical constituents have been detected in the subsurface soils, surficial soils, and ground water within the Newell Street Site. Several of these constituents have been classified as hazardous by the MDEP, while others are naturally-occurring or are present only at background concentrations. The information presented in this section provides a characterization of the hazardous constituents. This characterization includes: 1) the physical/chemical structure of the constituents; 2) general characteristics that influence the fate and transport of these constituents in the environment (i.e. water solubility, octanol/water partition coefficient, and vapor pressure); and 3) site-specific conditions that may impact environmental fate and transport of hazardous materials.

Due to the number of low-level constituents detected at the site, discussions of chemical-specific environmental fate and transport properties will target representative groups of chemicals. Groups of chemicals detected during soil and ground-water sampling include: 1) PCBs; 2) VOCs; 3) SVOCs; 4) certain dioxin/furan compounds; 5) certain metals; and 6) cyanide.

Table 7-1 presents the water solubility, log octanol/water partitioning coefficient (K_{ow}), and the vapor pressure for PCBs, VOCs, and SVOCs detected in the subsurface soils, surficial soils, and ground water at the Newell Street

Site. These parameters provide considerable insight into the fate and transport of a chemical in the environment. Highly water-soluble chemicals are less likely to volatilize from water depending on the chemical's vapor pressure and are generally more likely to biodegrade (Howard, 1989). The octanol/water partition coefficient correlates well with a chemical's tendency to adsorb to soil or sediment (Howard, 1989). The information in this table will be referenced as appropriate during discussion of the various groups of chemicals.

7.3.1 PCBs

The fate and transport of PCBs in the environment are greatly influenced by their low water solubility. This generally limits aqueous-phase concentrations unless significant amounts of solvents, oils, or colloids are present (Baker et al., 1986; Dragun, 1989). In general, the adsorption of PCBs to soils and sediments increases with increasing soil organic content, decreasing soil particle size, and increasing chlorination (Lyman et al., 1982; Pignatello, 1989). PCBs could potentially volatilize from soil, but strong adsorption to soils tends to limit the extent of volatilization (ATSDR, 1989a).

PCBs are fairly persistent in the environment, and degradation via chemical oxidation, hydrolysis, and photolysis in soil or aquatic systems is generally insignificant. PCBs may, however, be subject to loss via biotransformation and biodegradation. Experimental evidence indicates that PCBs are susceptible to biodegradation under both aerobic and anaerobic conditions. In general, the degradability of PCBs under aerobic conditions increases as the degree of chlorination decreases. Variations in this trend exist and are attributed to preferential degradation of meta- and para-substituted PCBs.

Laboratory research has shown that the lesser chlorinated PCBs are subject to aerobic biodegradation by microorganisms indigenous to soils and sediments. Aerobic biodegradation results in a complete breakdown of the PCBs, causing a net decrease in total PCB concentration. Various intermediate breakdown products have been identified, and include chlorinated catechol, chlorobenzoic acid, and carbon dioxide (Bedard et al., 1987a; 1987b; Hanklin and Sawhney, 1984; Fries and Morrow, 1984).

As with aerobic biodegradation, preferential degradation of meta- and para-substituted congeners has been observed under anaerobic conditions (Quensen et al., 1988). Laboratory research has shown that PCBs undergo reductive dechlorination under anaerobic conditions by indigenous microorganisms. Study results indicate that the more highly chlorinated PCBs are transformed to less chlorinated congeners by anaerobes (Quensen et al., 1988) and that the lower chlorinated PCBs may be further degraded to carbon dioxide, water, and chloride by aerobes (Chen et al., 1988).

Plant uptake and translocation of PCBs by crops is generally not significant (Bacci and Gaggi, 1985; O'Connor et al., 1991; Fries and Morrow, 1981; Iwata and Gunther, 1976; Weber and Mrozek, 1979; Weber et al., 1983).

7.3.2 Volatile Organic Compounds

Several volatile organic compounds (VOCs) have been detected at the Newell Street Site, including methylene chloride, acetone, benzene, chlorobenzene, and xylene in soil borings, and xylene and chlorobenzene in ground water. These constituents can generally be characterized by their high volatility and moderately low water solubilities. The primary transport processes for VOCs are volatilization to the atmosphere, percolation, and biodegradation. Vapor pressure for the site-specific VOCs (if present in pure phase) would be generally higher than for other organic compounds, indicating a greater propensity for volatilization. VOCs which are released to the atmosphere disperse rapidly and ultimately undergo photo-oxidization in the atmosphere. VOCs, if present at high concentrations in shallow ground water, could migrate as vapor into nonsaturated subsurface soils. In general, constituents with higher water solubilities and lower log octanol/water partition coefficients are more likely to be transported via ground water than to be bound to soil.

7.3.3 Semi-Volatile Organic Compounds

Phenols

At the Newell Street Site, phenol, was detected at low levels in soil borings. However, no phenols were detected in ground water. In the environment, phenols biodegrade rapidly in soils. Despite their high solubility and poor adsorption to soils, biodegradation is usually sufficiently rapid to prevent percolation into ground water (Howard, 1990).

Polynuclear Aromatic Hydrocarbons

Polynuclear Aromatic Hydrocarbons (PAHs) detected at low concentrations in some soil borings at the Newell Street Site include pyrene, phenanthrene, anthracene, and others. PAHs are semi-volatile compounds and have low water solubilities (Table 7-1). PAHs have a strong tendency to adsorb to soil particles and organic matter. The PAHs with higher molecular weights tend to be less water soluble and have higher octanol/water partitioning coefficients, and thus have a higher affinity for adsorption to soil.

Within the soil environment, biodegradation of PAHs is also related to molecular weight. PAHs with lower molecular weights tend to undergo microbial degradation more rapidly than the PAHs with higher molecular weights.

PAHs may also be subject to volatilization, but to a much lesser extent than VOCs. Among PAHs, volatilization is correlated with molecular weight, with the lower molecular weight compounds being more volatile.

Chlorinated Benzenes

At the Newell Street Site, 1,2-, 1,3-, and 1,4-dichlorobenzene, 1,2,3-trichlorobenzene, and other chlorinated benzenes were detected in some soil borings at low concentrations, and 1,4-dichlorobenzene was detected in ground water also at low concentrations. Chlorinated benzenes are relatively volatile compounds. In soil, the major transport mechanism is volatilization into the atmosphere, with the remainder adsorbing to soil particles or percolating downward through the soil column to ground water (CHEMFATE, 1989). In sandy or mineral soils, chlorinated benzenes readily leach through the soil, whereas in organic soils mobility is reduced. Biodegradation in soil and water is generally slow, but loss via this route may be significant in situations where acclimation of the microbial population has taken place (HSDB, 1990).

Phthalate Esters

Phthalate esters detected at low concentrations at the Newell Street Site include bis(2-ethylhexyl)phthalate. The behavior of phthalate ester compounds in the environment varies with the size and complexity of the ester chain. The low solubility and low volatility of bis(2-ethylhexyl)pthtthalate limit its mobility in soils (ATSDR, 1989b). Adsorption onto organic soil constituents is especially strong. Biodegradation screening studies indicate that bis(2-ethylhexyl)pthtthalate readily biodegrades in soil under aerobic conditions but is non-biodegradable under anaerobic conditions (Howard, 1988).

Aniline

In soil, loss of aniline occurs through a combination of aerobic biodegradation, oxidation, and chemical binding with soil components. Aniline is readily biodegraded under aerobic conditions, and substantial loss can be expected by this means (Howard, 1989).

In the terrestrial environment, aniline exhibits low to moderate sorption to soils, especially at lower pH, and undergoes slow oxidation. This is a significant fate process in soils with high organic content. The amount of aniline entering ground water by desorption from soils is limited by biodegradation in the soil column. Once in ground water, aniline is fairly mobile and degrades slowly (HSDB, 1989). Releases to the atmosphere via volatilization from soil are expected to be minimal (HSDB, 1989).

7.3.4 Dioxin/Furan Compounds

At the Newell Street Site, a number of polychlorinated dibenzodioxin (PCDD) and polychlorinated dibenzofuran (PCDF) congeners were detected in soil and ground water samples at very low concentrations.

The majority of information available on the environmental fate and transport of PCDDs and PCDFs is specific to 2,3,7,8-TCDD, while some information is also available for 2,3,7,8-TCDF. The physical and chemical characteristics of 2,3,7,8-TCDD and 2,3,7,8-TCDF are very similar, and these compounds tend to have the same environmental fate and transport properties. The information available on 2,3,7,8-TCDD and 2,3,7,8-TCDF is believed to be fairly representative of the entire class of PCDDs and PCDFs due to similarities in physical/chemical properties.

Based on their very low water solubilities and consequently high organic carbon adsorption coefficients (K_{oc} values), PCDDs and PCDFs are expected to strongly adsorb to most soils, thereby limiting migration of the compounds (HSDB, 1990b).

7.3.5 Metals

A number of naturally occurring and anthropogenic metals were detected in the surficial soils, subsurface soils, and ground water at the Newell Street Site. Metals are cycled within the environment, forming various species with different physical and chemical properties. Metal species may be transformed from one inorganic or organometallic species to another, but the inorganic element does not degrade. Certain species are highly water soluble, while others are extremely insoluble. The movement of a particular metal into and within ground water is determined by the amount and form of the metal, the ground water's chemical and physical properties, and the composition of the soil or waste solution with which the metal is associated. The soil properties affecting metal retention/release and transport include bulk density, surface area, particle-size distribution, pH, redox conditions, ion exchange capacity, amount of organic matter, type and amount of metal oxides, and type and amount of clay minerals (USEPA, 1988). Soil organic matter, at levels commonly found in surface soils and sediments, is one of the primary immobilizing processes for trace and toxic metals (USEPA, 1988). The form in which an inorganic element exists is highly dependent upon the chemical characteristics of the site such as pH, oxygen level, and ionic characteristics.

7.3.6 Cyanide

Cyanide was detected at low concentrations in two soil borings and one monitoring well at the Newell Street Site. The occurrence of the free cyanide ion in the environment at measurable levels is uncommon. The cyanide ion is very reactive and reacts with a variety of metals to form insoluble metal cyanides. Thus, the low-concentration cyanides present at the Newell Street Site are most likely iron and sulfur complexes rather than free cyanide.

Cyanides are a diverse group of compounds whose fate in the environment varies widely (USEPA, 1979). Cyanide is a weak acid which occurs at extremely low concentrations in its dissociated form (CN-) in the environment. Hydrogen cyanide is the most common form of undissociated cyanide. It is subject to biodegradation and volatilization processes. Weak adsorption of cyanide onto soils and high solubility in water accounts for its mobility in soil and ground water systems.

Ferri- and ferrocyanide complexes are stable and normally release negligible amounts of cyanide ion. If the cyanide ion is present in excess, complex metallocyanides may be formed. These compounds are soluble and can be transported in solution. The metallocyanides are not likely to volatilize, but will biodegrade.

SECTION 8 - MIGRATION AND EXPOSURE INFORMATION

8.1 General

This section of the report has been prepared to identify potential human and environmental receptors who may be exposed to the various chemicals detected at the Newell Street Site. This section also identifies the potential environmental paths of migration for these chemicals, resulting exposure points within the various media associated with the site (i.e. subsurface soils, surficial soils, ground water, and air), and potential routes of exposure. The information presented in this section is based on the results of the previously-described site investigations, as well as the current and reasonably foreseeable future uses of the site.

Much of the information presented in this section is necessarily preliminary, since supplemental Phase II investigations will be needed to fill certain data gaps, as discussed in Section 9. After completion of those supplemental field investigations, a separate Scope of Work for a Risk Assessment/Characterization will be prepared and submitted to the MDEP. In these circumstances, the discussion of migration and exposure information in this section of the present report is necessarily subject to modification after completion of the additional investigation and in connection with the Risk Assessment/Characterization phase of the MCP Phase II Comprehensive Site Assessment.

8.2 Potential Migration Pathways

This section discusses the potential migration pathways for the hazardous materials that have been detected in the various site media. In order for exposure to occur, a transport pathway by which a chemical will migrate from its source to a point of potential exposure must be established. There are three conditions that must exist for migration of a given chemical to occur: 1) a source of the chemical; 2) a potential mechanism of release from the source; and 3) a transport medium by which the chemical will migrate to a potential receptor. Identification of migration pathways allows for an overall understanding of the exposure potential associated with the site and serves to direct the scope of subsequent exposure evaluations.

Prior sections of this report have described the investigations that have been performed at the site to characterize the presence, quantity, and concentration of chemicals in various site media. The fate and transport characteristics of the chemicals identified in the above media have been previously discussed in Section 7.3 of this report. This information, as well as the physical characteristics and environmental setting of the site area, as discussed in Section 2, will influence the potential for migration of these hazardous materials.

Based upon the available information, the following potential migration pathways have been identified for hazardous materials detected in the media of concern at the site.

8.2.1 Migration from Subsurface Soils

The results of the subsurface soils component of the Phase II investigation have identified the presence of PCBs, certain metals, and low-level concentrations of certain VOCs, SVOCs, dioxin/furan compounds, and cyanide in site soils. Data describing the chemical constituents found in the subsurface soils are presented in Sections 4.3 and 5.2, and a discussion of the relative distribution of these substances within the site is presented in Section 7.2.1.

The potential migration of hazardous materials from the subsurface soils at the site would occur primarily as a result of direct contact with, and dissolution of materials into, the water table. In addition, volatilization of organics and/or generation of dusts from subsurface soils could potentially occur during disturbances (e.g. excavations) of the subsurface soils. Such instances would be related to construction or repair activities (e.g. utilities) and as such would be limited in frequency and duration and would be unlikely to contribute significantly to the migration of hazardous materials within or from the site.

8.2.2 Migration from Surficial Soils

The investigations performed prior to and as part of the MCP have identified the presence of PCBs and metals in site surface soils. Data describing the chemical constituents found in the surficial soils are presented in Sections 4.3 and 5.2, and a discussion of the relative distribution of these substances within the surficial soils at the site is presented in Section 7.2.2. The physical characteristics of the site have been described in Section 2. On-site characteristics that influence the potential migration pathways for these materials include the following: 1) areal extent of the site; 2) land use; 3) surface cover; 4) topography and slope; 5) the presence of human and environmental receptor populations and predominating site activities; and 6) the type and concentration of chemicals present.

Since the primary constituents of concern found in the surficial soils are PCBs and certain metals, and since these constituents do not readily volatilize into the air, it appears that volatilization of constituents from the surficial soils would be of only limited (if any) concern at this site. Site-specific conditions which further decrease the potential for volatilization from surficial soils include large areas of the site that are covered by pavement or buildings. In addition, at several locations within the site where elevated PCBs have been detected in the surficial soils, short-term measures have been implemented to minimize the mobility of PCBs on-site. As discussed in Sections 4.5 and 6.1, GE has installed (or will be installing) asphalt pavement in several areas to serve as a physical barrier between surficial soil PCBs and ambient air. These short-term measures are expected to reduce or eliminate the potential for PCB releases via volatilization at the site. If limited volatilization should occur at the site, the eventual fate of these chemicals is largely dependent upon dispersion within the atmosphere. During the dispersion phase it is conceivable that a limited potential would exist for on-site and off-site receptor exposure to chemical constituents. The site characteristics and short-term measures discussed previously, however, are likely to significantly minimize volatilization of chemicals in soil.

Activities that result in the generation of dust on-site will be influenced most strongly by the type and extent of surface soil cover and the level of activity in the vicinity of exposed surfaces where hazardous materials have been detected. As PCBs and most metals are expected to bind tightly to the soil matrix, the principal migration mechanisms affecting these substances will be soil-mediated. Natural dust generation (i.e. wind uplift) at the site is reduced due to the limited areas of exposed surficial soil. Anthropogenic influences, however, may create situations promoting the generation of dust over a greater range of environmental conditions. Site activities (i.e. use of heavy machinery and frequent on-site vehicular traffic) associated with the light commercial operations on-site may contribute to increased chances of dust generation, although a large part of these activities will likely be restricted to paved areas.

Further information regarding the significance of PCB volatilization and/or releases via windblown dust at the site will be provided by the Facility Air Monitoring Program discussed in Section 5.5, which includes an air monitoring station at the Newell Street Site.

Another potential migration pathway for hazardous constituents detected in the surficial soils of the site is precipitation runoff. Surface drainage from the site is promoted by the existence of numerous buildings, paved areas, and certain areas lacking vegetation. Rainfall runoff discharges into the Housatonic River either directly as sheet flow or as conveyed by the two drainage swales identified in Section 2.

Drainage from the central and southern areas of the site, as well as the paved areas, is controlled by a variety of drainage systems which have been constructed within the individual properties. These systems, in combination with the storm sewers which take accumulated rainfall from Newell Street, effectively control site surface drainage flowing to the west and south of the site. In addition to restricting the flow of on-site rainfall runoff, the above systems also restrict rainfall runoff from entering the site from off-site areas. All storm water drainage systems in the immediate vicinity of the Newell Street Site discharge to the river. It should be noted that, as previously discussed in Section 7.2.3, analytical results for the river water column upstream and downstream of the Newell Street Site indicate an insignificant (if any) contribution from the site.

Runoff to adjacent soils east of the site is controlled naturally. In this area of the site, topography and a dominant slope in the direction of the river eliminate overland transport to the east.

Thus, the fate of drainage-induced migration of hazardous materials from surface soils at the site is limited to their eventual discharge to the Housatonic River. Collection systems and site characteristics prevent transport to adjacent soils west, south, and east of the site.

Another water-borne migration pathway involves the possibility of uptake and transport during flooding events. Evaluations of the flooding potential at the site (Section 2.3) indicate that portions of the site lie within the 10 and 50-year floodplain, and that the entire site lies within the 100-year floodplain. As such, a limited potential exists for the migration of hazardous materials present in surface soils during flooding events.

8.2.3 Migration via Ground Water

The results of the ground-water investigation have identified the presence of low concentrations of PCBs, VOCs, SVOCs, and inorganics in localized areas of site ground water. Data describing the chemical content of on-site ground water are presented in Sections 4.4 and 5.4, and a discussion of the relative distribution of impacted ground water across the site is presented in Section 7.2.3.

As previously discussed, a potential source of the hazardous materials detected in ground water is the presence of fill material in the subsurface soils upgradient of certain monitoring wells and also the presence of fill material at depths which place it in contact with the water table. Subsurface investigations at the site suggest that leaching of hazardous materials from subsurface soils and fill above the water table is also a possible source of hazardous materials to on-site ground water.

The fate of hazardous materials released to ground water at the site could possibly include one or all of the following: 1) permanent "containment" within the ground-water system as a result of adsorption onto the subsurface soils; 2) permanent "containment" within the ground-water system in those instances where ground-water flow is negligible; and 3) possible subsurface transport into a receiving surface water body.

Movement of ground water beneath the site is primarily in a northward direction toward the Housatonic River. Ground water affected by the site ultimately discharges to the river. As discussed in Section 7.2.3, water column sampling of the river upstream and downstream of the Newell Street Site, performed in GE's MCP Phase II investigation of the Housatonic River, indicates that contributions (if any) from the Newell Street Site to the river are insignificant.

Accordingly, while the transport of PCBs and other hazardous materials via ground water is considered a potential migration pathway, the available sampling and analysis data from the Housatonic River indicate that the migration (if any) of these chemicals in ground water does not result in significant contributions to the Housatonic River. Further review of this will be provided in the context of the Housatonic River Comprehensive Site Assessment.

8.3 Preliminary Identification of Potential Human and Environmental Receptors

This section identifies the potential human and environmental receptors that may be exposed currently or in the foreseeable future to the hazardous materials that have been detected within the various site media.

For purposes of identifying preliminary exposure locations, it is useful to divide the site into two potential source areas. The first area includes the GE Parking Lot and adjacent areas. This area, a portion of which was formerly occupied by the Oxbow G area, is located on the western portion of the site and is bounded by the GE property line to the west, the Housatonic River to the north, and the GE/Moldmaster property line to the east. The second area for consideration of potential receptors includes the commercial areas covering the remainder of the Newell Street Site. This area (primarily associated with the former Oxbow I) is bordered by the GE/Moldmaster property line to the west and to the east by the nearest Allegroni Construction Company property line. This area is also bordered by Newell Street to the south and by the Housatonic River to the north.

