GZA
GeoEnvironmental, Inc.

Engineers and Scientists

DEC - 1 2003

230802

November 26, 2003
File No. 12.0075418.00

Mr. Gene Fowler
Bureau of Northern Case Management
New Jersey Department of Environmental Protection
401 East State Street
P.O. Box 435
Trenton, New Jersey 08625-0435

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Re: Unimatic Manufacturing Co.
25 Sherwood Lane, Fairfield, New Jersey
ISRA Case # E20010335
Spill Case #01-06-28-1610-13

Dear Mr. Fowler:

At your request, I'm sending you an additional copy of Volume 1 of GZA's Supplemental Remedial Investigation (SRI) report and associated cover letter for the above referenced Site.

If you have any questions regarding the contents of the cover letter or the enclosed report, do not hesitate to call me at (973) 256-7800. Thank you.

Very truly yours,
GZA GeoEnvironmental, Inc.

Benjamin Alter
Vice President

Enclosure: Supplemental Remedial Investigation Report (Volume 1 only)

cc: Bill Friedman, Esq., w/o enclosure

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GZA
GeoEnvironmental, Inc.

Engineers and Scientists

November 7, 2003
File No. 12.0075418.00

Mr. Joseph J. Nowak
Bureau of Northern Case Management
New Jersey Department of Environmental Protection
401 East State Street
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NOV 12 2003

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Re: Unimatic Manufacturing Co.
25 Sherwood Lane, Fairfield, New Jersey
ISRA Case # E20010335
Spill Case #01-06-28-1610-13

Dear Mr. Nowak:

On behalf of our client, Unimatic Manufacturing Company (Unimatic), GZA GeoEnvironmental, Inc. (GZA) is pleased to enclose a Supplemental Remedial Investigation (SRI) report and associated Electronic Data Deliverables (EDDs) regarding the above referenced Site. The field activities documented in this report were conducted in response to the letter from the New Jersey Department of Environmental Protection (Department) received by GZA on April 3, 2003. A copy of this letter is included as an appendix to the report. We are sending this report to your attention because we understand that a new case manager has not yet been assigned to this case.

The April 3, 2003 letter requests additional sampling in various areas of concern as well as additional information and/or clarification of information previously provided to the Department regarding the Site and the investigations previously conducted at the Site. In this cover letter, GZA responds to your requests for additional information in the order in which they are presented in the April 3, 2003 letter.

Soil Investigation

Waste Water Pipes

1. The enclosed report documents GZA's delineation activities in this area of concern. Based on our discussions subsequent to our receipt of the April 3, 2003 letter, GZA mobilized to the Site on October 27, 2003 to remove soils containing more than 100 milligrams per kilogram (mg/kg) of total PCBs. Subsequent groundwater sampling will determine the efficacy of this remedial action in remediating the groundwater at the Site.

2. The enclosed report documents GZA's delineation activities in the area of concern cited by the Department.

3. Several of the samples cited in this comment have been at least partially delineated. Sample SB-27 has been horizontally delineated by sample SB-59. Sample SB-38 has been horizontally delineated by sample SB-40. The area around sample TP-1 has been remediated; post-excavation samples PE-3 and TPE-1 were collected from this area. TPE-1 contained no detectable concentrations of PCBs. GZA is currently working with Jersey City to remediate its northern adjoining property to their satisfaction. The enclosed report documents GZA's supplemental delineation activities in these sampling areas.

4. GZA collected soil samples in the former trench areas and piping outfalls and had them analyzed for PCBs. The results of the sampling and analysis activities are described in the enclosed report.

5. Soil sample OUTFALL-1 was collected at the terminus of the former main waste water pipe. The former northern pipe appears to have discharged into the former main waste water pipe near post-excavation soil sample PE-11. The terminus of this pipe was broken during prior excavation activities, so GZA could not determine whether the two pipes were connected. The analytical results from OUTFALL-1 and PE-11 are documented in GZA's Interim Remedial Action report.

6. As part of the final remedial solution, GZA intends to place an asphalt cap over the soils with total PCB concentrations above 2 mg/kg, except where such soils are covered by the existing building.