In addition to these potential source areas, the abbuting Housatonic River has been identified as potentially being impacted by site source areas, and therefore, constitutes a third source location for exposure assessment consideration. However, discussions of river-based receptor populations and their associated potential exposures to river media will not be included in this report. Rather, they will be covered in the Phase II reports on the Housatonic River.

The GE property in the western portion of the site consists of an asphalt parking lot with adjacent grassy and wooded areas. This portion of the site is currently accessible to both pedestrian and vehicular traffic. The remaining commercial properties are currently comprised of nine properties, eight of which are light industrial/commercial businesses. The ninth property (Italian-American Club) is used as a social/recreational area. Pedestrian and vehicular access to this area is available from Newell Street. Access to both portions of the site from the north (adjacent to the Housatonic River) is limited. Dense trees and undergrowth line the edge of the river, which likely discourages pedestrian access to the site via the river or from the east and west via the river bank. Movement over the site from east to west is hindered by several fences which extend north to south across sections of the commercial properties. Fences currently exist at the following locations: 1) along the eastern border of Moldmaster and GE property; 2) along both the eastern and western borders of the former Quality Printing property; 3) along the eastern border of the Ravin Auto Body property; and 4) along the eastern border of the Anthony Marchetto Contractors property.

At the present time, human activity on the GE property in the western portion of the site includes use of the parking lot by GE employees, as well as occasional seasonal upkeep of the parking lot and surrounding areas by GE maintenance employees. In addition to GE activities, underground utilities at the site may require occasional repair or other maintenance, and the unrestricted nature of the area also leaves the site open to trespasser activity. Thus, current potential on-site human receptors in this area are limited to the following: 1) GE employees who use the parking lot; 2) GE maintenance employees; 3) municipal/utility maintenance employees; and 4) trespassers.

Current activities at the commercial properties are varied. Individuals accessing the site on a regular basis include employees of the individual enterprises and members of the Italian-American Club. In addition to routine property maintenance, site-related activities include vehicular upkeep, material storage, limited recreational activities at the Italian-American Club, occasional utility repair, and perhaps light construction activities. The potential for trespasser activity is also present to varying degrees among the individual properties. Thus, current potential on-site human receptors for the commercial properties include the following: 1) employees of the varied commercial and light industrial businesses at the site; 2) members of the Italian-American Club; 3) construction/utility employees; and 4) trespassers. In the reasonably foreseeable future, the current land uses are not expected to change.

The Newell Street Site does not provide a good habitat for wildlife due to the urban setting of the site and the nature of daily activities at the active industrial/commercial and social/recreational properties. As noted in Section 2.4, the National Wetlands Inventory performed by the United States Department of the Interior Office of Biological Services has not classified any portions of the Newell Street Site as wetlands. Similarly, the highly developed nature of the site and surrounding area afford little in the way of forage and cover for wildlife populations.

Field investigations have not identified significant terrestrial wildlife populations on site. Sightings and evidence (i.e., burrows, nests) of site wildlife are restricted to the small woodland area adjacent to the GE Parking Lot and the vegetated areas along the river where small mammals (e.g., rabbits, squirrels, wood chucks) and birds have been observed. The remainder of the site provides little (if any) habitat for terrestrial species.

8.4 Preliminary Identification of Potential Exposure Points

Exposure points are areas of a site where a receptor may be exposed to the hazardous materials that have been detected in the various media at the site. The identification of potential exposure points at the Newell Street

Site is based on identified sources, potential migration pathways, analytical results, and present and reasonably foreseeable land uses. The same two exposure areas within the site (the GE Parking Lot area and the commercial area) will be addressed in this section.

Investigations in the GE Parking Lot area have identified several hazardous materials in the subsurface soils and ground water. As noted above, this area is relatively inactive in terms of human activity. Exposure to surficial soils may occur for GE employees occasionally present at the site, maintenance workers, or trespassers. Surficial soil exposure is limited, however, by the presence of the paving at the site and would therefore be restricted to the currently unpaved areas, including the woodlands and the river bank areas on the northern border of the site. Exposure to subsurface soils in this area is anticipated to be infrequent and limited to those instances in which excavation is required for maintenance of property structures or to existing underground utilities. Ground water in this area is not used for drinking water or other water supply purposes and is not expected to be used in this manner in the future. Hence, no ground-water exposures would be expected. Receptor activities on this portion of the site allow for potential limited exposure to volatiles or dusts originating from the site. However, air-based exposures are expected to be mitigated for the reasons previously described.

Hence, potential exposures to the media of concern in the GE Parking Lot area are limited to occasional potential exposure to surface soils during various maintenance or other limited activities in this area, infrequent exposure to subsurface soils during excavation activities, and limited ambient air exposure during any activities undertaken in this area.

In the commercial properties portion of the site, hazardous constituents, particularly PCBs and metals, have been found in surface and subsurface soils, while low-level concentrations of a few hazardous constituents have been detected in the ground water. Exposure to surficial soils may occur during a variety of on-site activities. Portions of the site are void of extensive ground cover, with soils exposed or partially vegetated soils. The remainder of the site is either paved or covered with vegetative growth. Exposure to surficial soils may occur as a result of seasonal property maintenance; outdoor activities associated with equipment storage, materials handling, and vehicle maintenance; outdoor recreational activities at the Italian-American Club; and possible trespasser activities. Exposed soils also increase the potential for dust generation at the site, and volatilization processes may contribute organic vapors to on-site ambient air concentrations. Certain on-site activities (i.e. the operation of heavy machinery, vehicles, excavation) may generate considerable quantities of dust.

Exposure to subsurface soils in this portion of the site could occur during excavation activities. Although excavations are expected to be infrequent in this portion of the site, they could be required during maintenance activities for underground utilities or in conjunction with future construction activities at the commercial properties. Exposure to ground water in this portion of the site would not be expected to occur. Ground water in this area is not used for drinking water or other water supply purposes. Potable water is obtained from a municipal water supply and this condition is expected to continue in the foreseeable future. Other exposures to ground water (e.g. as a result of excavation activities) are not likely due to the considerable depth to ground water at the site, which is well below any likely excavations.

Hence, potential exposures to the media of concern in the commercial properties include contact with surface soils during a variety of on-site outdoor activities, incidental exposure to dusts and perhaps vapors in the ambient air, and potential exposure to subsurface soils during occasional excavation activities.

8.5 Potential Routes of Exposure

This section identifies the potential exposure routes by which the human receptor populations identified at the Newell Street Site may be exposed to the detected hazardous materials. These potential exposure routes describe the uptake mechanism by which a potential receptor would receive a dose of a chemical at the exposure point.

As noted above, a potential exposure route for all receptors at the site is the inhalation of ambient air containing dusts and possibly organic vapors. For exposure to surficial soils, the most likely exposure route for potential receptors, including on-site employees, maintenance workers, excavation and construction crews, recreationists, and trespassers, is direct dermal contact. Another potential route of exposure to surficial soils includes the incidental ingestion of soil by the placing of soiled non-food items in the mouth (i.e. fingers, cigarettes) or if individuals fail to wash prior to consuming food and drink during or after site activities.

For subsurface soils, potential exposure routes would be limited to dermal contact, incidental ingestion, and inhalation of dust (if the materials are exposed). It should be emphasized, however, that exposure of individuals during excavation and maintenance activities would not occur on a regular basis, and would only occur for a short duration. In addition, for excavation activities within property owned or controlled by GE, GE has implemented several required health and safety measures which limit, if not prevent from occurring, the potential routes of exposure discussed above.

8.6 Exposure Point Concentrations

Exposure point concentrations can typically be determined through an appropriate statistical interpretation of the analytical data in the Risk Assessment/Characterization. This information has not been presented in this report since supplemental data collection will be performed as described in Section 9. In addition, as a result of the site characteristics (i.e., numerous separate properties) and potential exposure scenarios associated with this site, it is believed that a property-specific evaluation of exposure point concentrations may be appropriate. Such an evaluation would be more usefully made in connection with preparation for the Risk Assessment/ Characterization, when the exposure information is more focused.

For these reasons, exposure point concentrations at this site will be specifically addressed in the Supplemental Phase II Report and/or the Scope of Work for the Risk Assessment/Characterization. At the same time, background levels of the constituents of concern will be presented, as required by the MCP for a Comprehensive Site Assessment.

SECTION 9 - REMAINING DATA GAPS

9.1 General

The performance of site investigation activities as proposed in the June 1990 SOW and summarized in Section 5 of this document has significantly increased GE's overall understanding of the Newell Street Site. The recent MCP-related efforts have provided baseline information concerning the GE Parking Lot (former Oxbow G) as well as supplemental data for the remaining commercial areas of the site (former Oxbow I). The activities proposed in the June 1990 SOW were intended to satisfy several initial "data gaps" that were identified from a comparison of MCP Phase II requirements with the activities that had already been performed at the site. While the implementation of the DEP-approved SOW has increased the level of understanding associated with the site, the results of this investigation have indicated that several limited data gaps remain.

Several limited data gaps concerning the subsurface soils, surficial soils, and ground water, as well as the ambient air, at the site have been identified based on the compilation and review of all available data from all investigations. These data gaps, as well as the types of activities that appear to be necessary to fill the data gaps, are presented in this section. Following the MDEP's comments on this Interim Phase II Report, a Supplemental Phase II Scope of Work will be submitted, detailing the specific activities proposed to fill these data gaps as well as taking account of the MDEP's suggestions (if any) for other supplemental Phase II investigations. Such supplemental activities will be reported in a Supplemental Phase II Report and are expected to complete the field investigations necessary to characterize the presence and extent of hazardous materials at the site.

After the completion of all Phase II field investigations, a separate Scope of Work for a Risk Assessment/Characterization will be submitted specifying the particular activities proposed to carry out an assessment of the risks to human health and the environment at the site.

In this section, the presentation and discussion of data gaps for each media of concern have been separated, where appropriate, into two areas: 1) the area formerly occupied by Oxbow I and currently consisting of the commercial areas, and 2) the area of former Oxbow G, now primarily occupied by the GE Parking Lot.

9.2 Subsurface Soils

9.2.1 Former Oxbow I Area

The advancement of 65 soil borings and the collection of 216 samples for PCB analysis and 12 samples for priority pollutant metals analyses have provided a significant characterization of the subsurface soils in this area. In addition to the laboratory data associated with the soil sample analyses, the available soil boring logs have been equally beneficial in defining the subsurface conditions in this area of the site. The soil boring logs provide a qualitative delineation between the presence of fill materials and the presence of native soils underlying the fill material. The information contained in the boring logs, coupled with the available analytical data, indicates that the presence of PCBs is generally confined to areas/depths where the fill material is located. The available data base adequately describes the extent of fill material (and therefore the potential presence of PCBs). Analytical data concerning priority pollutant metals in the subsurface soils can be considered a general characterization of the fill material.

Hence, additional efforts to characterize the presence of metals in the subsurface soils do not appear to be necessary at this time. However, information concerning other Appendix IX constituents that may be present within the subsurface soils in this portion of the site is not available and represents a current data gap.

Given the apparent correlation between the presence of PCBs and the fill materials, it is reasonable to assume that the presence of any other Appendix IX constituents would likewise be correlated with the subsurface fill material. Therefore, it appears unnecessary to conduct a detailed delineation of Appendix IX constituents in the subsurface soils occupying the former Oxbow I. Rather, sufficient data should be collected to provide a general characterization of the Appendix IX constituents in those soils and to allow a comparison of such constituents with the constituents detected in the subsurface soils of the former Oxbow G area to the west.

It is believed that this objective could be accomplished by the advancement of one soil boring in the former Oxbow I area. At this location (to be selected and proposed in the Supplemental SOW), sampling would occur in two-foot increments through the fill material until the native soil is encountered; each depth increment would be screened with a PID; the sample with the highest PID reading would be submitted for analysis of Appendix IX+3 constituents (minus analyses for herbicides/pesticides); and any other sample with a PID reading greater than 10 units would be submitted for analysis for VOCs and 1,2,4-trichlorobenzene.

9.2.2 GE Parking Lot

The majority of the subsurface investigation in this area was performed as part of the June 1990 SOW. The results of this investigation identified elevated levels of PCBs both above (as expected) and below the field-determined native soils. Several borings (NS-8, NS-12, NS-13, and NS-14) had elevated PCB concentrations at their deepest sample. The presence of a native soil "layer" with elevated PCB concentrations above and below this layer is difficult to explain but may be connected to the history of fill placement or site grading which may have occurred during placement of the fill. Review of the data contained in Table 5-8 for the four borings where elevated PCBs were detected at the deepest sample increment indicates that the borings were advanced 12 to 16 feet below land surface before stopping. Further, review of those borings within the parking lot that were advanced to 24 feet below grade indicates that the transition from elevated PCBs to very low level PCBs occurred in the range of 14 to 18 feet below grade. Based on this, it would be expected that if additional samples had been collected vertically from Borings NS-8, NS-12, NS-13, and NS-14, low levels of PCBs would have been detected within the next 2 to 4 feet. To support this position, it is proposed that one additional soil boring be performed at a location centered within the locations of those 4 borings. This boring would be advanced to a depth of 24 feet below grade with continuous 2-foot samples collected for PCB analysis. Any samples with PID readings greater than 10 units would also be submitted for VOC and 1,2,4-trichlorobenzene analysis.

With respect to the horizontal distribution of PCBs in the subsurface soils, the westerly-most sampling and analysis data show elevated PCB concentrations (see Figure 7-2). Based on review of available historic photographs for this portion of the site, it is estimated that the western edge of the former oxbow is generally parallel to the western edge of the parking lot. To assist in delineating the presence of PCB-containing fill material to the west and south of the GE Parking Lot, it is believed that 4 soil borings should be advanced in a line parallel to and offset from the west and south edges of the parking lot. Each of these borings would be advanced to a depth 4 feet below the bottom of any fill material or, if fill material is not detected, to 8 feet below grade. Samples would be collected in 2-foot increments and analyzed for PCBs, and all samples with PID readings greater than 10 units would be submitted for VOC and 1,2,4-trichlorobenzene analysis.

As previously discussed, since the extent of affected materials in the subsurface soils in the GE Parking Lot area has not been fully delineated at this time, it is not possible to make an estimate of the volume of affected materials in this area with any degree of accuracy (see Section 7.2.4). After the foregoing activities are carried out, an estimate will be made of the volume of affected materials in this area. That estimate will be presented in the Supplemental Phase II Report.

9.3 Surficial Soils

9.3.1 Former Oxbow I Area

The activities proposed in the June 1990 SOW included the collection of surficial soil samples throughout the this area of the site, with analysis for PCBs (10 samples) and Appendix IX metals (28 samples). This effort was performed to satisfy an initial data gap identified during review of the prior investigations. The results of this effort satisfy the data requirements needed at this time to delineate the extent of hazardous constituents present in the surficial soils, as discussed in Section 7.2.2.

9.3.2 GE Parking Lot

In this area, no surficial soil sampling has been performed, as the focus of MCP activities to date has been was to define the extent of PCB-containing fill material. In addition, the presence of the asphalt parking lot precludes the presence of surficial soil and prohibits the collection of surficial soil samples from a large percentage of this area. However, the lack of PCB data for the surficial soils in for the area outside of the paved area represents a current data gap.

The analysis of several subsurface soil samples in the unpaved area of the parking lot resulted in the detection of elevated PCB concentrations in the uppermost sample depth, as follows;

Sample Location	PCB Concentration (depth)
GE-10	930 ppm (0 to 2 ft)
GE-11	3800 ppm (0 to 2 ft)
RB-6	45 ppm (0 to 2 ft)
RB-7	1200 ppm (0 to 2 ft)
GE-2	140 ppm (0 to 4 ft)

As a result, it is suggested that 6 to 8 additional surficial soil samples should be collected from this area for analysis for PCBs and Appendix IX metals. The samples would be taken at various locations around the GE Parking Lot. The samples would be collected by compositing soils from an area of 3 feet by 3 feet by 4 inches deep from areas where no data currently exists.

9.4 Ground Water

9.4.1 Former Oxbow I Area

Given the extent of data available from prior investigations, the June 1990 SOW did not call for the collection of additional ground-water data in this area. Table 8 of the SDS (Appendix B) provides the results of ground-water sampling and analysis that have been performed for this portion of the site. This table indicates that only wells IA-9 and SZ-3 had detectable constituents (chlorobenzene and unfiltered PCBs). As noted previously (Section 7.2.3), the detection of these constituents in these two wells may be related to the presence of the upgradient fill materials. Although ground water was not encountered in the fill material during the soil borings in this area, review of ground-water elevation data from June 7, 1988 [Table 5 of the SDS (Appendix B)] and the geologic cross-section of the site [Figures 3 and 4 of the SDS (Appendix B)] indicates that some of the lower-depth fill material may contact the ground water on some occasions. Further, where the ground water could contact these deep fill pockets, there are two areas where elevated PCB concentrations are present (SZ-4: 430 ppm at 10 to 12 feet, and IA-2: 70 ppm at 10 to 12 feet); both of these locations are upgradient of Wells IA-9 and SZ-3.

The potential for and extent of seasonal ground-water elevation changes will be evaluated with the collection of semi-annual ground-water elevation data for all wells at the Newell Street Site. The resulting data base will assist in further defining the hydrogeologic characteristics of the site. Beyond this semi-annual water elevation monitoring, no additional ground-water sampling or analysis activities in this area appears to be necessary at this time.

9.4.2 GE Parking Lot

The sampling and analysis of the four ground-water monitoring wells within the limits of the GE Parking Lot have provided sufficient data to characterize ground-water conditions. However, given the direction of ground-water flow and the data available for the most upgradient well that currently exists in this area (Well NS-10), it appears that the upgradient extent of ground-water impacts has not been fully defined. Well NS-10 contained detectable levels of 1,4 dichlorobenzene and xylenes (see Tables 5-12 and 5-13). Since hazardous constituents were also detected in the subsurface soil samples collected at this location, it was previously proposed (Section 9.2.2) to advance an additional soil boring south of the parking lot to delineate the extent of fill materials. As part of this effort, it is suggested that this soil boring should be converted to a monitoring well for additional sampling and analysis. Upon completion, the new well would be surveyed to an existing benchmark. Within one week after the well has been developed, a ground-water sample would be collected for laboratory analysis of only those constituents that were previously detected in Well NS-10.

As noted in Section 9.4.1, the existing wells associated with the former Oxbow I area will be subject to monitoring on a semi-annual basis to gauge any fluctuations in ground-water elevation. The 4 existing wells and 1 proposed well associated with the former Oxbow

G area will also be included in this semi-annual elevations monitoring program.

9.5 Ambient Air

As discussed in Section 5.5, the Newell Street Site is included in GE's Facility Air Monitoring Program, which will quantify the levels of PCBs in the ambient air at the site. This year-long monitoring program began in August 1991. The results of the air monitoring program, as applicable to the Newell Street Site, will be included in the Supplemental Phase II Report on this site.

9.6 Summary

Although a significant data base exists for the Newell Street Site, there are several limited data gaps that still remain. Sections 9.2, 9.3, and 9.4 have identified the scope of activities believed to be appropriate to fill these data gaps for subsurface soils, surficial soils, and ground water, respectively.

Following MDEP review and comment on this Interim Phase II Report, the scope of the proposed activities to satisfy remaining data gaps will be formally prepared and forwarded to the MDEP for approval in a Supplemental Phase II Scope of Work.

SECTION 10 - FUTURE ACTIVITIES

10.1 General

Activities performed to date at the Newell Street Site have fulfilled several components of the MCP Phase II Comprehensive Site Assessment. Information concerning the physical site features and the presence of hazardous materials within the subsurface soils, surficial soils, and ground water at the site has been obtained. This information, coupled with known characteristics of the detected hazardous constituents, has been utilized to develop potential fate, transport and exposure mechanisms for the site. Although numerous MCP Phase II requirements have been satisfied, there are several activities that must still be performed to complete the Phase II Comprehensive Site Assessment. For this reason, this report has been identified as an "Interim" Phase II report subject to the performance of additional activities, as discussed below.

10.2 Scope of Remaining Activities

Section 9 of this document identified additional field activities to satisfy several limited data gaps concerning the presence and extent of hazardous materials at the site. Following the MDEP's review and approval of this Interim Phase II Report, a Supplemental Phase II Scope of Work will be prepared to incorporate the activities discussed in Section 9, as well as to address additional study objectives (if any) identified by the MDEP in its review of this Interim Phase II Report. Following the MDEP's approval of that Supplemental Phase II SOW, the supplemental field activities will be performed. The results of these activities, combined with the results of the on-going air monitoring program, will be presented in a Supplemental Phase II Report on the site.

After completion of all Phase II field investigations, a separate Scope of Work for a Risk Assessment/Characterization will be submitted for MDEP review and approval. This Scope of Work will utilize the available site information to propose the remaining MCP Phase II activities necessary to evaluate the risks to human health and environment. The results of this risk assessment/characterization will be presented in a Final Phase II Report, which will represent completion of the Comprehensive Site Assessment.

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Tables

TABLE 2-1

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II REPORT FOR THE NEWELL STREET SITE

GROUND-WATER ELEVATIONS - SUMMARY

Well Designation	Measuring Point (Feet Above Mean Sea Level)	6/7/88 Elev. of Water (Feet Above Mean Sea Level)	12/19/91 Elev. of Water (Feet Above Mean Sea Level)
GE-3	984.96	973.66	--
MW-1*	987.37	975.85	--
MW-2*	986.45	972.88	--
MW-3*	985.94	974.58	973.49
IA-9	984.20	972.75	--
SZ-1	984.87	977.10	--
SZ-3	986.40	973.03	--
FW-16	983.29	972.38	--
NS-9	982.31	--	972.31
NS-10	984.45	--	974.48
NS-11	984.37	--	974.03

Notes:

-- Not measured.

* These monitoring wells were installed by O'Brien & Gere Engineers at this site prior to work performed by Geraghty & Miller, Inc. Geraghty & Miller installed the remaining wells.

TABLE 3-1

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II REPORT
FOR THE NEWELL STREET SITE

SUMMARY OF AVAILABLE HISTORIC AERIAL PHOTOGRAPHS

Date	Photographer	Approx. Scale of Photos	Appendix
July 13, 1942	Nat. Arch.[1]	1:16,300	G-1
November 24, 1956	Col-East[2]	1:9,600	--
October 3, 1957	Col-East	1:25,000	G-2
July 3, 1960	Col-East	1:2,400	G-3
April 14, 1969	Col-East	1:4,800	G-4
July 1, 1974	Col-East	1:2,400	G-5
March 29, 1979	Col-East	1:6,000	G-6
November 3, 1981	Col-East	1:2,400	G-7
April 13, 1983	Quinn[3]	1:12,000	--
November 1, 1987	Col-East	1:19,200	--
April 23, 1990	Lockwood[4]	1:6,000	G-8
August 8, 1990	Col-East	1:6,000	--

Notes:

[1] Nat. Arch. - USGS National Archives, Washington, D.C.
[2] Col-East - Col-East, Inc., North Adams, Massachusetts
[3] Quinn - Quinn Associates, Inc., Horsham, Pennsylvania
[4] Lockwood - Lockwood Mapping, Inc., Rochester, New York
Approximate Scale of Figures is 1"=400'

Table 5-1. Summary of Photoionization Detector (PID) Readings, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Boring Number	Sample Depth Interval and Correlating PID Reading*											
	(0-2)	(2-4)	(4-6)	(6-8)	(8-10)	(10-12)	(12-14)	(14-16)	(16-18)	(18-20)	(20-22)	(22-24)
NS-1A	0.1	0.0	0.2	1.9	0.3	0.2	1.8	9.0	4.2	16.2	3.1	0.4
NS-2A	0.4	0.0	0.0	0.0	0.0	0.0	10.5	12.4	55.7	60.4	12.6	54.2
NS-5	0.2	0.2	0.2	0.2	0.1	0.0	0.0	-	-	-	-	-
NS-6	0.3	0.1	5.1	2.8	1.5	0.4	0.6	-	-	-	-	-
NS-7	1.8	0.3	0.0	NR	0.0	0.0	0.9	3.3	-	-	-	-
NS-8	0.1	0.5	2.6	3.4	5.9	5.5	9.9	-	-	-	-	-
NS-9	0.0	0.3	0.0	0.0	0.0	0.0	0.0	2.1	1.0	0.0	0.0	0.3
NS-10	0.0	0.8	3.3	9.7	31.0	70.5	60.9	35.7	22.7	29.9	-	-
NS-11	0.0	0.0	0.0	0.8	16.0	10.2	NR	3.6	0.0	0.0	-	-
NS-12	0.0	0.2	8.6	4.4	4.3	3.8	4.6	17.3	-	-	-	-
NS-13	0.0	0.1	7.9	NR	7.5	9.2	8.2	19.5	-	-	-	-
NS-14	0.0	0.3	0.4	0.3	5.6	5.7	8.2	-	-	-	-	-
RB-6	0.0	0.0	-	-	-	-	-	-	-	-	-	-
RB-7	0.0	0.0	-	-	-	-	-	-	-	-	-	-
GE-9	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-	-	-
GE-10	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-	-
GE-11	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-	-
GE-12	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-	-

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* These results are qualitative only and do not represent the absolute concentrations of any volatile organic compound in the soil core, whether the compound is natural or man-made.

NR No sample recovery.

\- Not applicable; boring did not extend to this depth.

TABLE 5-2

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II REPORT
FOR THE NEWELL STREET SITE

THICKNESS OF FILL MATERIAL - MCP INTERIM PHASE II INVESTIGATION

Site Location	Boring Designation	Thickness of Fill (ft)	Depth Drilled (ft)
GE Parking Lot and Wooded Area	NS-1A	9	24
	NS-2A	11	24
	NS-5	9	14
	NS-6	8	14
	NS-7	10	16
	NS-8	10	14
	NS-9	10	24
	NS-10	10	20
	NS-11	11	20
	NS-12	11	16
	NS-13	12	16
	NS-14	7	14
	GE-9	5	12
	GE-10	2	12
	GE-11	4	12
	GE-12	4	14
River Bank	RB-6	0	4
	RB-7	0	4

Notes:
- All measurements are feet below land surface
- Thickness of fill determined by visual observations (see soil boring logs in Appendix M)
- Borings installed under the direction of Geraghty & Miller, Inc.

Table 5-3. Summary* of Volatile Organic Compounds Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Boring Number: Sample Depth: Collection Date: Analyte (ug/kg)	NS-1A 18'-20' 5/23/91	NS-2A 12'-14' 11/12/91	NS-2A 14'-16' 11/12/91	NS-2A 16'-18' 11/12/91	NS-2A 18'-20' 11/12/91	NS-2A 20'-22' 11/12/91	NS-2A 22'-24' 11/12/91	NS-5 2'-4' 5/22/91	NS-6 4'-6' 11/12/91	NS-7 14'-16' 5/24/91	NS-8 12'-14' 5/21/91
Vinyl chloride						2J					8J
Methylene chloride	15B	51B	23B	44B	48B	55	58B	28B	30B	63B	29B
Acetone	17B	19B	37B	39B	37B	37	11BJ	9BJ	35B	140B	52B
1,2-Dichloroethene (total)	13			8	30	12			3J		16
Chlorobenzene	3J			17	53	2J	9				210
1,1,2-Trichloro-1,2,2-trifluoroethane								1BJ		2BJ	
Benzene					2J						69
Ethylbenzene					5J						3J
Xylene (total)											10
Trichloroethene									2J		8
Toluene					2J						
1,1,1-Trichloroethane											

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* Only detected analytes are shown.

** Field duplicate sample

ug/kg Micrograms per kilogram (ppb)

B Indicates the compound was found in the associated blank as well as in the sample.

J Indicates an estimated value less than the method detection limit.

Table 5-3. Summary* of Volatile Organic Compounds Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Boring Number:	NS-9	NS-10	NS-10	NS-10**	NS-10	NS-10	NS-10	NS-10	NS-11	NS-11	NS-12
Sample Depth:	14'-16'	8'-10'	10'-12'	10'-12'	12'-14'	14'-16'	16'-18'	18'-20'	8'-10'	10'-12'	14'-16'
Collection Date:	10/25/91	11/15/91	11/15/91	11/15/91	11/15/91	11/15/91	11/15/91	11/15/91	12/10/91	12/10/91	5/22/91
Analyte (ug/kg)											
Vinyl chloride											
Methylene chloride	49	270B	53B	56B	440B	82B	290B	48B	38B	53B	220B
Acetone	87	260B	29B	91B	920B	95B	190B	34B	42	51	190B
1,2-Dichloroethene (total)		16J				6J					
Chlorobenzene		29J	13	13J		19J	13J		17	54	460
1,1,2-Trichloro-1,2,2-trifluoroethane					15J		14J				
Benzene					16J						
Ethylbenzene		20J	6J	6J		6J	8J	1J			8J
Xylene (total)		420	170	220	450	160	230	26		4J	15J
Trichloroethene		32J	7J	7J		17J	16J				
Toluene		10J	2J			4J					
1,1,1-Trichloroethane			2J								

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* Only detected analytes are shown.

** Field duplicate sample

ug/kg Micrograms per kilogram (ppb)

B Indicates the compound was found in the associated blank as well as in the sample.

J Indicates an estimated value less than the method detection limit.

Table 5-3. Summary* of Volatile Organic Compounds Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Boring Number: Sample Depth: Collection Date: Analyte (ug/kg)	NS-13 14'-16' 5/21/91	NS-14 12'-14' 5/24/91	RB-6 0'-2' 5/21/91	RB-6 2'-4' 5/21/91	RB-7 0'-2' 5/21/91	RB-7 2'-4' 5/21/91	GE-9 8'-10' 12/12/91	GE-10 10'-12' 12/11/91	GE-11 10'-12' 12/12/91	GE-12 10'-12' 12/11/91
Vinyl chloride										
Methylene chloride	3,200BJ	52B	23B	40B	30B	27B	48	30	52	61
Acetone		75B	5BJ	38B	4BJ		56	22		20
1,2-Dichloroethene (total)										
Chlorobenzene	16,000	160								
1,1,2-Trichloro-1,2,2-trifluoroethane		2BJ	2BJ	3BJ	2BJ	1BJ				
Benzene	450J									
Ethylbenzene										
Xylene (total)										
Trichloroethene										
Toluene										
1,1,1-Trichloroethane										

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* Only detected analytes are shown.

** Field duplicate sample

ug/kg Micrograms per kilogram (ppb)

B Indicates the compound was found in the associated blank as well as in the sample.

J Indicates an estimated value less than the method detection limit.

Table 5-4. Summary* of Semivolatile Organic Compounds Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield Massachusetts.

Boring Number:	NS-1A	NS-2A	NS-2A	NS-2A	NS-2A	NS-2A	NS-2A	NS-5
Sample Depth:	18'-20'	12'-14'	14'-16'	16'-18'	18'-20'	20'-22'	22'-24'	2'-4'
Collection Date:	5/23/91	11/12/91	11/12/91	11/12/91	11/12/91	11/12/91	11/12/91	5/22/91
Analyte (ug/kg)								
Phenol								170 J
Aniline								700
3-Methylphenol								97 JX
4-Methylphenol								97 JX
2,4-Dimethylphenol								61 J
Acenaphthylene		48 J		49 J	170 J		210 J	
Phenanthrene		170 J	250 J	180 J	1,700		2,100	1,300
Anthracene			51 J		290 J		380 J	230 J
Di-n-butylphthalate								
Fluoranthene	56 J	91 J			420 J		560	1,300
Pyrene	87 J	110 J			860		1,000	990
Benzo(a)anthracene		69 J		120 J	320 J		380 J	580
Chrysene	42 J	72 J	97 J	95 J	380 J		310 J	590
Bis(2-ethylhexyl)phthalate	370 BJ	95 J	63 J	80 J	150 J		87 J	160 BJ
Benzo(b)fluoranthene	47 JX	110 JX	200 JX	190 JX	280 JX		370 JX	1,100 X
Benzo(k)fluoranthene	47 JX	110 JX	200 JX	190 JX	280 JX		370 JX	1,100 X
Benzo(a)pyrene		76 J	110 J	130 J	240 J		300 J	440
Indeno(1,2,3-cd)pyrene			66 J	79 J	88 J		100 J	250 J
Dibenz(a,h)anthracene								140 J
Benzo(g,h,i)perylene		46 J	89 J	110 J	120 J		130 J	270 J
1,2,4-Trichlorobenzene	130 J		110 J	78 J	60 J		81 J	
1,4-Dichlorobenzene				360 J	220 J		280 J	
Methylnaphthalene			63 J		260 J		280 J	63 J
orene			45 J		330 J		400 J	91 J
1,3-Dichlorobenzene				76 J	54 J		52 J	
1,2-Dichlorobenzene								
Benzyl chloride								
Naphthalene		200 J	75 J	120 J	460 J		540	92 J
1,2,3-Trichlorobenzene								
2-Methylnaphthalene		86 J			230 J		260 J	48 J
1,2,3,4-Tetrachlorobenzene			140 J	95 J			51 J	
1,2,3,5-Tetrachlorobenzene			55 JX					
1,2,4,5-Tetrachlorobenzene			55 JX					
Acenaphthene					58 J		52 J	110 J
Dibenzofuran								83 J
2-Methyl phenol								
Benzoic acid								
7,12-Dimethylbenzanthracene								
2-Nitroaniline								
Methapyrilene								
Dimethylphenylethylamine					870			
Zinophos					60 J			
Cyclophosphamide					89 J			
Butylbenzylphthalate								
Dimethoate								
Acetophenone								
2-Naphthylamine								
2-Picoline								
3-Nitroaniline								
4-Nitrophenol								
4-Aminobiphenyl								
exachloroethane								

* Only detected analytes are shown.

** Field duplicate sample.

ug/kg - Micrograms per kilogram (ppb).

J - Indicates an estimated value less than the method detection limit.

X - Indicates coeluting indistinguishable isomers.

Table 5-4. Summary* of Semivolatile Organic Compounds Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield Massachusetts.

Boring Number: Sample Depth: Collection Date: Analyte (ug/kg)	NS-6 4'-6' 11/12/91	NS-8 12'-14' 5/21/91	NS-9 14'-16' 10/25/91	NS-10 8'-10' 11/15/91	NS-10 10'-12' 11/15/91	NS-10** 10'-12' 11/15/91	NS-10 12'-14' 11/15/91	NS-10 14'-16' 11/15/91
Phenol								
Aniline								
3-Methylphenol								
4-Methylphenol								
2,4-Dimethylphenol								
Acenaphthylene	130 J		150 J					
Phenanthrene	16,000	74 J	2,500	110,000	1,000 J		850 J	1400
Anthracene	3,600		300 J	27,000				220 J
Di-n-butylphthalate								
Fluoranthene	10,000		1,600	89,000	300 J		310 J	
Pyrene	7,300		2,000	71,000	240 J		450 J	
Benzo(a)anthracene	3,900		920	77,000	400 J			
Chrysene	3,600	55 J	770	42,000			580 J	
Bis(2-ethylhexyl)phthalate	360 J	750	67J	45,000 X	580 J			
Benzo(b)fluoranthene	5,100 X		1,100 X	45,000 X				
Benzo(k)fluoranthene	5,100 X		1,100 X					
Benzo(a)pyrene	2,200		670	25,000 J				
Indeno(1,2,3-cd)pyrene	1,200		350 J	14,000 J				
Dibenz(a,h)anthracene	640 J		110 J					
Benzo(g,h,i)perylene	1,400		400	14,000 J				
1,2,4-Trichlorobenzene	1,200	370 J		4,200 J	1,400 J			210 J
1,4-Dichlorobenzene		98 J		9,000 J			3,000	
` -Methylnaphthalene	1,700	51 J			440 J		480 J	
uorene	5,300		290 J	15,000 J				250 J
1,3-Dichlorobenzene								850
1,2-Dichlorobenzene								
Benzyl chloride								
Naphthalene	3,500				1,100 J		720 J	870
1,2,3-Trichlorobenzene	160 J	120 J						
2-Methylnaphthalene	1,700				390 J		360 J	230 J
1,2,3,4-Tetrachlorobenzene	150 J							
1,2,3,5-Tetrachlorobenzene								
1,2,4,5-Tetrachlorobenzene								
Acenaphthene	4,400		40 J	5,600 J				130 J
Dibenzofuran	2,800			9,600 J				190 J
2-Methyl phenol								
Benzoic acid								
7,12-Dimethylbenzanthracene					430 J			
2-Nitroaniline								
Methapyrilene						2,800 J		
Dimethylphenylethylamine								
Zinophos					1,500 J	500 J		
Cyclophosphamide								
Butylbenzylphthalate			42BJ					
Dimethoate							1,200 J	
Acetophenone					1,500 J			
2-Naphthylamine					340 J			
2-Picoline					590 J			
3-Nitroaniline					490 J			
4-Nitrophenol					1,500 J	650 J		
4-Aminobiphenyl					1,500 J		1,200 J	
lexachloroethane							2,100 J	

* Only detected analytes are shown.

** Field duplicate sample.

ug/kg - Micrograms per kilogram (ppb).

J - Indicates an estimated value less than the method detection limit.

X - Indicates coeluting indistinguishable isomers.

Table 5-4. Summary* of Semivolatile Organic Compounds Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield Massachusetts.

Boring Number:	NS-10	NS-10	NS-11	NS-11	NS-12	NS-13	NS-14
Sample Depth:	16'-18'	18'-20'	8'-10'	10'-12'	14'-16'	14'-16'	12'-14'
Collection Date:	11/15/91	11/15/91	12/10/91	12/10/91	5/22/91	5/21/91	5/24/91
Analyte (ug/kg)							
Phenol							
Aniline							
3-Methylphenol							
4-Methylphenol							
2,4-Dimethylphenol							
Acenaphthylene							
Phenanthrene	22,000	150 J	3,300 J			940	800
Anthracene	4,900		810 J				
Di-n-butylphthalate	710 J						
Fluoranthene	14,000	96 J	5,800			550	430 J
Pyrene	10,000	98 J	4,000 J			540	360
Benzo(a)anthracene	7,000	74 J	3,200 J			310 J	
Chrysene	5,700	130 J	4,700			630	
Bis(2-ethylhexyl)phthalate		100 J					1,700 BJ
Benzo(b)fluoranthene	7,000 X		2,800 JX			310 JX	
Benzo(k)fluoranthene	7,000 X		2,800 JX			310 JX	
Benzo(a)pyrene	3,800		2,300 J			150 J	
Indeno(1,2,3-cd)pyrene	2,100		810 J			71 J	
Dibenz(a,h)anthracene	670 J						
Benzo(g,h,i)perylene	1,900 J		850 J			98 J	
1,2,4-Trichlorobenzene	400 J		1,900 J		14,000	9,600 E	1,200 J
1,4-Dichlorobenzene			4,600		38,000 E	25,000 E	210
Methylnaphthalene	3,000		1,000 J			600	220 J
uorene			460 J			230 J	
1,3-Dichlorobenzene			1,000 J		3,700	5,100	
1,2-Dichlorobenzene					3,800	520	
Benzyl chloride						350 J	
Naphthalene	8,900		720 J				
1,2,3-Trichlorobenzene					11,000	700	
2-Methylnaphthalene	2,900		590 J			430 J	
1,2,3,4-Tetrachlorobenzene					860 J	260 J	
1,2,3,5-Tetrachlorobenzene					680 JX	670 X	
1,2,4,5-Tetrachlorobenzene					680 JX	670 X	
Acenaphthene	320 J					160 J	
Dibenzofuran						140 J	
2-Methyl phenol							
Benzoic acid							
7,12-Dimethylbenzanthracene							
2-Nitroaniline							
Methapyrilene							
Dimethylphenylethylamine							
Zinophos							
Cyclophosphamide							
Butylbenzylphthalate							
Dimethoate							
Acetophenone							
2-Naphthylamine							
2-Picoline							
3-Nitroaniline							
4-Nitrophenol							
4-Aminobiphenyl	1,100 J						
lexachloroethane							

* Only detected analytes are shown.