7. GZA collected a soil sample from the former location of borehole SB-49. The results of these sampling activities are discussed in the enclosed report. There was no evidence of VOC contamination in borehole SB-36, and no sample was collected at that location.

Historic Fill

1. The soils in the vicinity of sample TP-1 were excavated as part of the interim remedial action conducted at the Site. Post-excavation samples from this and the surrounding area did not contain any targeted metals in concentrations exceeding the most stringent NJDEP soil cleanup criteria. Test pits TP-5 and TP-6 were installed to delineate the historic fill on the Site. Samples were collected from four of the test pits, as required by NJDEP regulations for a fill area of less than two acres.

2. We will backfill subsequent excavations with materials similar in physical properties to the material removed.

Septic Systems

GZA sampled the former septic system areas as requested. No exceedances of any targeted compounds were noted in any of the samples collected in this area of concern. The results of these sampling activities are discussed in the enclosed report.

Miscellaneous

1. Only a de minimus quantity of purple liquid was present in the drum. The soils in the vicinity of the drum were excavated and shipped off-site as part of the interim remedial action documented in GZA's report dated October 29, 2002. The drum itself was sent off-site to a metals recycler. No further actions are warranted for this drum.

2. GZA has revised the Site map to include sample names and the location of PCB samples collected during the Site Investigation. The map is included as part of the enclosed report.

Ground Water Investigation

1. GZA will address the ground water issue at the Site after completion of the next round of soil remediation activities.

2. Same answer as above.

Baseline Ecological Evaluation

No further actions are required on this issue.

Analytical Data Package

1. GZA was not aware that the sample bottles used for samples SB-1, SB-2, and SB-13 lacked surrogates. Since there were no detectable concentrations of any targeted volatile organic compounds (VOCs) in any of the three samples, the surrogate concentrations should not be relevant in determining the validity of these samples. Furthermore, the area around SB-13 was sampled as part of the supplemental remediation investigation documented in the enclosed report. As such, no resampling is warranted in any of the three above referenced areas at the Site.

2. We have instructed the Laboratory to document the temperature of the samples received on its data reports.

3. GZA collected a new soil sample at SB-25 and analyzed the sample for VOCs. The results of the sampling are discussed in the enclosed report.

4. The requested laboratory report is enclosed.

The contents of this cover letter and the contents of the enclosed report indicate that GZA has completed the soil delineation activities at the Site to the extent feasible. Please confirm this conclusion in writing at your earliest convenience. If you have any questions regarding the contents of this cover letter or the enclosed report, do not hesitate to call me at (973) 256-7800. Also, please let me know as soon as a new case manager is assigned to this case. Thank you.

Very truly yours,
GZA GeoEnvironmental, Inc.

Benjamin Alter
Vice President

Enclosures: Supplemental Remedial Investigation Report
HAZSITE Diskettes
Laboratory Report for TP-1 through TP-4

cc: William J. Friedman, Esq., WolfBlock Brach Eichler, w/SRI report
Kathy Smith, Unimatic Manufacturing Corp., w/SRI report

State of New Jersey
Department of Environmental Protection

James E. McGreevey
Governor

Bradley M. Campbc
Commissioner

William J. Friedman, Esq.
Brach Eichler, Rosenberg, et al
101 Eisenhower Parkway
Roseland, NJ 07068

3 2003

Re: Unimatic Manufacturing Corporation (Unimatic)
Fairfield Township, Essex County
ISRA Case #E20010335

Dear Mr. Friedman:

This letter is to advise you that the New Jersey Department of Environmental Protection (NJDEP) has completed the review of the Remedial Investigation Reports dated June 7, 2002, August 9, 2002 and October 29, 2002. The following comments are provided based on the review.

Unimatic shall submit a Remedial Investigation Report including the following required sampling results within 90 days of receipt of this letter.

Soil Investigation

Waste Water Pipes

1. The proposal to excavate soils that have polychlorinated biphenyl (PCBs) above 100 parts per million (ppm) is not acceptable because PCBs are found in the ground water above the Ground Water Quality Standards (GWQS). As a result, Unimatic shall delineate and remediate the PCB contaminated soil to 50ppm, the Impact to Ground Water Soil Cleanup Criterion (IGWSCC) for PCBs. This shall include the soil contamination below the water table.