** Field duplicate sample.

ug/kg - Micrograms per kilogram (ppb).

J - Indicates an estimated value less than the method detection limit.

X - Indicates coeluting indistinguishable isomers.

Table 5-4. Summary* of Semivolatile Organic Compounds Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield Massachusetts.

Boring Number:	RB-6	RB-6	RB-7	RB-7	GE-9	GE-10	GE-11	GE-12
Sample Depth:	0'-2'	2'-4'	0'-2'	2'-4'	8'-10'	10'-12'	10'-12'	10'-12'
Collection Date:	5/21/91	5/21/91	5/21/91	5/21/91	12/12/91	12/11/91	12/12/91	12/11/91
Analyte (ug/kg)								
Phenol	510		430	180 J				
Aniline	1,500	290 J	610	500 J				
3-Methylphenol	43 JX		62 JX					
4-Methylphenol	43 JX		62 JX					
2,4-Dimethylphenol			47 J					
Acenaphthylene	190 J		330 J	1,700				
Phenanthrene	280 J	120 J	380	460 J			40 J	
Anthracene	350 J	40 J	120 J	400 J				
Di-n-butylphthalate	350 J	71 J						
Fluoranthene	450	130 J		1,500			56 J	
Pyrene	580	160 J		2,500		44 J	78 J	
Benzo(a)anthracene	330 J	79 J	520	1,900				
Chrysene	440	100 J	760	2,400			50 J	
Bis(2-ethylhexyl)phthalate	60 J	41 J			45 J	340 J	260 J	250 J
Benzo(b)fluoranthene	750 X	190 JX	1,300 X	5,500 X			60 JX	
Benzo(k)fluoranthene	750 X	190 JX	1,300 X	5,500 X			60 JX	
Benzo(a)pyrene	410	110 J	590	3,800				
Indeno(1,2,3-cd)pyrene	250 J	67 J	400	1,900				
Dibenz(a,h)anthracene	110 J		180 J	820				
Benzo(g,h,i)perylene	320 J	88 J	470	2,900				
1,2,4-Trichlorobenzene			380	96 J				
1,4-Dichlorobenzene								
-Methylnaphthalene			52 J					
uorene	57 J			150 J				
1,3-Dichlorobenzene								
1,2-Dichlorobenzene								
Benzyl chloride				97 J				
Naphthalene	41 J		90 J					
1,2,3-Trichlorobenzene			110 J					
2-Methylnaphthalene				410 J				
1,2,3,4-Tetrachlorobenzene			200 J					
1,2,3,5-Tetrachlorobenzene			92 JX					
1,2,4,5-Tetrachlorobenzene			92 JX					
Acenaphthene								
Dibenzofuran								
2-Methyl phenol								
Benzoic acid		150 J						
7,12-Dimethylbenzanthracene				80 J				
2-Nitroaniline		39 J						
Methapyrilene		220 J						
Dimethylphenylethylamine								
Zinophos								
Cyclophosphamide								
Butylbenzylphthalate								
Dimethoate								
Acetophenone								
2-Naphthylamine								
2-Picoline								
3-Nitroaniline								
4-Nitrophenol								
4-Aminobiphenyl								
Hexachloroethane								

* Only detected analytes are shown.

** Field duplicate sample.

ug/kg - Micrograms per kilogram (ppb).

J - Indicates an estimated value less than the method detection limit.

X - Indicates coeluting indistinguishable isomers.

Table 5-5. Summary* of Metals Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Boring Number:	NS-1A	NS-2A	NS-5	NS-6	NS-8	NS-9	NS-10	NS-10 +	NS-11	NS-12
Sample Depth:	18'-20'	18'-20'	2'-4'	4'-6'	12'-14'	14'-16'	10'-12'	10'-12'	8'-10'	14'-16'
Collection Date:	5/23/91	11/12/91	5/22/91	11/12/91	5/21/91	10/25/91	11/15/91	11/15/91	12/10/91	5/22/91
Analyte (mg/kg)										
Aluminum	7,480	8,300	8,140	10,700	11,400	8,830	7,400	7,750	9,180**	10,200
Antimony				7.9 N					13.9 BN	
Arsenic	3.1 N	4.0 N	2.9	10.2 AN	7.1	4.7	1.5**	2.4**	8.6 A	1.4
Barium	17.2 B	24.3 B	246**	152	670**	17.0 B	10.6B N**	63.2 N**	240	31.0**
Beryllium	0.16 B	0.19 B	0.20 B	0.29 B	0.55 B		0.21 B	0.33 B	0.57 B	0.25 B
Cadmium			1.2	5.6					2.6	
Calcium	7,820	4,700	21,500 E	25,000	1,420 E	9,840**	707 E**	2,010 E**	9,190 E	25,500 E
Chromium	8.9	10.9	25.4	62.4	19.7	10.0	6.9E N**	13.3 EN**	106	10.2
Cobalt	9.6	11.2	8.7	11.9	11.3	13.2	7.6**	6.2**	13.9	9.1
Copper	37.8	33.5	193	1,060	233	62.8 N**	36.9**	336**	980 N	17.3
Iron	16,800	18,700 E	18,300 E	28,400 E	23,100 E	21,200 E	15,600 E**	20,400 E**	32,600**	20,600 E
Lead	21.1 A	20.7	271**	520 N	235**	64.5 N	33.2 E	469 E	968**	2.4 A**
Magnesium	5,750	4,640	12,000	11,000	3,840	7,620**	3,190	3,070	4,300	17,000
Manganese	422	413	405 E**	875	195 E**	668	177 E**	198 E**	473 N**	368 E**
Mercury			4.6	3.3 N**	0.16				3.7	
Nickel	18.1	18.1	19.3	45.0	27.6	19.7	16.5 N**	15.2 N**	70.2	17.6
Potassium	528 B	590 B	484 B	816	649 B	307 B	325 B	458 B	567 B	1,150
Selenium		0.62 BWN						0.50 BN		
Silver				1.4**		0.74			3.4 N	
Sodium	74.3 B	140 B	268 B	280 B	368 B	171 B	97.4 B	195 B	451 B	76.5 B
Vanadium	7.1	9.3	17.1	12.4	19.2	8.3	7.2	9.0	21.9	13.7
Zinc	57.3	77.9 E	986 E	806 E	216 E	86.7 E	66.1 E**	275 E**	1,300	59.4 E

* Only detected analytes are shown.

\+ Field duplicate sample.

mg/kg Milligrams per kilogram (ppm).

** Indicates sample matrix duplicate was outside control limits.

A Results reported from single-point method-of-standard addition calculation.

B Indicates the reported value is less than the contract required detection limit (CRDL), but greater than the instrument detection limit (IDL).

E Indicates the reported value is estimated because of the presence of interference.

N Indicates sample matrix spike analysis was outside control limits.

Q Indicates severe physical or chemical interference in the sample matrix.

W Indicates slight matrix-related interference for the analyte.

Table 5-5. Summary* of Metals Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Boring Number:	NS-13	NS-14	RB-6	RB-6	RB-7	RB-7	GE-9	GE-10	GE-11	GE-12
Sample Depth:	14'-16'	12'-14'	0'-2'	2'-4'	0'-2'	2'-4'	8'-10'	10'-12'	10'-12'	10'-12'
Collection Date:	5/21/91	5/24/91	5/21/91	5/21/91	5/21/91	5/21/91	12/12/91	12/11/91	12/12/91	12/11/91
Analyte (mg/kg)										
Aluminum	2,690	7,230	6,920	7,110	9,450	6,920	12,400**	13,500**	7,470**	13,900**
Antimony									11.1 BN	9.6 BN
Arsenic	2.6	3.3 N	3.8	4.6 A	7.9	3.7	37.4 A	4.9	4.5	5.6 A
Barium	54.9**	34	46.5**	40.7**	35.6**	93.4**	37.5 B	20.6 B	22.0 B	15.1 B
Beryllium			0.32 B	0.26 B	0.30 B	0.24 B				
Cadmium			0.58 B			0.94				
Calcium	427 BE	1,320	6,450 E	6,040 E	7,830 E	4,070 E	1,680 E	7,070 E	639 BE	4,700 E
Chromium	8.2	9.2	23.5	16.8	9.3	25.5	13.0	15.2	9.0	14.2
Cobalt	2.9 B	9.2	7.4	7.8	11.6	7.4	14.4	15.2	10.9 B	15.3
Copper	1,440	68.4	81.4	23.1	17.8	184	22.7 N	39.1 N	45.5 N	33.5 N
Iron	5,410 E	18,300	15,200 E	15,200 E	24,400 E	15,400 E	32,500**	30,600**	18,000**	34,200**
Lead	108**	32.1	60.2**	50.2**	15.3**	123**	8.9**	65.4**	22.5 A**	14.9**
Magnesium	969	3,060	6,350	6,310	6,490	4,840	5,050	8,790	3,200	6,290
Manganese	51.1 E**	335	324 E**	431 E**	633 E**	269 E**	1,070 N**	747 N**	299 N**	772 N**
Mercury	0.26	1.1	0.10	0.22	3.0	0.35				
Nickel	16.1	17.4	13.9	13.5	19.6	16.0	23.9	26.1	15.6	26.8
Potassium	175 B	348 B	422 B	405 B	437 B	446 B	286 B	318 B	364 B	408 B
Selenium	0.67 BAN									
Silver										
Sodium	147 B	82.9 B	56.6 B	67.5 B	50.8 B	132 B	108 B	119 B	118 B	109 B
Vanadium	3.6 B	7.0	12.6	12.8	15.6	12.5	12.3	12.3	8.4 B	12.0 B
Zinc	196 E	63.1	98.1 E	67.0 E	82.7 E	291 E	67.5	90.2	66.7	80.2

* Only detected analytes are shown.

\+ Field duplicate sample.

mg/kg Milligrams per kilogram (ppm).

** Indicates sample matrix duplicate was outside control limits.

A Results reported from single-point method-of-standard addition calculation.

B Indicates the reported value is less than the contract required detection limit (CRDL), but greater than the instrument detection limit (IDL).

E Indicates the reported value is estimated because of the presence of interference.

N Indicates sample matrix spike analysis was outside control limits.

Q Indicates severe physical or chemical interference in the sample matrix.

W Indicates slight matrix-related interference for the analyte.

Table 5-6. Summary* of Phenols, Cyanide, Sulfide, and Organophosphorous (OP) Pesticides Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Boring Number: Sample Depth: Collection Date:	NS-1A 18'-20' 5/23/91	NS-2A 18'-20' 11/12/91	NS-5 2'-4' 5/22/91	NS-6 4'-6' 11/12/91	NS-8 12'-14' 5/21/91	NS-9 14'-16' 10/25/91	NS-10 10'-12' 11/15/91	NS-10** 10'-12' 11/15/91	NS-11 8'-10' 12/10/91	NS-12 14'-16' 5/22/91
Analyte (mg/kg)										
Phenols	-	0.20	0.17	0.31	0.31	0.25	0.89	0.24	0.85	1.14
Cyanide	-	-	0.58	-	-	-	-	-	0.72	-
Sulfide	12	-	-	-	-	13.1	33.1	-	-	-
OP Pesticides										
Sulfotepp	-	-	-	-	-	-	0.1	-	-	-

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* Only detected analytes are shown.

** Field duplicate sample.

mg/kg Milligrams per kilogram (ppm).

\- Not detected.

Table 5-6. Summary* of Phenols, Cyanide, Sulfide, and Organophosphorous (OP) Pesticides Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Boring Number: Sample Depth: Collection Date: Analyte (mg/kg)	NS-13 14'-16' 5/21/91	NS-14 12'-14' 5/24/91	RB-6 0'-2' 5/21/91	RB-6 2'-4' 5/21/91	RB-7 0'-2' 5/21/91	RB-7 2'-4' 5/21/91	GE-9 8'-10' 12/12/91	GE-10 10'-12' 12/11/91	GE-11 10'-12' 12/12/91	GE-12 10'-12' 12/11/91
Phenols	1.34	0.11	0.57	0.17	0.37	0.27	-	-	-	-
Cyanide	-	-	-	-	-	-	-	-	-	-
Sulfide	-	-	20.0	-	-	-	-	-	-	-
OP Pesticides										
Sulfotepp	-	-	-	-	-	-	-	-	-	-

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* Only detected analytes are shown.
** Field duplicate sample.
mg/kg Milligrams per kilogram (ppm).
\- Not detected.

Table 5-7. Summary* of Dioxin/Furan Compounds Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Analyte (ng/g)	Boring Number: Sample Depth (ft): Collection Date:	GE-9 8-10 12/12/91	GE-10 10-12 12/11/91	GE-11 10-12 12/12/91	GE-12 14-16 12/11/91	NS-9 10-12 10/25/91	NS-10 10-12 11/15/91	NS-10** 10-12 11/15/91	NS-11 8-10 12/10/91	NS-2A 18-20 11/12/91	NS-6 4-6 11/12/91
TCDD		-	-	-	-	-	-	-	-	-	-
PeCDD		-	-	-	-	-	-	-	-	-	0.93
HxCDD		-	-	-	-	-	-	-	0.50	-	2.2
HpCDD		-	-	-	-	-	0.11	-	0.80	-	2.0
OCDD		-	-	0.056	-	0.052	0.20	0.30	2.0	0.068	1.4
2,3,7,8 TCDF		-	-	0.11	-	0.059	-	-	1.4	0.13	5.3
TCDF		-	-	0.61	-	0.30	-	-	13.8	0.62	18.1
PeCDF		-	-	0.66	-	0.37	-	-	5.4	1.1	28.4
HxCDF		-	0.028	0.66	-	0.34	0.95	1.3	7.1	1.0	32.7
HpCDF		-	-	0.28	-	-	2.4	3.7	4.3	0.34	14.4
OCDF		-	-	0.16	-	0.096	0.76	1.2	2.0	0.21	8.8

* Only detected analytes are shown.

** Field duplicate sample.

ng/g - Nanograms per gram (ppb).

\- Not detected.

Table 5-7. Summary* of Dioxin/Furan Compounds Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

	Boring Number:	NS-1A	NS-5	NS-7	NS-8	NS-12	NS-13	NS-14	RB-6	RB-6	RB-7	RB-7
	Sample Depth (ft):	18-20	2-4	14-16	12-14	14-16	14-16	12-14	0-2	2-4	0-2	2-4
Analyte (ng/g)	Collection Date:	5/23/91	5/22/91	5/24/91	5/21/91	5/22/91	5/21/91	5/24/91	5/21/91	5/21/91	5/21/91	5/21/91
TCDD		-	-	-	-	-	-	-	-	-	0.29	0.07
PeCDD		-	-	0.067	-	-	0.68	-	-	-	-	-
HxCDD		-	-	0.14	-	1.3	3.6	0.38	-	-	3.0	0.82
HpCDD		-	0.37	0.25	-	2.4	4.5	0.87	-	-	2.4	0.65
OCDD		-	0.54	0.21	-	15.1	16.0	3.7	0.40	-	1.4	0.50
2,3,7,8 TCDF		0.14	0.34	1.0	0.74	0.11	0.82	0.052	0.088	-	18.9	1.2
TCDF		0.73	0.64	4.6	4.1	0.85	6.1	0.32	0.57	-	116	7.3
PeCDF		1.8	1.6	3.5	10.0	3.9	25.7	0.49	0.42	-	166	13.1
HxCDF		2.8	3.9	3.0	17.8	8.4	93.4	1.9	0.60	-	164	10.7
HpCDF		0.96	1.7	1.5	6.1	5.0	65.3	1.8	0.44	-	52.1	3.6
OCDF		0.34	0.75	0.93	2.5	2.2	59.7	0.64	0.27	-	16.7	1.4

* Only detected analytes are shown.
** Field duplicate sample.
ng/g - Nanograms per gram (ppb).
\- Not detected.

Table 5-8. Summary* of Polychlorinated Biphenyls Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Boring Number	Sample Depth (ft)	Sample Collection Date	Aroclor 1016, 1232, 1242 and/or 1248	Aroclor 1254	Aroclor 1260	Total Aroclors +
NS-1A	0-2	5/22/91		3,700		3,700
	2-4	5/22/91		8,400		8,400
	4-6	5/22/91		9,900		9,900
	6-8	5/22/91		12,000		12,000
	8-10	5/22/91		33		33
	10-12	5/23/91		3,400		3,400
	12-14	5/23/91		1,300		1,300
	14-16	5/23/91		1,500		1,500
	16-18	5/23/91		11		11
	18-20	5/23/91		3.8 (17)		3.8
	20-22	5/23/91		9.5		9.5
	22-24	5/23/91		29		29
NS-2A	0-2	11/12/91		0.64		0.64
	2-4	11/12/91		9,100		9,100
	4-6	11/12/91		2,000		2,000
	4-6**	11/12/91		25		25
	6-8	11/12/91		2,800		2,800
	8-10	11/12/91		320		320
	10-12	11/12/91		1.8		1.8
	12-14	11/12/91		6.3		6.3
	14-16	11/12/91		1,000		1,000
	16-18	11/12/91		1,100		1,100
	18-20	11/12/91		60		60
	20-22	11/12/91		0.53		0.53
	22-24	11/12/91		8.5		8.5
NS-5	0-2	5/22/91		1,200		1,200
	2-4	5/22/91		48 (17)		48
	4-6	5/22/91		2,100		2,100
	6-8	5/22/91		590		590
	6-8**	5/22/91		5,700		5,700
	8-10	5/22/91		0.55		0.55
	10-12	5/22/91		29		29
	12-14	5/22/91		3.5		3.5
NS-6	0-2	11/12/91		280		280
	2-4	11/12/91		17,000		17,000
	4-6	11/12/91		53,000		53,000
	6-8	11/12/91		3,400		3,400
	8-10	11/12/91		2,700		2,700
	10-12	11/12/91		24		24
	12-14	11/12/91		4.0		4.0

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* Only detected analytes are shown.

Concentrations reported in milligrams per kilogram (ppm).

Concentrations in parentheses are from analyses performed by CompuChem Laboratories. All other samples analyzed by IT Analytical Laboratories, Inc.

** Field duplicate sample.

\+ Rounded totals are as reported on laboratory data sheets.

Table 5-8. Summary* of Polychlorinated Biphenyls Detected in Soil Boring Samples, Newell Street Site, GE Comp[illegible]y, Pittsfield, Massachusetts.

Boring Number	Sample Depth (ft)	Sample Collection Date	Aroclor 1016, 1232, 1242 and/or 1248	Aroclor 1254	Aroclor 1260	Total Aroclors +
NS-7	0-2	5/24/91		190		190
	2-4	5/24/91		500		500
	6-8	5/24/91		130		130
	8-10	5/24/91		280		280
	10-12	5/24/91		20		20
	12-14	5/24/91		0.53		0.53
	14-16	5/24/91		0.65		0.65
NS-8	0-2	5/21/91		1.1		1.1
	2-4	5/21/91		46		46
	4-6	5/21/91		5,200		5,200
	6-8	5/21/91		80,000		80,000
	8-10	5/21/91		13		13
	10-12	5/21/91		850		850
	12-14	5/21/91		4,500 (8[illegible]0)		4,500
NS-9	0-2	10/24/91		19		19
	2-4	10/24/91		[illegible]	9.3	28
	4-6	10/24/91		0.06		0.06
	4-6**	10/24/91		8.8	6.4	15
	6-8	10/24/91				
	8-10	10/24/91		2.0	0.65	2.6
	10-12	10/24/91		0.60	0.34	0.94
	12-14	10/25/91		8.6	2.0	11
	14-16	10/25/91		0.89 (0.66)		0.89
	16-18	10/25/91		11		11
	18-20	10/25/91		0.26	0.11	0.37
	20-22	10/25/91		6.9	1.3	8.2
	22-24	10/25/91		10		10
NS-10	0-2	11/15/91		4.1	44	44
	2-4	11/15/91		3.4	1.3	4.7
	4-6	11/15/91		8.3	3.9	12.1
	6-8	11/15/91		49		49
	8-10	11/15/91		250		250
	10-12	11/15/91		420 (17)		420
	10-12**	11/15/91		(5.3)		
	10-12**	11/15/91		520		520
	12-14	11/15/91		380		380
	14-16	11/15/91	2.5	42		44
	16-18	11/15/91		2.1		2.1
	18-20	11/15/91		2.7		2.7

* Only detected analytes are shown.

Concentrations reported in milligrams per kilogram (ppm).

Concentrations in parentheses are from analyses performed by CompuChem Laboratories. All other samples analyzed by IT Analytical Laboratories, Inc.

** Field duplicate sample.

\+ Rounded totals are as reported on laboratory data sheets.

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Table 5-8. Summary* of Polychlorinated Biphenyls Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Boring Number	Sample Depth (ft)	Sample Collection Date	Aroclor 1016, 1232, 1242 and/or 1248	Aroclor 1254	Aroclor 1260	Total Aroclors +
NS-11	0-2	12/10/91		1.8		1.8
	2-4	12/10/91		110		110
	4-6	12/10/91		3,700		3,700
	6-8	12/10/91		8,800		8,800
	8-10	12/10/91		790		790
	10-12	12/10/91		470		470
	14-16	12/10/91		5.5		5.5
	16-18	12/10/91		0.18		0.18
	18-20	12/10/91		0.12		0.12
NS-12	0-2	5/22/91		7.3	3.3	11
	2-4	5/22/91		9.5	2.2	12
	4-6	5/22/91		19	3.9	23
	6-8	5/22/91		4,400		4,400
	8-10	5/22/91		91	13	104
	10-12	5/22/91		140		140
	12-14	5/22/91		1,400		1,400
	14-16	5/22/91		680 (14,000)		680
NS-13	0-2	5/21/91		2,100		2,100
	2-4	5/21/91		26		26
	4-6	5/21/91		4,500		4,500
	8-10	5/21/91		32,000		32,000
	10-12	5/21/91		42,000		42,000
	10-12**	5/21/91		76,000		76,000
	12-14	5/21/91		460		460
	14-16	5/21/91		1,200 (880)	380	1,600
NS-14	0-2	5/23/91		210		210
	2-4	5/23/91		92		92
	4-6	5/23/91		320		320
	6-8	5/23/91		120		120
	8-10	5/23/91		320		320
	10-12	5/24/91		480		480
	12-14	5/24/91		310 (80)		310
RB-6	0-2	5/21/91			(45)	
	2-4	5/21/91			(4)	
RB-7	0-2	5/21/91		(1,200)		
	2-4	5/21/91		(89)	(66)	

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* Only detected analytes are shown.

Concentrations reported in milligrams per kilogram (ppm).

Concentrations in parentheses are from analyses performed by CompuChem Laboratories. All other samples analyzed by IT Analytical Laboratories, Inc.

** Field duplicate sample.

+ Rounded totals are as reported on laboratory data sheets.

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Table 5-8. Summary* of Polychlorinated Biphenyls Detected in Soil Boring Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Boring Number	Sample Depth (ft)	Sample Collection Date	Aroclor 1016, 1232, 1242 and/or 1248	Aroclor 1254	Aroclor 1260	Total Aroclors +
GE-9	0-2	12/12/91		2.3	1.0	3.3
	2-4	12/12/91		8.0	2.0	10.0
	4-6	12/12/91				
	6-8	12/12/91				
	8-10	12/12/91		0.12		0.12
GE-10	0-2	12/11/91		930		930
	2-4	12/11/91		3.9	2.5	6.4
	4-6	12/11/91		0.07		0.07
	6-8	12/11/91				
	8-10	12/11/91		0.68		0.68
	10-12	12/11/91		1.9		1.9
GE-11	0-2	12/12/91		3,800		3,800
	2-4	12/12/91		1.7		1.7
	4-6	12/12/91				
	6-8	12/12/91		1.8		1.8
	8-10	12/12/91		5.1		5.1
	10-12	12/12/91		0.49		0.49
GE-12	0-2	12/11/91				
	2-4	12/11/91				
	4-6	12/11/91		0.06		0.06
	6-8	12/11/91				
	8-10	12/11/91				

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* Only detected analytes are shown.

Concentrations reported in milligrams per kilogram (ppm).

Concentrations in parentheses are from analyses performed by CompuChem Laboratories. All other samples analyzed by IT Analytical Laboratories, Inc.

** Field duplicate sample.

\+ Rounded totals are as reported on laboratory data sheets.

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Table 5-9. Summary* of Polychlorinated Biphenyls Detected in Surficial Soil Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Sample Location:	IA-22	IA-23	MM-10	MM-11	RV-7	RV-7**	SZ-21	SZ-22	SZ-25	SZ-26	RB-5
Collection Date:	5/8/91	5/8/91	5/8/91	5/8/91	5/8/91	5/8/91	5/8/91	5/8/91	5/8/91	5/8/91	12/10/91
Analyte (mg/kg)											
Aroclor 1254	3.0	0.11	0.64	0.93	0.96	0.76	-	0.06	0.11	0.11	-
Aroclor 1260	2.7	0.60	0.46	0.77	0.74	0.69	1.4	0.15	0.57	0.07	1.0
Total Aroclors +	5.7	0.71	1.1	1.7	1.7	1.4	1.4	0.21	0.68	0.18	1.0

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* Only detected analytes are shown.

** Field duplicate sample.

mg/kg - Milligrams per kilogram (ppm).

\+ Rounded totals are as reported on laboratory data sheets.

\- Not detected.

Table 5-10. Summary* of Metals Detected in Surficial Soil Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Sample Location:	FW-22	FW-23	MO-12	MO-13	MO-13 +	SZ-23	SZ-24	RV-8	IA-24	IA-25
Collection Date:	5/8/91	5/8/91	5/8/91	5/8/91	5/8/91	5/8/91	5/8/91	5/8/91	5/8/91	5/8/91
Analyte (mg/kg)										
Aluminum	7,410	5,970	4,680	8,370	8,520	10,500	8,060	7,770	7,530	6,940
Antimony	-	-	-	-	-	-	-	-	-	-
Arsenic	3.4 N**	2.6 N**	2.5 N**	7.0 N**	5.9 AN**	7.9 AN**	5.1 BN**	7.0 N**	5.8 N**	4.7 N*
Barium	29.1	66.2	28.2	98.3	69.3	44.8	34.9	81.9	37	27
Beryllium	0.17 B	0.16 B	0.84	0.39 B	0.91	0.29 B	0.24 B	0.22 B	0.18 B	0.12 B
Cadmium	0.49 B	0.56	-	1.0	0.68	-	-	0.60	-	0.7
Calcium	7,040	13,100	31,900	10,300	13,300	19,400	6,290	7,990	2,040	5,090
Chromium	10.3	9.4	12.9	21.3	35.6	12.6	11.3	11.3	12.3	11.1
Cobalt	9.0	7.9	8.1	8.4	13.4	9.5	8.5	30.1	6.6	12.6
Copper	70.4	48.6	74.2	302	264	21.6	21.6	51.5	44.4	42.7
Iron	18,300	17,700	15,500	18,500	25,500	22,000	21,900	18,300	15,800	16,800
Lead	71.4	110	80.0	192	288	53.3 AN**	26.4 N**	61.2	97	64
Magnesium	5,290	6,470	13,900	6,400	8,580	12,700	5,980	5,170	2,920	4,710
Manganese	495	616	295	412	497	693	405	2,160	291	656
Mercury	0.13	-	-	0.52	3.0	0.17	-	0.17	-	-
Nickel	20.6	15.7	38.9	28.0	70.8	15.9	15.8	21.5	14.7	18.7
Potassium	507 B	651	384 B	624	646	514 B	1,090	455 B	292 B	289 B
Selenium	-	-	-	-	-	-	-	-	-	-
Silver	-	-	-	0.90 BN	-	-	-	-	-	-
Sodium	82.9 B	94.5 B	94.9 B	135 B	161 B	93.9 B	65.6 B	65.3 B	56.1 B	51.5 B
Vanadium	11.2	10.4	7.3	12.9	18.0	15.6	12.1	9.8	16.8	15.7
Zinc	120 E	84.8 E	236 E	360 E	577 E	70.1 E	80.6 E	104 E	149 E	98.4 E

* Only detected analytes are shown.

mg/kg Milligrams per kilogram (ppm).

\+ Field duplicate sample.

** Indicates sample matrix duplicate was outside control limits.

A - Results reported from single-point method-of-standard addition calculation.

B - Indicates the reported value is less than the contract required detection limit (CRDL), but greater than the instrument detection limit (IDL).

E - Indicates the reported value is estimated because of the presence of interference.

N - Indicates sample matrix spike analysis was outside control limits.

Q - Indicates severe physical or chemical interference in the sample matrix.

W - Indicates slight matrix-related interference for the analyte.

\- Not detected.

Table 5-10. Summary* of Metals Detected in Surficial Soil Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

	Sample Location:	PK-12	PK-13	PK-14	PK-15	QP-24	QP-25	QP-25 +	QP-26	GE-8
	Collection Date:	5/9/91	5/9/91	5/23/91	5/9/91	5/9/91	5/9/91	5/9/91	5/9/91	11/20/91
Analyte (mg/kg)										
Aluminum		6,070	10,400	10,300	9,910	13,100	10,300	12,100	6,570	15,300
Antimony		-	-	-	-	-	72.7 N	129 N	6.7 BN	-
Arsenic		6.3 AN**	5	9.1 N	7	5	16	20.4 N**	4	6.9 N
Barium		21.7 B	45.4**	126	37.5**	32.4**	561	382	136**	75.9
Beryllium		0.17 B	0.32 B	0.29 B	0.31 B	0.19 B	0.47 B	0.47 B	0.20 B	0.43B
Cadmium		-	-	-	-	-	11.8	13.4	1.7	1.3
Calcium		18,500	2,740 E	2,540	5,970 E	743 E	23,900 E	26,300	16,000 E	3,000
Chromium		7.4	11.0	11.0	10.2	14.7	525	506	114	24.1
Cobalt		5.5 B	10.8	7.1 B	12.9	10.7	20.5	23.5	9.0	15.7
Copper		16.0	22.7	29.5	18.8	43.9	3,760	4,180	984.0	198
Iron		15,900	24,500 E	19,600	24,500 E	30,000 E	57,500 E	57,100	26,600 E	30,800 E
Lead		43	2.0 A**	56	16.0**	51.5**	7,070**	8,150	1830**	235 N
Magnesium		10,600	4,320	2,780	5,870	4,940	14,100	16,800	9,760	6,260
Manganese		360	721 E**	381	743 E**	774 E**	1,160 E**	1,110	467 E**	910
Mercury		-	-	-	-	-	7	-	1	0.25 N**
Nickel		12.5	20.9	14.0	20.7	24.7	108	113	30.5	34.9
Potassium		358 B	486 B	508 B	498 B	496 B	545 B	588 B	520 B	1,470
Selenium		-	-	-	-	-	-	-	-	0.70QN
Silver		-	-	-	-	-	9.5 N	11.6 N	-	-
Sodium		53.2 B	53.3 B	55.9 B	53.3 B	48.3 B	241 B	251 B	71.8 B	136B
Vanadium		18.5	25.1	24.2	17.0	15.2	13.8	15.7	18.3	24.2
Zinc		57.7 E	87	116	76.0 E	87.3 E	4,870 E	5,780 E	789 E	300 E

* Only detected analytes are shown.

mg/kg Milligrams per kilogram (ppm).

\+ Field duplicate sample.

** Indicates sample matrix duplicate was outside control limits.

A - Results reported from single-point method-of-standard addition calculation.

B - Indicates the reported value is less than the contract required detection limit (CRDL), but greater than the instrument detection limit (IDL).

E - Indicates the reported value is estimated because of the presence of interference.

N - Indicates sample matrix spike analysis was outside control limits.

Q - Indicates severe physical or chemical interference in the sample matrix.

W - Indicates slight matrix-related interference for the analyte.

\- Not detected.

Table 5-11. Summary of Well Construction and Survey Data, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Well Designation	Installation Date	Elevation[a] of Measuring Point[b]	Depth[c] of Well	Screen Length (ft)	Depth[c] of Screen	Elevation[a] of Screened Interval	Elevation[a] of Land Surface
NS-9	10/25/91	982.31	20.0	15.0	5.0 - 20.0	978.0 - 963.0	983.0
NS-10	11/15/91	984.45	20.0	15.0	5.0 - 20.0	979.8 - 964.8	984.8
NS-11	12/10/91	984.37	20.0	15.0	5.0 - 20.0	979.8 - 964.8	984.8

---

[a] In feet above mean sea level.

[b] Measuring point is the black mark on top of the PVC casing.

[c] In feet below land surface.

Table 5-12. Summary* of Volatile Organic Compounds Detected in Ground-Water Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Analyte (ug/L)	Well Number: Collection Date:	NS-1 1/31/92	NS-9 12/19/91	NS-9** 12/19/91	NS-10 12/19/91	NS-11 12/19/91	Trip Blank
Vinyl Chloride		2,400	-	-	-	-	-
Methylene Chloride		860 B	8 BJ	20 B	9 BJ	10 B	10 B
1,2-Dichloroethene (total)		210	3 J	2 J	2 J	-	-
1,1,1-Trichloroethane		24 J	-	-	-	-	-
Benzene		41 J	1 J	1 J	2 J	-	-
Chlorobenzene		350	13	11	3 J	-	-
Xylene (total)		-	-	-	21	-	-
chloroethene		-	4 J	-	-	-	-

---

* Only detected analytes are shown.

** Field duplicate sample.

ug/L - Micrograms per liter (ppb).

B - Indicates the compound was found in the associated blank as well as in the sample.

J - Indicates an estimated value less than the sample quantitation limit.

\- Not detected.

Table 5-13. Summary* of Semivolatile Organic Compounds Detected in Ground-Water Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Analyte (ug/L)	Well Number: Collection Date:	NS-1 1/31/92	NS-9 12/19/91	NS-9** 12/19/91	NS-10 12/19/91	NS-11 12/19/91
2-Picoline		-	-	-	1 J	-
1,2-Dichlorobenzene		4J	-	-	-	-
1,3-Dichlorobenzene		24	-	1 J	7 J	-
1,4-Dichlorobenzene		80	1 J	2 J	39	1 J
1,2,4-Trichlorobenzene		2J	-	-	-	-
Benzoic Acid		-	-	1 J	-	1 J
Bis-(2-Ethylhexyl)phthalate		3J	3 J	4 BJ	2 BJ	1 BJ
Acetophenone		-	-	-	3 J	-
Naphthalene		-	-	-	2 J	-

---

* Only detected analytes are shown.
** Field duplicate sample.
ug/L - Micrograms per liter (ppb).
B - Indicates the compound was found in the associated blank as well as in the sample.
J - Indicates an estimated value less than the sample quantitation limit.

le 5-14. Summary* of Metals Detected in Ground-Water Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Well Number: Collection Date: Analyte (ug/L)	NS-1 1/31/92	NS-9 12/19/91	NS-9 + 12/19/91	NS-10 12/19/91	NS-11 12/19/91	MW-3 1/31/92
Aluminum	136B	1,760 N**	2,030 N**	3,170 N**	5,200 N**	514
Arsenic	-	6.1 B	4.8 B	6.2 B	10.3 W	137
Barium	71.2B	64.9 B	67.3 B	287	85.5 B	3,640
Calcium	89,300	72,600	73,700	48,500	66,000	87,600
Cobalt	-	-	-	-	-	8.3B
Copper	-	18.9 B	19.6 B	31.5	39.1	33.7
Iron	2,370	3,670	3,980	28,600	14,500	38,700
Lead	-	5.8 N**	6.0 WN**	36.7 N**	21.2 N**	140
Magnesium	35,700	30,500	30,800	8,690	28,500	56,100
Manganese	502	841	854	680	731	106
Mercury	-	-	-	-	0.36 N	-
Nickel	-	-	-	-	-	67.5
Potassium	5,480	4,540 B	5,240	5,670	4,980 B	10,700
Sodium	36,800E	162,000 E	162,000 E	119,000 E	38,100 E	16,200E
nadium	-	-	-	7.0 B	7.4 B	-
c	38.9	49.4	53.8	66.1	82.0	5,830

---

* Only detected analytes are shown.

ug/L - Micrograms per liter (ppb).

\+ Field duplicate sample.

** Indicates sample matrix duplicate was outside control limits.

B - Indicates the reported value is less than the contract required detection limit (CRDL), but greater than the instrument detection limit (IDL).

E - Indicates the reported value is estimated because of the presence of interference.

N - Indicates sample matrix spike analysis was outside control limits.

- Indicates slight matrix-related interference for the analyte.

\- Not detected.

Table 5-15. Summary* of Cyanide, Dioxin/Furan Compounds, and Sulfide Detected in Ground-Water Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

	Well Number:	NS-1	NS-9	NS-9**	NS-10	NS-11
Analyte	Collection Date:	1/31/92	12/19/91	12/19/91	12/19/91	12/19/91
Cyanide (ug/L)			-	-	-	25.3
Dioxins/Furans (ng/L)						
OCDD		1.6	-	-	-	4.1
2,3,7,8 TCDF		1.6				
TCDF		8.0				
PeCDF		21.6				
HxCDF		35.1				
HpCDF		11.8				
OCDF		5.0				
Sulfide (mg/L)		5.1	-	-	-	3.2

---

* Only detected analytes are shown.

** Field duplicate sample.

ug/L - Micrograms per liter (ppb).

ng/L - Nanograms per liter (ppt).

mg/L - Milligrams per liter (ppm).

\- Not detected.

Table 5-16. Summary* of OrganoChlorine Pesticides/Polychlorinated Biphenyls (PCBs) Detected in Ground-Water Samples, Newell Street Site, GE Company, Pittsfield, Massachusetts.

Analyte (ug/L)	Well Number: Sample Date:	NS-1 1/31/92	NS-9 12/19/91	NS-9** 12/19/91	NS-10 12/19/91	NS-11 12/19/91
Aldrin		-	-	-	-	0.18
PCB-1254		520	-	-	-	-

---

*Only detected analytes are shown.

**Field duplicate sample.

ug/L Micrograms per liter (ppb).

- Not detected.