2. Unimatic shall vertically and horizontally delineate the post excavation samples, where PCBs were found at 1126ppm (PE-15) and 2061ppm (PE-14), to the Residential Direct Contact Soil Cleanup Criterion (RDCSCC) of 0.49ppm in the off-site direction. It does not appear that the samples collected off-site are at depths consistent with the contamination detected at PE-14 and PE-15. Unimatic shall propose remediation of the soil with PCB contamination above 0.49ppm after completion of the delineation for any off-site areas.

3. Unimatic shall also complete the horizontal and vertical delineation of the PCB contamination to the RDCSCC including offsite areas, such as, SB-27, SB-38, TP-1 and PE-2. The depths for the horizontal delineation samples shall be collected at a depth consistent with the elevated levels detected at these areas. Be advised that all off-site areas shall be remediated to the RDCSCC of 0.49ppm.

4. Unimatic has stated that the trenches and the northern waste water discharge pipe were utilized to dispose the waste water which containes PCB-laden lubricants used in the die casting process. However, these trenches have not been investigated. As a result, Unimatic is required to collect samples for PCB analysis inside the building at all trench areas and in the areas where the two waste water (outfall) pipes originated and ran through pursuant to the Technical Requirements for Site Remediation (TRSR) N.J.A.C. 7:26E. In addition, Unimatic shall also sample for PCBs along the northern waste water pipe at depths 0-6" below the pipe in accordance with the TRSR.

5. Unimatic shall clarify whether the discharge points of the waste water pipe (former abandoned outfall pipe) have been sampled for PCBs pursuant to the TRSR. If so, Unimatic shall provide the information on the sampling results and the depths of the sampling points. If not, Unimatic shall sample the discharge points at a proper depth pursuant to the TRSR. Be advised that, at a minimum, samples shall be collected 0-6" below the discharge point of the pipes. Unimatic shall also depict the exact location of the discharge points on a revised map.

6. The proposal to place an asphalt cap only for the soils with PCB concentrations between 25ppm and 100ppm is not acceptable. Unimatic is advised that an engineering control is required when the contaminant levels are above the NJDEP non-residential soil cleanup criteria. Therefore, Unimatic shall propose engineering and institutional controls for soils with PCB contamination above 2ppm. For soils with PCB concentrations above 0.49ppm, an institutional control shall be proposed.

7. The soil boring log indicated elevated PID readings at boring SB-49 (134ppm). Additionally, the log showed elevated PID readings at boring SB-36, but the actual readings were not provided due to malfunction of the field testing equipment. Unimatic shall clarify if these high PID readings were addressed. If not, Unimatic shall provide an explanation or a proposal to address them pursuant to the TRSR.

Historic Fill

1. Unimatic shall propose additional sampling in the non-operational area to demonstrate that the metal contamination found in TP-1 is a result of historic fill. In addition, Unimatic shall clarify whether samples TP-5 and TP-6 were analyzed. If so, the results shall be provided to NJDEP pursuant to the TRSR.

2. Unimatic has backfilled the historical excavations with stone. Pursuant to the TRSR 7:26E-6.4(b), the fill material used to restore the site shall be similar in physical properties to the material removed. Therefore, for future excavations, Unimatic shall backfill in accordance with the TRSR.

Septic Systems

The proposed no further action for this area is not acceptable. Unimatic shall propose to sample both septic systems in accordance with the TRSR.

Miscellaneous

1. Upon further review of the Remedial Action Report dated April 3, 2002, page 3, it is noticed that the leaking drum containing purple-colored liquid has not been investigated in accordance with the

TRSR. Since the substance is unknown, Unimatic is required to collect samples in this area and analyze for priority pollutants (PP+40).

2. Unimatic shall submit a complete site map which depicts the excavated areas (indicating the depths of the excavation) with the historical sampling locations and depths including the post-excavation sample names and the areas of concern (aboveground or underground storage tank areas, etc.) pursuant to the TRSR.