TABLE 7-1

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II REPORT
FOR THE NEWELL STREET SITE

PHYSICAL CHARACTERISTICS OF SELECT CONSTITUENTS

Constituent[1]	Water Solubility	LOG Kow	Vapor Pressure
Volatiles			
Methylene chloride	1.3E+4 mg/l at 25°C	0.91	4309.7 mm Hg at 30°C
Acetone	Miscible	-0.24	231 mm Hg at 25°C
1,2-Dichloroethene	600 mg/l at 20°C	1.48	200 mm Hg at 14°C
Chlorobenzene	471.7 mg/l at 25°C	2.84	11.9 mm Hg at 25°C
Benzene	1,791 mg/l at 25°C	2.13	95.2 mm Hg at 25°C
Xylene	175 mg/l at 25°C	3.12	6.6 mm Hg at 25°C
Trichloroethene	1,100 mg/l at 25°C	2.29	57.9 mm Hg at 20°C
Semivolatiles			
Phenol	8.7E+4 mg/l at 25°C	1.46	0.524 mm Hg at 25°C
2,4-Dimethylphenol	6,200 mg/l at 25°C	2.30	0.098 mm Hg at 25°C
Acenaphthylene	3.93 mg/l	4.07	0.001 to 0.01 mm Hg at 20°C
Phenanthrene	1.00/1.29 mg/l at 25°C	4.46	6.8E-4 mm Hg at 20°C
Anthracene	0.045/0.073 mg/l at 25°C	4.45	1.95E-4 mm Hg at 20°C
Fluoranthene	0.26 mg/l at 25°C	5.33	1.0E-6 to 1.0E-4 mm Hg at 20°C
Pyrene	0.14/0.132 mg/l at 25°C	5.32	6.85E-7 mm Hg at 20°C

See Notes on Page 3

TABLE 7-1 (Cont'd)

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II REPORT
FOR THE NEWELL STREET SITE

PHYSICAL CHARACTERISTICS OF SELECT CONSTITUENTS

Constituent	Water Solubility	LOG Kow	Vapor Pressure
Semi-Volatiles (Cont'd)			
Benzo(a)anthracene	0.14/0.009 mg/l at 25°C	5.61	5.0E-9 mm Hg at 20°C
Benzo(b)fluoranthene	NA	6.57	1.0E-11 to 1.0E-6 mm Hg at 20°C
Benzo(k)fluoranthene	NA	6.84	9.59E-11 mm Hg at 20°C
Benzo(a)pyrene	0.0038 mg/l at 25°C	6.04	5.0E-9 mm Hg
Indeno(1,2,3-cd)pyrene	NA	7.66	1.0E-10 mm Hg at 25°C
Dibenzo(a,h)anthracene	5.0E-4 mg/l at 25°C	5.97	1.0E-10 mm Hg at 25°C
Benzo(g,h,i)perylene	2.6E-4 mg/l at 25°C	7.23	1.0E-10 mm Hg at 25°C
Fluorene	1.98/1.69 mg/l	4.18	0.001 to 0.01 mm Hg at 20°C
Acenaphthene	3.42 mg/l	4.33	0.001 to 0.01 mm Hg at 20°C
Naphthalene	31.7 mg/l at 25°C	3.30	0.082 mm Hg at 25°C
1-Methylnaphthalene	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA
Chrysene	0.002 mg/l at 25°C	5.61	1.0E-11 to 1.0E-6 mm Hg at 20°C
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,4-Trichlorobenzene	30 mg/l at 25°C	4.26	0.42 mm Hg at 25°C
1,4-Dichlorobenzene	79 mg/l at 25°C	3.39	1.18 mm Hg at 25°C
1,3-Dichlorobenzene	123 mg/l at 25°C	3.38	2.28 mm Hg at 25°C

See Notes on Page 3

TABLE 7-1 (Cont'd)

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II REPORT
FOR THE NEWELL STREET SITE

PHYSICAL CHARACTERISTICS OF SELECT CONSTITUENTS

Constituent	Water Solubility	LOG Kow	Vapor Pressure
Semi-Volatiles (Cont'd)			
1,2-Dichlorobenzene	145 mg/l at 25°C	3.38	1.5 mm Hg at 25°C
1,2,3,5-Tetrachlorobenzene	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	NA	NA	NA
Bis(2-ethylhexyl)phthalate	0.4/1.3 mg/l at 25°C	8.73/5.3	<0.01/2E-7 mm Hg at 20°C
Aniline	NA	NA	NA
PCBs			
Aroclor 1242	0.13/0.24 mg/l	4.11	4.06E-4 mm Hg at 25°C
Aroclor 1254	0.012/0.056 mg/l	6.03	7.71E-5 mm Hg at 25°C
Aroclor 1260	0.0027 mg/l	7.14	4.05 mm Hg at 25°C

Notes:

[1] = Represents those chemicals detected in soils and/or ground water above the method detection limits.

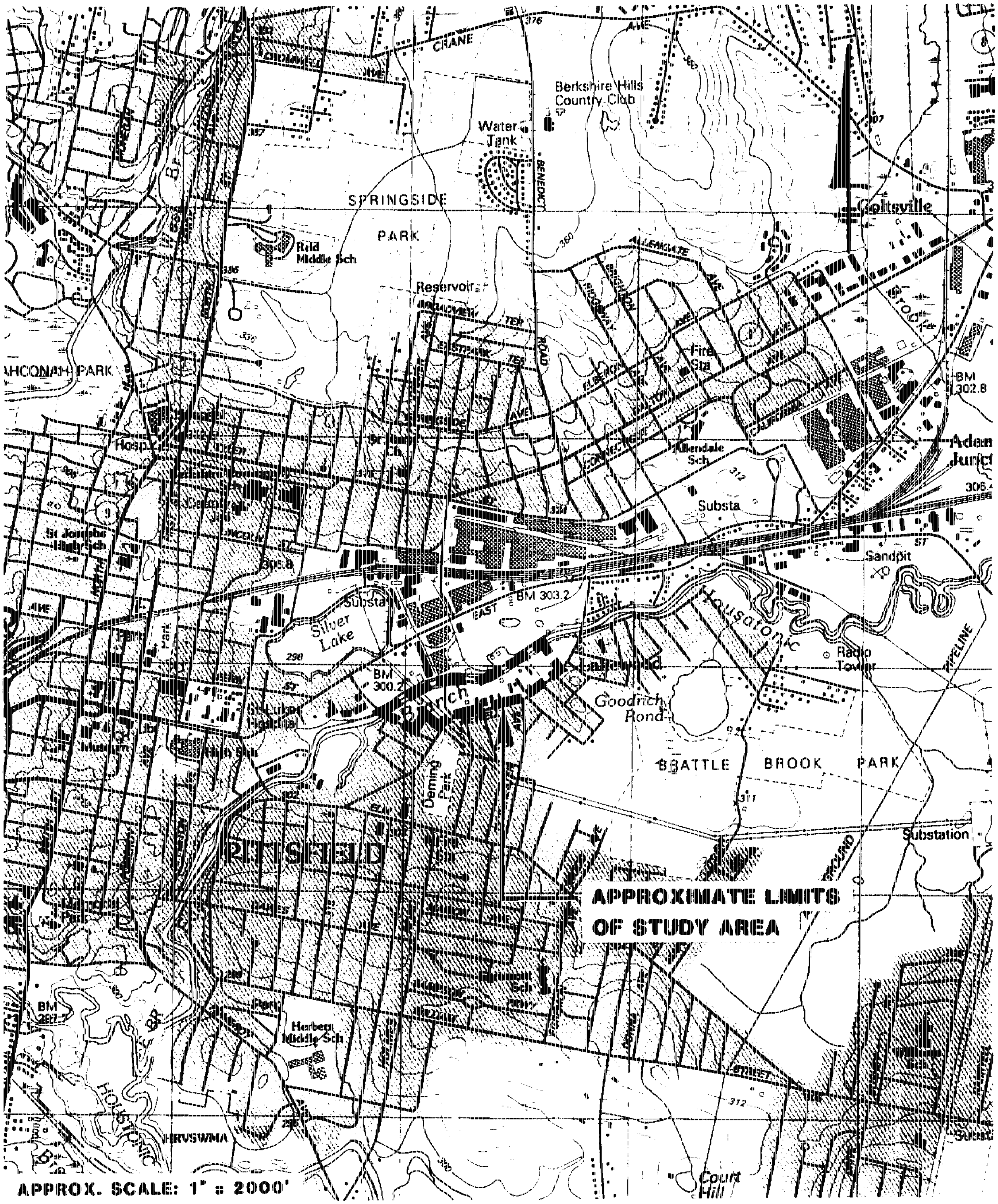
NA = Not Available

Reference:

(Howard, 1989; 1990; 1991; and USEPA, 1979).

Figures

FIGURE 2-1

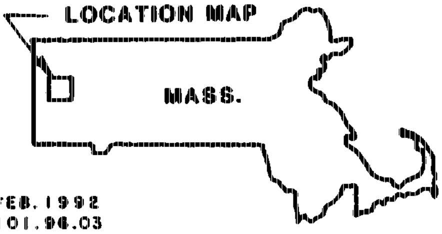


APPROX. SCALE: 1" = 2000'

REFERENCE: PITTSFIELD EAST QUAD.

GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II - NEWELL STREET SITE

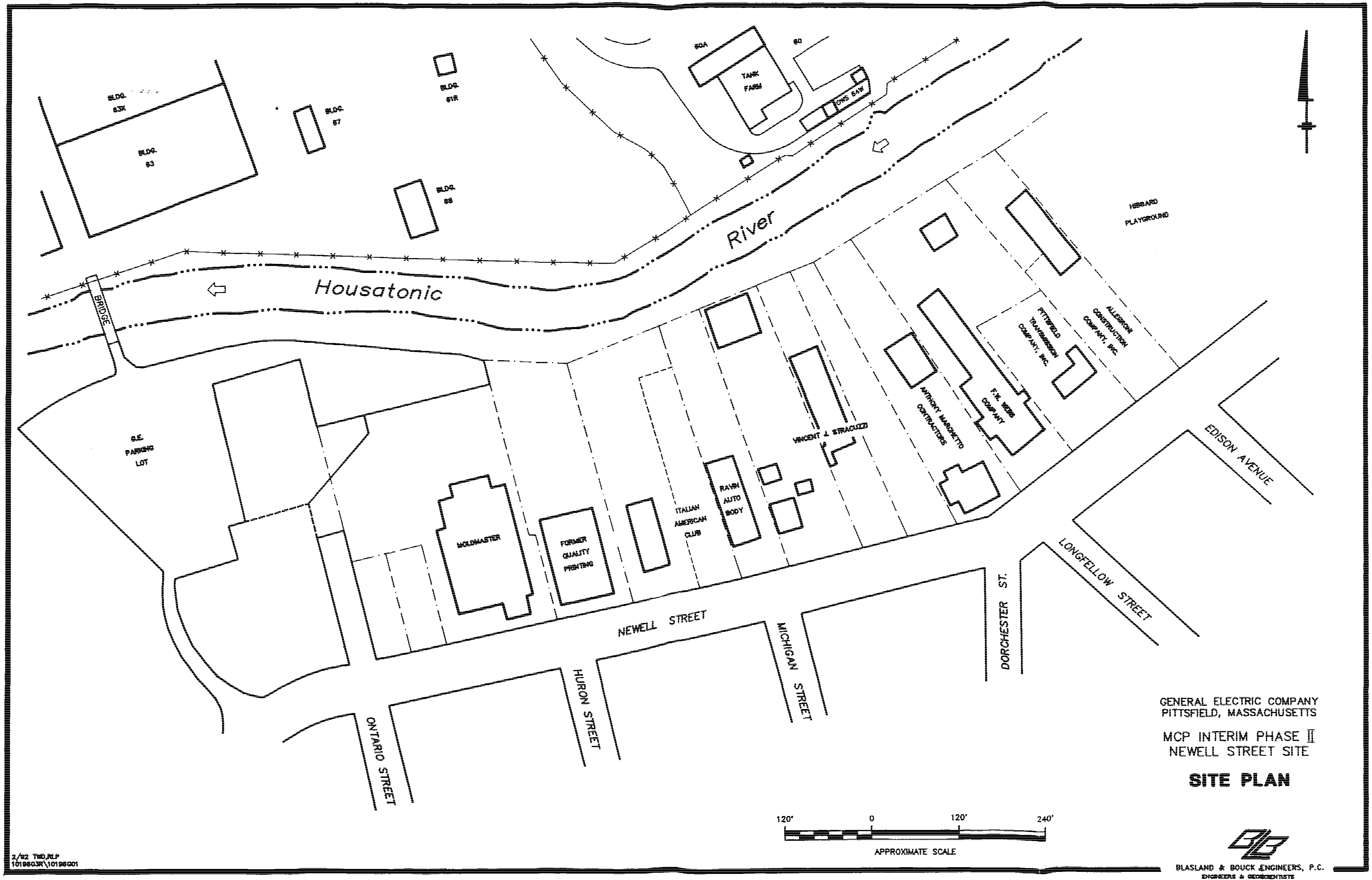


LOCATION PLAN

FEB. 1992
101.96.03

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

FIGURE 2-2



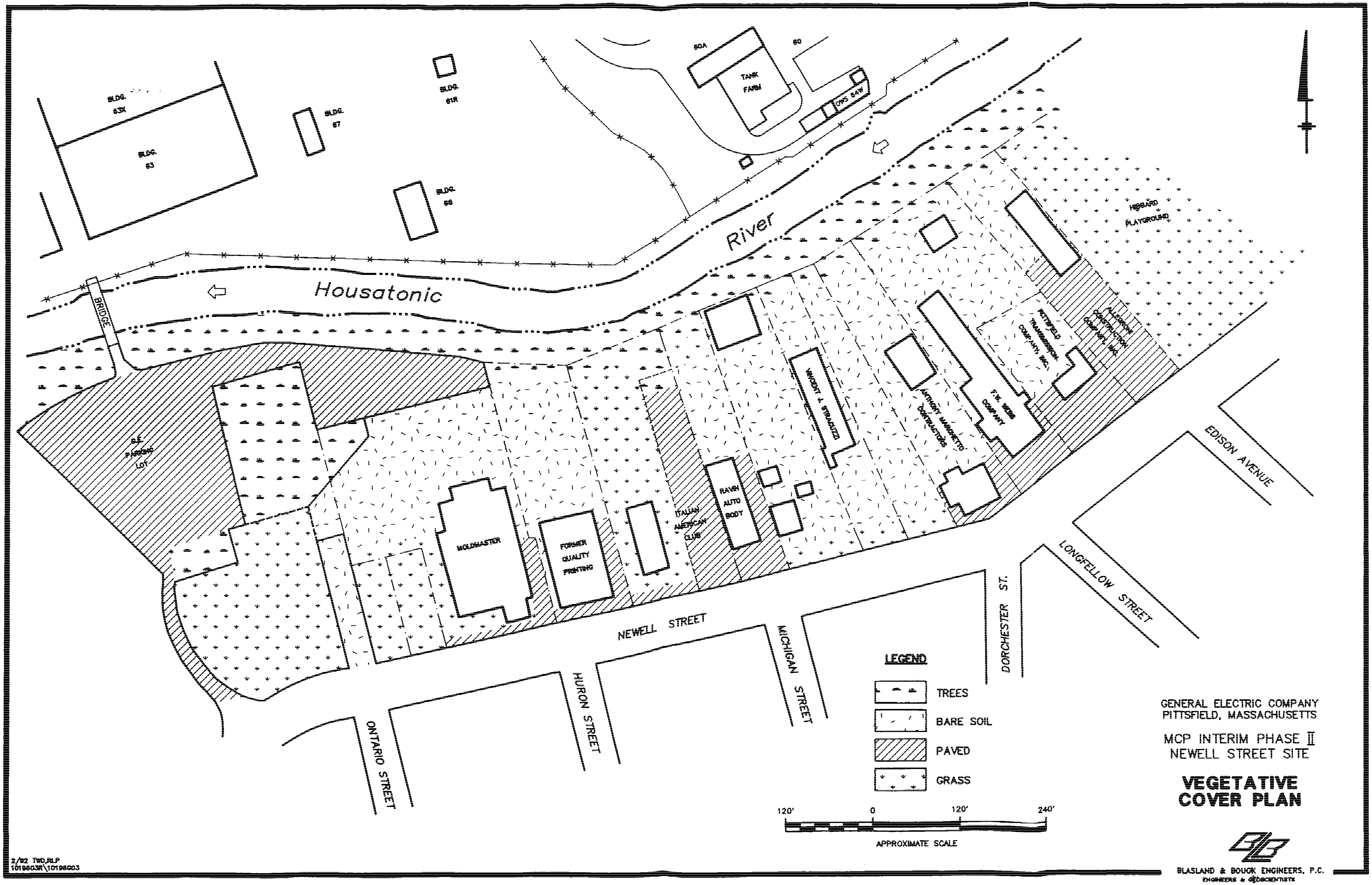
GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II
NEWELL STREET SITE

SITE PLAN

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

FIGURE 2-3



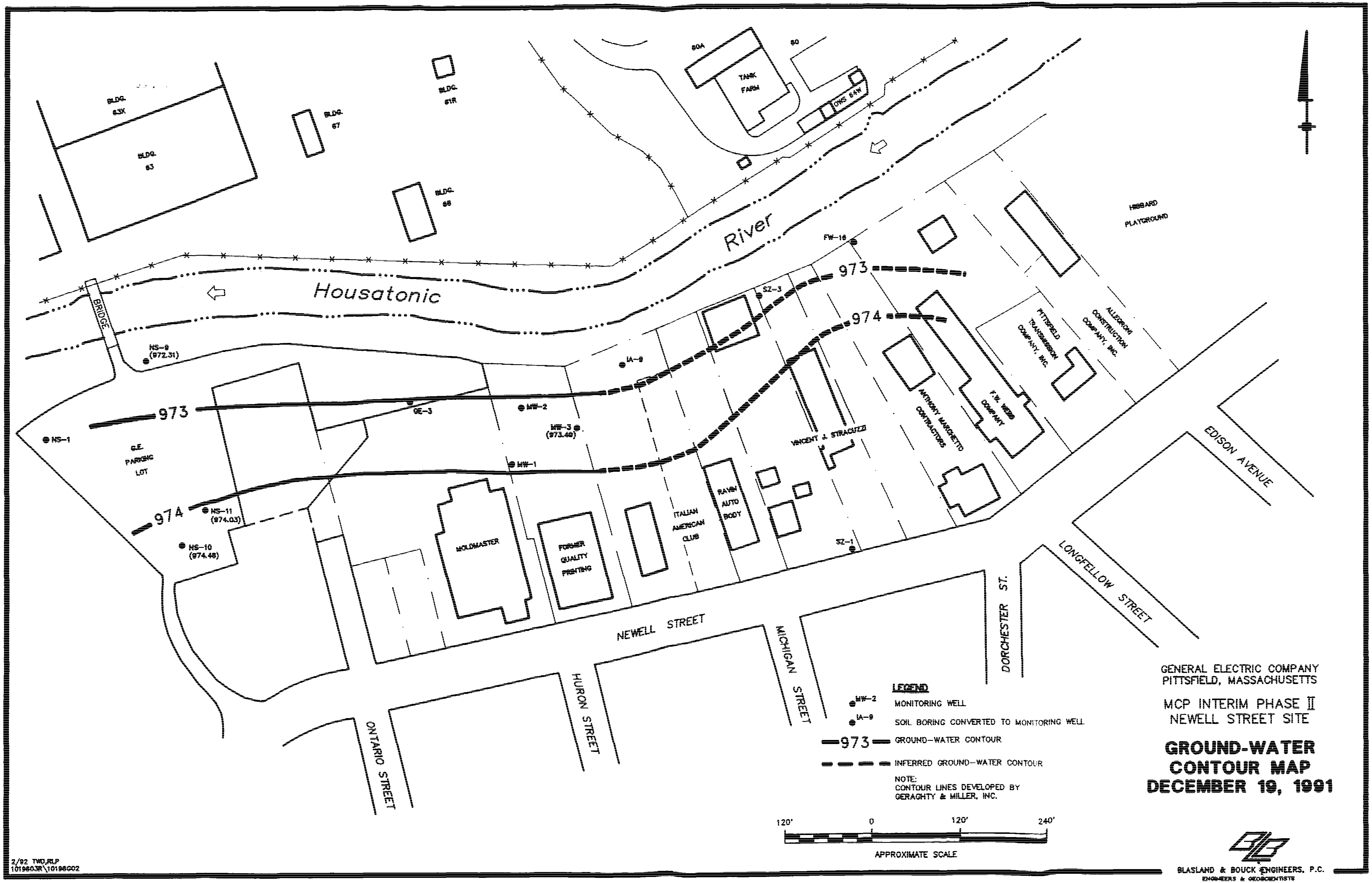
GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II
NEWELL STREET SITE