Ground Water Investigation

1. After soil remediation, Unimatic shall propose either an active or passive ground water remedial action. If passive, Unimatic shall propose a monitoring program to address historical soil and well point hot spots.

2. The proposed Classification Exception Area (CEA) is considered premature at this time. After soil remediation, Unimatic shall demonstrate that the ground water contamination is fully delineated both horizontally and vertically. CEA shall be established based on this information. Unimatic shall submit all required information pursuant to the Technical Requirements for Site Remediation (N.J.A.C. 7:26E-8.3).

Baseline Ecological Evaluation

The Baseline Ecological Evaluation is acceptable. Since there are pathways to environmentally sensitive areas, further ecological evaluation may be required depending on the future results of the investigation/remediation.

Analytical Data Package

1. The submitted missing Quality Assurance/Quality Control (QA/QC) data package in response to the inspection report indicates that SB-1, SB-2 (Empty Drum Storage Area) and SB-13 were not prepared by the laboratory and no surrogates were added to these samples. Please clarify where the samples were prepared. Unimatic shall incorporate re-sampling and re-analysis of these samples to the investigation plan since these data are rejected due to the improper preparation of the samples.

2. It is noticed that the Chain of Custory (COC) form provided by Aqua Pro-Tech Laboratories has no designated column for temperature. As a result, temperatures were not recorded (except for the samples mentioned in item 4 below). This is not acceptable. For future submissions, temperature shall be reported, especially for volatile organic compound analysis.

3. Unimatic collected a sample at boring SB-25 for volatile organic compound (VO) analysis due to high PID reading and the results showed no presence of target compounds. However, the chain of custody indicated a temperature of 22°C. Unimatic shall clarify what this temperature is or propose to re-sample and re-analyze this sample.

4. The analytical data for TP-1 through TP-4 were not found in the submitted package. Unimatic shall submit them in the next report.

If you have any questions regarding this letter, please contact the Case Manager, Yang Cao, at (609) 633-0753.

Sincerely,

Joseph J. Nowak

Joseph J. Nowak, Supervisor
Bureau of Northern Case Management

c: Benjamin Alter, GZA GeoEnvironmental, Inc.
Health Officer, West Caldwell Health Department

GZA
GeoEnvironmental, Inc.

Engineers and
Scientists

August 20, 2003
File No. 12.0075418.00

Ms. Yang Cao, case manager
Bureau of Field Operations
New Jersey Department of Environmental Protection
401 East State Street
P.O. Box 435
Trenton, New Jersey 08625-0435

Re: Unimatic Manufacturing Company
25 Sherwood Lane, Fairfield, New Jersey
ISRA Case # E20010335, Spill Case #01-06-28-1610-13

65 Willowbrook Blvd.
Wayne
New Jersey 07470
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http://www.gza.com

Dear Ms. Cao:

GZA GeoEnvironmental, Inc. is writing this letter on behalf of our client, Unimatic Manufacturing Company regarding the above referenced Site. As I discussed with Joe Nowak, we would like to proceed with the interim remediation of soils outside the building that are impacted with PCBs at concentrations exceeding 100 parts per million. After removal of these soils, we will sample the three onsite monitoring wells using the low-flow sampling technique approved in the Department's July 24, 2003 letter. Based on the analytical results from the groundwater sampling, we will assess the need to remediate the soils to a lower concentration. At Joe Nowak's suggestion, I am sending you this letter to formally request Department approval of this remedial plan. The rationale for this strategy was discussed in GZA's May 29, 2003 letter.

Regarding the ongoing delineation activities, we plan to remobilize to the Site next week to hopefully complete the delineation of impacted soils north of the building.

As GZA discussed with Joe Nowak, the current facility owners have requested that we proceed as quickly as possible with the soil remediation to minimize disruption to their facility operations. Please indicate your approval of our request at your earliest convenience so that we can mobilize to the Site within two weeks of Labor Day.

Thank you for your prompt attention to this matter.

Very truly yours,
GZA GeoEnvironmental, Inc.

Benjamin Alter
Vice President

cc: William J. Friedman, Esq., Brach Eichler
Kathy Smith, Unimatic Manufacturing Company

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GZA
GeoEnvironmental, Inc.