VEGETATIVE COVER PLAN

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

FIGURE 2-4



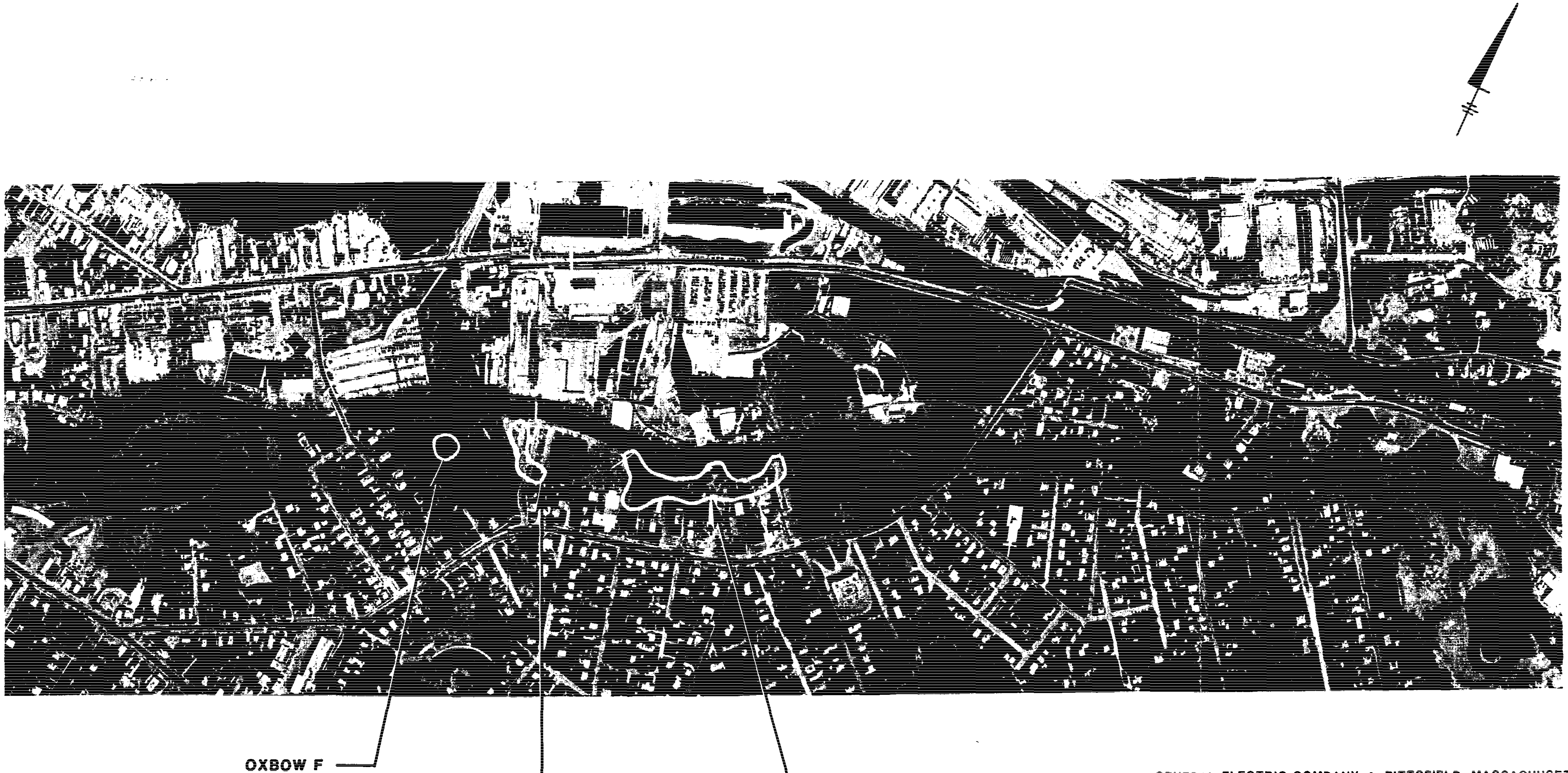
NOTE:
CONTOUR LINES DEVELOPED BY GERAGHTY & MILLER, INC.

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II
NEWELL STREET SITE

GROUND-WATER CONTOUR MAP
DECEMBER 19, 1991

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS



NOTE:

OXBOW LOCATIONS ARE APPROXIMATE,
DETERMINED FROM CITY OF PITTSFIELD
HISTORIC RECHANNELIZATION MAP (1940)
AND AVAILABLE HISTORIC AERIAL PHOTOGRAPHS

GENERAL ELECTRIC COMPANY • PITTSFIELD, MASSACHUSETTS

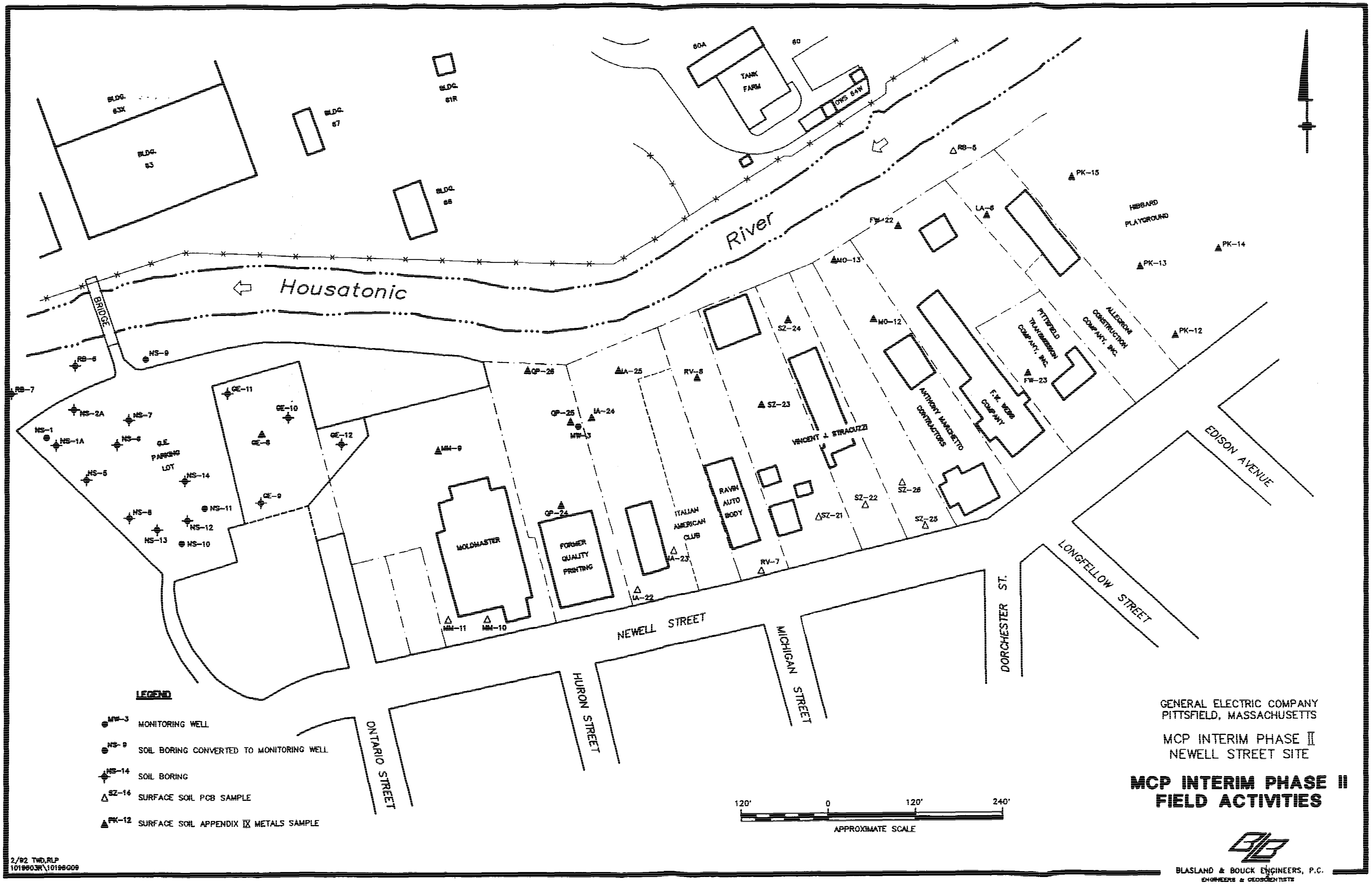
MCP INTERIM PHASE II
NEWELL STREET SITE

HISTORICAL
1990 AERIAL PHOTOGRAPH
SHOWING FORMER HOUSATONIC RIVER OXBOWS
IN THE VICINITY OF NEWELL STREET

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

FEB. 1992
101.96.05

FIGURE 5-1

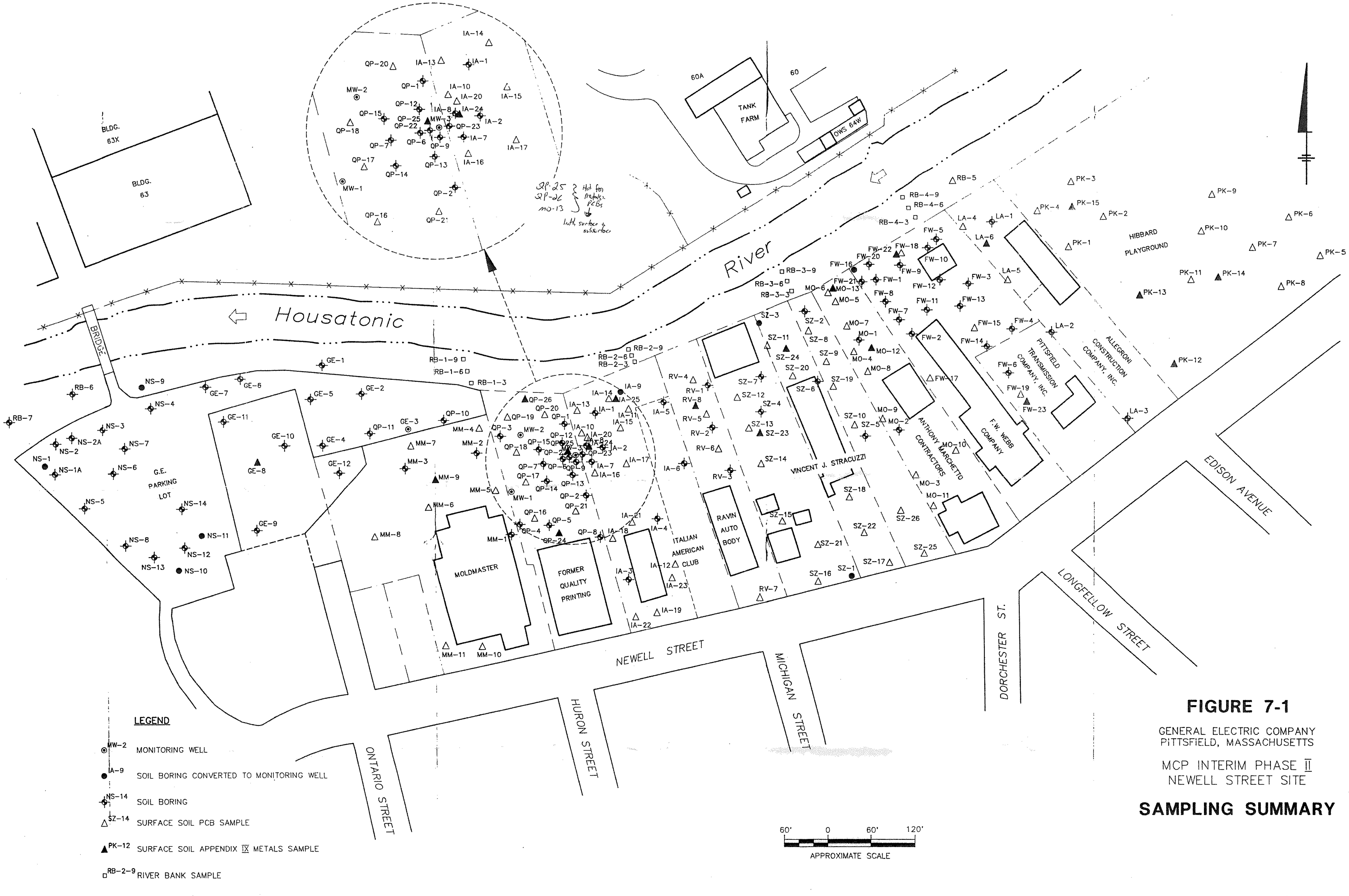


GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II
NEWELL STREET SITE

MCP INTERIM PHASE II
FIELD ACTIVITIES

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS



QP-25
QP-26
MO-13
} Hot for metals & PCBs
both surface & subsurface

LEGEND

⊙ MW-2	MONITORING WELL
● IA-9	SOIL BORING CONVERTED TO MONITORING WELL
⊕ NS-14	SOIL BORING
△ SZ-14	SURFACE SOIL PCB SAMPLE
▲ PK-12	SURFACE SOIL APPENDIX IX METALS SAMPLE
□ RB-2-9	RIVER BANK SAMPLE

60' 0 60' 120'
APPROXIMATE SCALE

FIGURE 7-1

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II
NEWELL STREET SITE

SAMPLING SUMMARY

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

05-0016

NS-3 ▲

Depth(ft)	PCBs(ppm)
0-4	240
4-8	20
8-12	1.3

RB-6 △

DEPTH(ft)	PCBs(ppm)
0-2	45
2-4	4

NS-2A △

DEPTH(ft)	PCBs(ppm)
0-2	0.64
2-4	9100
4-6	2000
4-6**	25
6-8	2800
8-10	320
10-12	1.8
12-14	6.3
14-16	1000
16-18	1100
18-20	60
20-22	0.53
22-24	8.5

NS-5 △

DEPTH(ft)	PCBs(ppm)
0-2	1200
2-4	48
4-6	2100
6-8	590
6-8**	5700
8-10	0.55
10-12	29
12-14	3.5

NS-2 ▲

Depth(ft)	PCBs(ppm)
0-4	220
4-8	200
8-12	260

NS-1A △

DEPTH(ft)	PCBs(ppm)
0-2	3700
2-4	8400
4-6	9900
6-8	12000
8-10	33
10-12	3400
12-14	1300
14-16	1500
16-18	11
18-20	3.8
20-22	9.5
22-24	29

RB-7 △

DEPTH(ft)	PCBs(ppm)
0-2	1200
2-4	155

NS-1 ▲

Depth(ft)	PCBs(ppm)
0-4	8500
4-8	12000
8-12	310

NS-14 △

DEPTH(ft)	PCBs(ppm)
0-2	210
2-4	92
4-6	320
6-8	120
8-10	320
10-12	480
12-14	310

NS-8 △

DEPTH(ft)	PCBs(ppm)
0-2	1.1
2-4	46
4-6	5200
6-8	80000
8-10	13
10-12	850
12-14	4500

NS-13 △

DEPTH(ft)	PCBs(ppm)
0-2	2100
2-4	26
4-6	4500
8-10	32000
10-12	42000
10-12**	76000
12-14	460
14-16	1600

NS-12 △

DEPTH(ft)	PCBs(ppm)
0-2	11
2-4	12
4-6	23
6-8	4400
8-10	104
10-12	140
12-14	1400
14-16	680

NS-10 △

DEPTH(ft)	PCBs(ppm)
0-2	44
2-4	4.7
4-6	12.1
6-8	49
8-10	250
10-12	420
10-12**	520
12-14	380
14-16	44
16-18	2.1
18-20	2.7

NS-6 △

DEPTH(ft)	PCBs(ppm)
0-2	280
2-4	17000
4-6	53000
6-8	3400
8-10	2700
10-12	24
12-14	4

NS-7 △

DEPTH(ft)	PCBs(ppm)
0-2	190
2-4	500
6-8	130
8-10	280
10-12	20
12-14	0.53
14-16	0.65

NS-9 △

DEPTH(ft)	PCBs(ppm)
0-2	19
2-4	28
4-6	0.06
4-6**	15
6-8	ND
8-10	2.6
10-12	0.94
12-14	11
14-16	0.89
16-18	11
18-20	0.37
20-22	8.2
22-24	10

NS-4 ▲

Depth(ft)	PCBs(ppm)
0-4	31
4-8	0.60
8-12	1.6

GE-7

Depth(ft)	PCBs(ppm)
0-2	1.7
2-4	<0.05
4-6	<0.05

GE-6

Depth(ft)	PCBs(ppm)
0-2	7.4
2-4	<0.05
4-6	<0.05

GE-5

Depth(ft)	PCBs(ppm)
0-2	0.57
2-4	250
4-6	<0.05
6-8	<0.05

GE-1

Depth(ft)	PCBs(ppm)
0-2	8.7
2-4	22
4-6	0.05

GE-4

Depth(ft)	PCBs(ppm)
0-2	0.17
2-4	8.9
4-6	7.9
6-8	<0.05

GE-12 △

DEPTH(ft)	PCBs(ppm)
0-2	ND
2-4	ND
4-6	0.06
6-8	ND
8-10	ND
10-12	ND

GE-2

Depth(ft)	PCBs(ppm)
0-4	140
4-8	170

QP-11

Depth(ft)	PCBs(ppm)
0-2	1.7
2-12	<0.05

QP-1

Depth(ft)	PCBs(ppm)
0-10	36
10-14	<0.05

QP-12

Depth(ft)	PCBs(ppm)
0-2	350
2-4	100
4-6	95
6-8	350
8-10	140
10-12	170
12-14	0.28

QP-14

Depth(ft)	PCBs(ppm)
0-2	36
2-4	330
4-6	260
6-8	380
8-10	520
10-12	280
12-14	12

QP-7

Depth(ft)	PCBs(ppm)
0-8	62
8-14	0.28

QP-15

Depth(ft)	PCBs(ppm)
0-2	80
2-4	290
4-6	150
6-8	690
8-10	110
10-12	0.88

QP-6

Depth(ft)	PCBs(ppm)
0-10	17,000
10-14	0.66

QP-13

Depth(ft)	PCBs(ppm)
0-2	2.9
2-4	2.4
4-6	21
6-8	210
10-12	1.4
12-14	0.23

QP-9

Depth(ft)	PCBs(ppm)
0-2	850
2-4	120,000
4-6	290,000
6-8	61
8-10	33
10-12	60.
12-14	0.34

IA-1

Depth(ft)	PCBs(ppm)
0-10	200
10-14	0.47

IA-9

Depth(ft)	PCBs(ppm)
0-2	42
2-4	63
4-6	7.9
6-8	320
8-10	0.28
10-12	0.28
12-14	0.65
14-16	0.17

IA-5

Depth(ft)	PCBs(ppm)
0-10	1,300
10-16	0.66

RV-1

Depth(ft)	PCBs(ppm)
0-2	3.6
2-4	120
4-6	100
6-8	350
8-10	61
10-12	53
12-14	0.34
14-16	8.9

SZ-3

Depth(ft)	PCBs(ppm)
0-8	350
8-12	0.33

SZ-7

Depth(ft)	PCBs(ppm)
0-12	24
12-16	<0.05

SZ-4

Depth(ft)	PCBs(ppm)
0-2	1.1
2-4	6.5
4-6	320
6-8	21
10-12	430
12-14	20

SZ-2

Depth(ft)	PCBs(ppm)
0-6	160
6-12	6.0

FW-16

Depth(ft)	PCBs(ppm)
0-2	130
2-4	62
4-6	920
6-8	2,300
8-10	0.39
10-12	1.0
12-14	0.27

FW-1

Depth(ft)	PCBs(ppm)
0-2	17
2-4	210
4-6	49
6-8	61
8-10	66
10-12	3.2
12-14	0.85
14-16	<0.05
16-18	<0.05

FW-8

Depth(ft)	PCBs(ppm)
0-4	6.8

FW-9

Depth(ft)	PCBs(ppm)
0-4	2.3

LA-1

Depth(ft)	PCBs(ppm)
0-2	0.42
2-4	<0.05
4-6	<0.05
6-8	0.13
8-10	<0.05
10-12	<0.05

FW-5

Depth(ft)	PCBs(ppm)
0-4	0.39
4-10	<0.05

FW-10

Depth(ft)	PCBs(ppm)
0-4	1.7

FW-12

Depth(ft)	PCBs(ppm)
0-4	14

FW-3

Depth(ft)	PCBs(ppm)
0-6	0.06
6-10	<0.05

FW-13

Depth(ft)	PCBs(ppm)
0-4	0.63

LA-2

Depth(ft)	PCBs(ppm)
2-6	1.3
6-12	<0.05

FW-4

Depth(ft)	PCBs(ppm)
0-4	5.5
6-12	0.64

LA-3

Depth(ft)	PCBs(ppm)
0-10	<0.05

FW-6

Depth(ft)	PCBs(ppm)
0-10	5.2
10-16	1.1

FW-14

Depth(ft)	PCBs(ppm)
0-4	25

NS-11 △

DEPTH(ft)	PCBs(ppm)
0-2	1.8
2-4	110
4-6	3700
6-8	8800
8-10	790
10-12	470
14-16	5.5
16-18	0.18
18-20	0.12