Engineers and Scientists

August 15, 2003
File No. 12.0075418.00

Ms. Yang Cao
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Re: 25 Sherwood Lane
Fairfield, New Jersey
ISRA Case # E20010335
Spill Case #01-06-28-1610-13

Dear Ms. Cao:

On behalf of our client, Unimatic Manufacturing Company, GZA GeoEnvironmental, Inc. hereby requests a 30-day extension on the submittal of the Supplemental Remedial Investigation (SRI) Report, which was due on August 16, 2003. We have now completed five rounds of soil sampling, and have not completed the delineation of the polychlorinated biphenyls (PCBs) north of the building at the Site.

Please contact me to confirm the extension of the deadline. We plan to submit the SRI Report to the State no later than September 15, 2003. We also intend to schedule soil removal activities at known impacted areas prior to your review of the SRI Report. GZA will provide a schedule to you in the next several work days. Thank you.

Very truly yours,
GZA GeoEnvironmental, Inc.

Benjamin Alter
Vice President

cc: William J. Friedman, Esq., Brach Eichler
Kathy Smith, Unimatic Manufacturing Corp.

RECEIVED
AUG 21 2003

State of New Jersey
Department of Environmental Protection

James E. McGreevey
Governor

Bradley M. Campb
Commissioner

JUL 2 4 2003

William J. Friedman, Esq.
Brach Eichler, Rosenberg, et al
101 Eisenhower Parkway
Roseland, NJ 07068

Re: Unimatic Manufacturing Corporation (Unimatic)
Fairfield Township, Essex County
ISRA Case #E20010335
Low Flow Sampling Proposal Dated July 9, 2003

Dear Mr. Friedman:

Please be advised that the New Jersey Department of Environmental Protection (NJDEP) has completed its review of the above referenced proposal. The NJDEP's comments regarding the referenced proposal are provided below.

I. Ground Water

1. The proposal to use the low flow sampling procedures for polychlorinated biphenyls (PCBs) in the ground water is acceptable.

2. NJDEP accepts the proposal to use a centrifugal pump for the low flow sampling, as informed by Benjamin Alter, GZA, Inc., on July 11, 2003, through a voice mail.

3. Unimatic is advised that two rounds of low flow ground water sampling are required to confirm the results.

4. Unimatic shall record temperatures with the other water quality parameters.

II. Remediation Schedule Requirements

Pursuant to the Technical Requirements for Site Remediation (N.J.A.C. 7:26E), a detailed Remedial Action Schedule is required for all cases in the remedial investigation and remedial action phases.

Therefore, Unimatic shall submit a Remediation Schedule which incorporates the remediation of all remaining areas of environmental concern within 30 days of the receipt of this letter. Unimatic shall note the implementation and completion date for each remedial activity and the submission dates for all documents. Be advised that, in accordance with N.J.S.A. 58:10B, Unimatic may remediate the site without prior submission or approval from the NJDEP; however, prior approval must be obtained from the NJDEP for a remedial action involving ground water, surface water, or for the closure of an underground storage tank subject to N.J.S.A. 58:10A.

III. Electronic Data Deliverable Requirements

Pursuant to the Technical Requirements for Site Remediation (TRSR), N.J.A.C. 7:26E-3.13(c)3v, Unimatic shall submit all analytical data both as a hard copy and an electronic deliverable using the database format outlined in detail in the current HAZSITE application or appropriate spreadsheet format specified in the NJDEP's electronic data interchange manual. Please note that the electronic deliverables may be submitted directly to the Case Manager via email (Yang.Cao@ dep.state.nj.us).

The Electronic Data Submittal Application (EDSA) is a software program which will perform an administrative and completeness check on electronic data prior to that data being reviewed, evaluated or used by NJDEP personnel. Unimatic shall ensure that it performs this check on all electronic data submitted to the NJDEP in the .txt, .wk1, or .dbf format to determine if the basic required information is included and correct. This routine is intended to decrease the occurrence of the NJDEP rejecting data for administrative errors or omissions.