GE-11 △

DEPTH(ft)	PCBs(ppm)
0-2	3800
2-4	1.7
4-6	ND
6-8	1.8
8-10	5.1
10-12	0.49

GE-9 △

DEPTH(ft)	PCBs(ppm)
0-2	3.3
2-4	10
4-6	ND
6-8	ND
8-10	0.12

GE-10 △

DEPTH(ft)	PCBs(ppm)
0-2	930
2-4	6.4
4-6	0.07
6-8	ND
8-10	0.68
10-12	1.9

MM-3

Depth(ft)	PCBs(ppm)
0-2	0.24
2-4	0.36
4-6	<0.05
8-10	0.11
10-12	<0.05

QP-10

Depth(ft)	PCBs(ppm)
0-8	94
8-12	0.06

MM-2

Depth(ft)	PCBs(ppm)
0-12	7.0
12-14	0.92

QP-3

Depth(ft)	PCBs(ppm)
0-2	380
2-4	110
4-6	170
6-8	84
8-10	130
10-12	6.5
12-14	0.05
14-16	0.29

MM-1

Depth(ft)	PCBs(ppm)
0-8	25
8-16	0.10

QP-4

Depth(ft)	PCBs(ppm)
0-14	0.20
14-18	<0.05

QP-5

Depth(ft)	PCBs(ppm)
0-2	<0.05
2-4	0.06
4-6	410
6-8	240
8-10	55
10-12	0.07
12-14	<0.05

IA-8

Depth(ft)	PCBs(ppm)
0-2	550
2-4	280
4-6	1,400
6-8	23,000
8-10	670
10-12	590
12-14	1.6

IA-4

Depth(ft)	PCBs(ppm)
0-4	19
4-8	0.32

IA-3

Depth(ft)	PCBs(ppm)
0-2	0.63
2-8	<0.05

IA-2

Depth(ft)	PCBs(ppm)
0-2	150
2-4	84
4-6	57
6-8	28
8-10	39
10-12	70.
12-14	2.2

QP-8

Depth(ft)	PCBs(ppm)
0-4	0.65
4-8	0.13

IA-7

Depth(ft)	PCBs(ppm)
0-2	110
2-4	0.66
4-6	4.6
6-8	300
12-14	8.9

QP-2

Depth(ft)	PCBs(ppm)
0-12	16
12-20	0.60

RV-3

Depth(ft)	PCBs(ppm)
0-2	0.5
2-4	0.16
4-6	16
6-8	<0.05
8-10	0.09
10-12	0.10

RV-2

Depth(ft)	PCBs(ppm)
0-2	<0.05
2-4	2.6
4-6	2
6-8	1,100
8-10	2.6
10-12	0.28
12-14	<0.05
14-16	0.15

IA-6

Depth(ft)	PCBs(ppm)
0-10	330
10-14	0.14

SZ-5

Depth(ft)	PCBs(ppm)
0-6	10
6-8	<0.05

SZ-1

Depth(ft)	PCBs(ppm)
0-4	0.08
4-10	<0.05

SZ-6

Depth(ft)	PCBs(ppm)
0-12	11
12-14	<0.06

FW-11

Depth(ft)	PCBs(ppm)
0-4	21

FW-2

Depth(ft)	PCBs(ppm)
0-6	22
6-12	0.05

FW-7

Depth(ft)	PCBs(ppm)
0-4	400

MO-2

Depth(ft)	PCBs(ppm)
0-6	8.9
6-12	0.29

MO-1

Depth(ft)	PCBs(ppm)
0-2	140
2-4	37
4-6	380
6-8	0.48
8-10	23
10-12	3.3

LEGEND

● IA-9	SOIL BORING CONVERTED TO MONITORING WELL
⊕ NS-14	SOIL BORING
*	THESE BORINGS WERE ANALYZED FOR PRIORITY POLLUTANT METALS ONLY.
**	DUPLICATE SAMPLE
▲	THESE BORINGS WERE ALSO ANALYZED FOR VOC's AND BASE/NEUTRAL ORGANICS.
△	THESE BORINGS WERE ALSO ANALYZED FOR APPENDIX IX CONSTITUENTS.
ND	NOT DETECTED
—50ppm—	PCB ISOCONCENTRATION (DASHED LINE REPRESENTS AN APPROXIMATION TO ACCOUNT FOR PHYSICAL STRUCTURES, SEE NOTE 1)
▨	>50ppm PCB CONCENTRATION

60' 0 60' 120'

APPROXIMATE SCALE

NOTE:

1. ISOCONCENTRATION LINES HAVE BEEN DEVELOPED BASED ON A COMPUTER GENERATED INTERPOLATION/EXTRAPOLATION OF AVAILABLE DATA. MODIFICATIONS TO THIS METHOD OF DELINEATION HAVE BEEN INCORPORATED TO ACCOUNT FOR THE PRESENCE OF PHYSICAL STRUCTURES.

FIGURE 7-2

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II
NEWELL STREET SITE

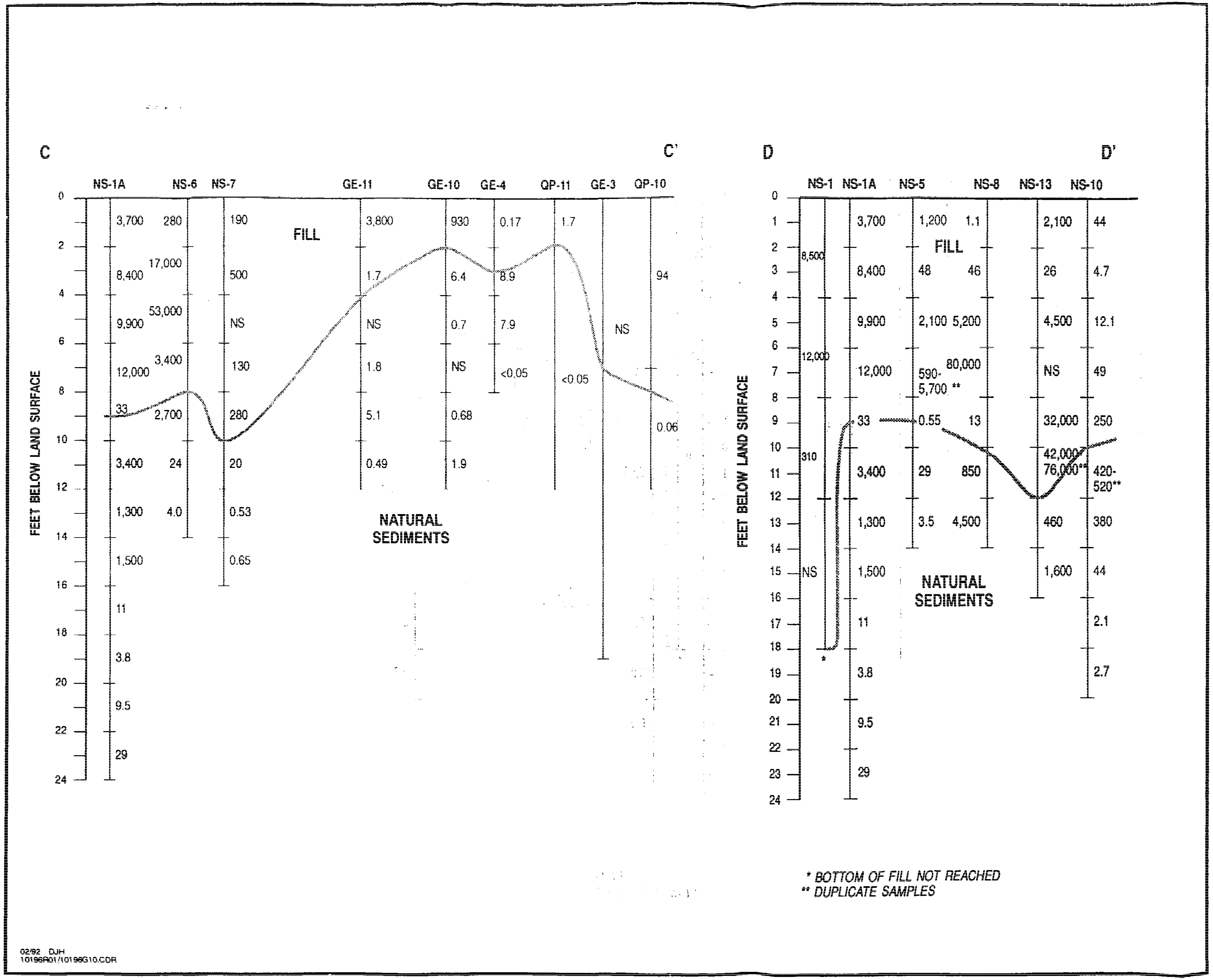
SOIL BORING LOCATIONS AND SUBSURFACE PCB DATA

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

2/92 TWD,RLP
10106103R/10106005

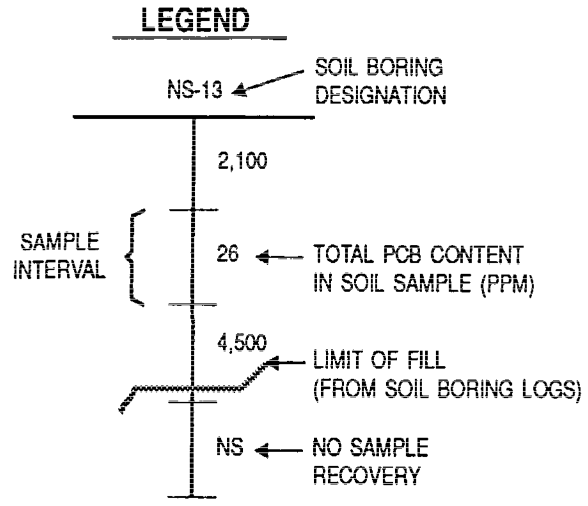
05-0016

FIGURE 7-3



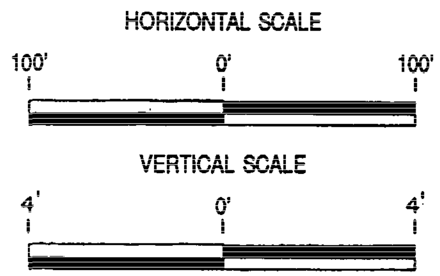
** BOTTOM OF FILL NOT REACHED*
*** DUPLICATE SAMPLES*

02/92 DJH
10196R01/10196G10.CDR

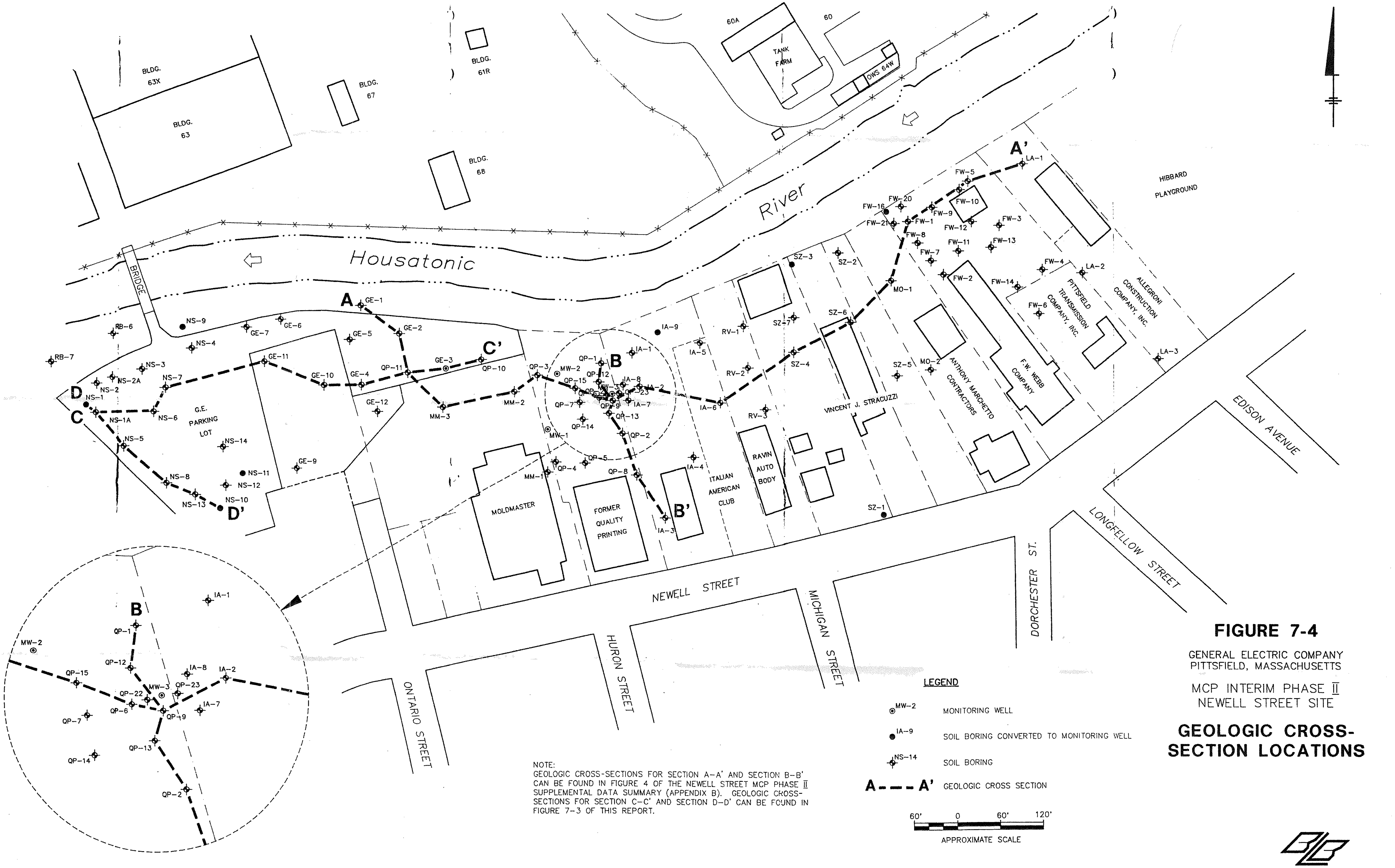


GENERAL ELECTRIC COMPANY
PITTSFIELD, MA.
MCP INTERIM PHASE II - NEWELL STREET SITE

GEOLOGIC CROSS-SECTIONS GENERAL ELECTRIC PARKING LOT



BLASLAND & BOUCK ENGINEERS, P. C.
ENGINEERS & GEOSCIENTISTS



NOTE:
GEOLOGIC CROSS-SECTIONS FOR SECTION A-A' AND SECTION B-B' CAN BE FOUND IN FIGURE 4 OF THE NEWELL STREET MCP PHASE II SUPPLEMENTAL DATA SUMMARY (APPENDIX B). GEOLOGIC CROSS-SECTIONS FOR SECTION C-C' AND SECTION D-D' CAN BE FOUND IN FIGURE 7-3 OF THIS REPORT.

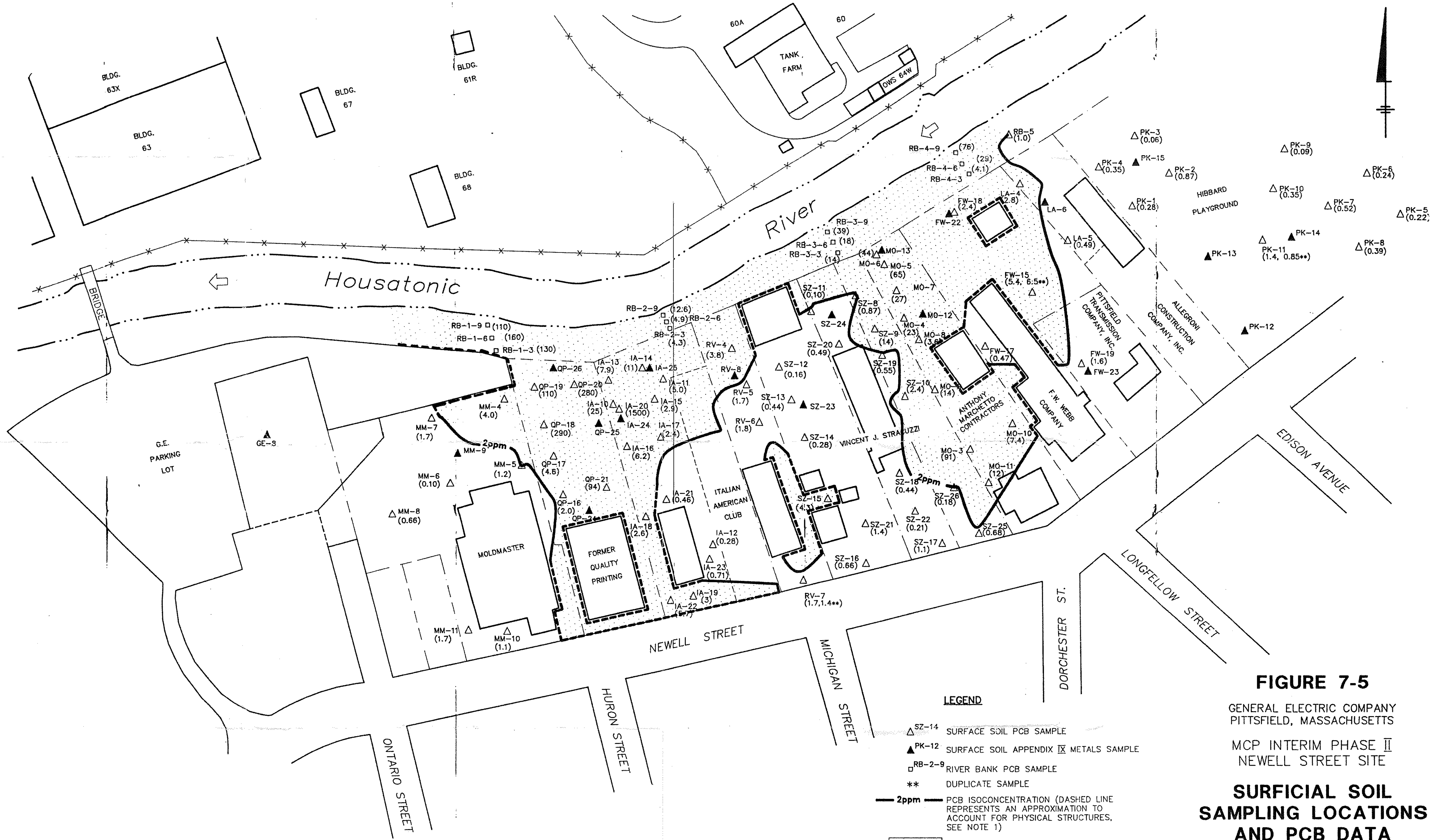
FIGURE 7-4

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II
NEWELL STREET SITE

GEOLOGIC CROSS-SECTION LOCATIONS

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS



LEGEND

△SZ-14	SURFACE SOIL PCB SAMPLE
▲PK-12	SURFACE SOIL APPENDIX IX METALS SAMPLE
□RB-2-9	RIVER BANK PCB SAMPLE
**	DUPLICATE SAMPLE
— 2ppm —	PCB ISOCONCENTRATION (DASHED LINE REPRESENTS AN APPROXIMATION TO ACCOUNT FOR PHYSICAL STRUCTURES, SEE NOTE 1)
▨	> 2ppm PCB CONCENTRATION

60' 0 60' 120'

APPROXIMATE SCALE

NOTE:

1. ISOCONCENTRATION LINES HAVE BEEN DEVELOPED BASED ON A COMPUTER GENERATED INTERPOLATION/EXTRAPOLATION OF AVAILABLE DATA. MODIFICATIONS TO THIS METHOD OF DELINEATION HAVE BEEN INCORPORATED TO ACCOUNT FOR THE PRESENCE OF PHYSICAL STRUCTURES.

FIGURE 7-5

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

MCP INTERIM PHASE II
NEWELL STREET SITE

SURFICIAL SOIL SAMPLING LOCATIONS AND PCB DATA

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

05-0016