For further information related to electronic data submissions, please refer to the Site Remediation Program's (SRP's) home page at the following Internet address: **http://www.state.nj.us/dep/srp/hazsite/** This website includes downloadable files, an explanation of how to use these files to comply with the NJDEP's requirements, the SRP's Electronic Data Interchange (EDI) manual, and Guidance for the Submission and Use of Data In GIS Compatible Formats Pursuant to "Technical Requirements for Site Remediation".

IV General Requirements

1. Unimatic shall submit the report or additional proposals in duplicate. Please note that only one copy of the Quality Assurance/Quality Control Deliverables and one disk of electronic deliverables are needed.

2. Unimatic shall submit summarized analytical results in accordance with the Technical Requirements For Site Remediation (TRSR), N.J.A.C. 7:26E.

3. Unimatic shall collect and analyze all samples in accordance with the sampling protocol outlined in the May, 1992 edition of the NJDEP's "Field Sampling Procedures Manual" and the TRSR, N.J.A.C. 7:26E.

4. Unimatic shall notify the assigned BNCM Case Manager at least 14 calendar days prior to implementation of all field activities.

If you have any questions regarding this letter, please contact the Case Manager, Yang Cao, at (609) 633-0753.

Prepared By

Yang Cao, Case Manager
Bureau of Northern Case Management

Approved By

Joseph J. Nowak, Supervisor
Bureau of Northern Case Management

c: Benjamin Alter, GZA GeoEnvironmental, Inc.
Health Officer, West Caldwell Health Department

GZA
GeoEnvironmental, Inc.

Engineers and Scientists

July 9, 2003
File No. 12.0075418.00

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Re: Unimatic Manufacturing Company
Fairfield, New Jersey
ISRA Case # E20010335
Spill Case #01-06-28-1610-13

Dear Ms. Cao:

GZA GeoEnvironmental, Inc. (GZA) prepared this letter on behalf of our client, Unimatic Manufacturing Company, regarding the above referenced Site. In a letter to the Department dated May 29, 2003, GZA requested permission to sample the onsite wells using the low-flow sampling methodology. The objective of this letter is to provide sufficient detail regarding the proposed procedure so that the Department can approve its usage at the Site.

In general, we will utilize the procedures outlined in the USEPA Region II document, entitled *Ground Water Sampling Procedure – Low Stress (Low Flow) Purging and Sampling*. Monitoring well MW-2, the only well where PCBs were detected, will be purged and sampled last.

The pump and other permanent equipment to be introduced into the well will be thoroughly decontaminated before and after each well. GZA will rent a decontaminated pump, so that the recommended daily decontamination procedure will have already been performed prior to mobilization. Between wells, GZA will decontaminate the sampling equipment as follows:

- Operate pump in a basin of potable water for five minutes and flush other non-disposable equipment with potable water for five minutes.
- Operate pump in a basin of non-phosphate detergent solution for five minutes and flush other non-disposable equipment with potable water for five minutes.
- Repeat the first step.
- Operate pump in a basin of distilled/deionized water to pump out one to two gallons of this final rinse water.

Once decontaminated, the pump will be lowered so that the intake is at the depth of the midpoints of the saturated well screens. This depth will be recorded on the well purge data sheet. Each well will be purged at a rate of 200 to 500 milliliters per minute (ml/min). The water level and water quality parameters will be measured every five minutes. GZA will attempt to keep drawdown to less than 0.3 feet throughout the purging and sampling procedure. Purging will continue until the following water quality parameters have all stabilized in three consecutive readings:

±0.1 for pH
±3% for conductivity
±10 mv for redox potential
±10% for dissolved oxygen and turbidity

Once the well has stabilized, GZA will collect a groundwater sample at a pumping rate of 100 to 250 ml/min while not exceeding a 0.3 foot drawdown. After removing the pump, disposable equipment will be disconnected and replaced for the next well. A field blank will be collected to test for cross-contamination after purging and sampling MW-2.

Except as noted above, all other purging and sampling procedures will follow the New Jersey *Field Sampling Procedures Manual* (1992).

I trust that this letter contains all of the information needed for the Department to make a determination regarding this issue. Please include this topic as part of your weekly peer review meeting tomorrow so that we can resample the wells in the next several work days. Do not hesitate to call me at (973) 256-7800 if you have any questions or comments regarding this letter. Thank you.

Very truly yours,
GZA GeoEnvironmental, Inc.

Benjamin Alter

Benjamin Alter, P.G.
Vice President

cc: William J. Friedman, Esq., Brach Eichler
Kathy Smith, Unimatic Manufacturing Corp.

GZA
GeoEnvironmental, Inc.

Engineers and Scientists

July 1, 2003
File No. 12.0075418.00

Ms. Yang Cao
Bureau of Field Operations
New Jersey Department of Environmental Protection
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http://www.gza.com

Re: 25 Sherwood Lane
Fairfield, New Jersey
ISRA Case # E20010335
Spill Case #01-06-28-1610-13

Dear Ms. Cao:

On behalf of our client, Unimatic Manufacturing Company, GZA GeoEnvironmental, Inc. hereby requests a 45-day extension on the submittal of the Supplemental Remedial Investigation (SRI) Report, which is due July 2, 2003. We have completed three rounds of soil sampling, and have not completed the delineation of the polychlorinated biphenyls (PCBs) at the Site. The next round of sampling is scheduled for next week. In addition, we have not received a determination from the State on our written requests in our May 29, 2003 letter regarding the right to conduct low-flow sampling, on the information regarding the location of monitoring well MW-2, or on our data regarding the mass and cost differentials between a 50 and a 100 parts per million (ppm) cleanup standard for total PCBs in soils.

Please contact me to confirm the extension of the deadline, and if you have made a determination regarding the above elements from our May 29, 2003 letter. We plan to submit the SRI Report to the State no later than August 16, 2003, assuming we receive a timely response to our May 29 letter. Thank you.

Very truly yours,
GZA GeoEnvironmental, Inc.

Benjamin Alter

Benjamin Alter, P.G.
Vice President

cc: William J. Friedman, Esq., Brach Eichler, w/o enclosure
Kathy Smith, Unimatic Manufacturing Corp., w/o enclosure

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GZA
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Engineers and Scientists

May 29, 2003
File No. 12.0075418.00

JUN 03 2003

Ms. Yang Cao, Case Manager
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Re: Unimatic Manufacturing Corp.
25 Sherwood Lane, Fairfield, Essex County, New Jersey
ISRA Case No. E20010335

Dear Ms. Cao:

I want to thank you and Joe Novak for taking time from your busy schedules to meet with Bill Friedman and me last week regarding the above-referenced case. GZA GeoEnvironmental, Inc. (GZA) sends you this letter to provide information that was requested at the meeting regarding polychlorinated biphenyls (PCBs) at the Site, and to formally request permission to use low flow sampling techniques on the onsite wells. The requested information includes:

- The rationale for GZA's placement of monitoring well MW-2; and
- The mass and cost differentials between cleanup levels of 100 milligrams per kilogram (mg/kg) and 50 mg/kg for total PCBs at the Unimatic site.

The following discussions address these three topics.

Location of Monitoring Well MW-2

GZA installed MW-2 twenty feet northwest of temporary well point GW-1. It was the closest downgradient location to GW-1 that was not in an area that requires additional soil remediation, which would necessitate destroying the well. Because GW-1 was a temporary well point, the groundwater grab sample from this location contained more suspended sediments than the sample collected from MW-2. Therefore, it was not surprising that the grab sample from GW-1 contained 20 times the concentration of total PCBs, since PCBs adhere strongly to soils (Aroclor 1248 has a octanol-water partition coefficient of 6.11[1]).

PCB Mass and Cost Differentials Between 100 mg/kg and 50 mg/kg Cleanup Levels

GZA estimates that approximately 1,000 tons of additional contaminated soils would have to be removed using the 100 mg/kg total PCBs cleanup criterion. To approximate the PCB concentration in these soils, GZA averaged the concentrations of the nine soil samples in the proposed excavation area that exceeded the 100 mg/kg threshold, to yield

[1] Hazardous Wastes: Sources, Pathways, Receptors. Watts, Richard J., John Wiley & Sons, 1998. p. 274.

an average total PCB concentration of 707 mg/kg. Using this average PCB concentration, an additional 1,415 pounds of PCBs would be removed from the Site at an approximate cost of $250,000.

Using the 50 mg/kg cleanup standard, GZA would remove approximately an incremental addition of 500 tons of PCB-contaminated soil from the Site, for a total of 1,915 tons. Using an average PCB concentration for these soils of 75 mg/kg, GZA estimates that an additional 150 pounds of PCBs would be removed from the Site. In other words, the 100 mg/kg cleanup level will be over 90% as effective at removing PCB mass from the Site as the 50 mg/kg cleanup level. GZA estimates the incremental cost of the 50 mg/kg cleanup level to be approximately $135,000. Thus, each additional dollar spent will clean up only one-fifth as much PCBs ($900/lb vs. 176.67/lb). The additional mass of PCBs removed simply does not justify the cost.

It is useful to note that GZA has removed 2,358.73 tons of PCB-contaminated soil from the Site to date. The waste classification sample contained PCBs at a concentration of 1,722 mg/kg, implying that GZA has removed a total of 8,123 pounds of PCBs from the Site. In other words, approximately 84% of the PCBs originally present on the Site have already been remediated during GZA interim remedial measures undertaken from November 2001 to January 2002.

Low-Flow Sampling Methdology

As documented in GZA's Remedial Investigation Report/Remedial Action Work Plan dated October 29, 2002, PCBs were detected in onsite monitoring well MW-2 at a concentration of 22.0 micrograms per liter (ug/l), which exceeds the Class II-A Ground Water Quality Criterion (GWQC) of 0.5 ug/l for total PCBs. GZA proposes to resample this monitoring well using the low-flow method. We have used low-flow pumps successfully on several sites in New Jersey, and numerous studies have shown that the water quality data obtained using the low-flow technique is more representative of actual conditions in the groundwater. The pump intake will be located in the middle of the 15-foot screen, at a depth of between 22 and 23 feet below grade.

We request that the Department approve the usage of the low-flow technique for the monitoring wells at the Unimatic site on an expedited basis, so that GZA can resample its onsite wells using this technique in the near future. Thank you for your cooperation.

Very truly yours,
GZA GeoEnvironmental, Inc.

Benjamin Alter

Benjamin Alter, P.G.
Vice President

cc: William J. Friedman, Esq.

State of New Jersey
Department of Environmental Protection

James E. McGreevey
Governor

Bradley M. Campbe
Commissioner

William J. Friedman, Esq.
Brach Eichler, Rosenberg, et al
101 Eisenhower Parkway
Roseland, NJ 07068

2003

Re: Unimatic Manufacturing Corporation (Unimatic)
Fairfield Township, Essex County
ISRA Case #E20010335

Dear Mr. Friedman:

This letter is to advise you that the New Jersey Department of Environmental Protection (NJDEP) has completed the review of the Remedial Investigation Reports dated June 7, 2002, August 9, 2002 and October 29, 2002. The following comments are provided based on the review.

Unimatic shall submit a Remedial Investigation Report including the following required sampling results within 90 days of receipt of this letter.

Soil Investigation

Waste Water Pipes

1. The proposal to excavate soils that have polychlorinated biphenyl (PCBs) above 100 parts per million (ppm) is not acceptable because PCBs are found in the ground water above the Ground Water Quality Standards (GWQS). As a result, Unimatic shall delineate and remediate the PCB contaminated soil to 50ppm, the Impact to Ground Water Soil Cleanup Criterion (IGWSCC) for PCBs. This shall include the soil contamination below the water table.

2. Unimatic shall vertically and horizontally delineate the post excavation samples, where PCBs were found at 1126ppm (PE-15) and 2061ppm (PE-14), to the Residential Direct Contact Soil Cleanup Criterion (RDCSCC) of 0.49ppm in the off-site direction. It does not appear that the samples collected off-site are at depths consistent with the contamination detected at PE-14 and PE-15. Unimatic shall propose remediation of the soil with PCB contamination above 0.49ppm after completion of the delineation for any off-site areas.

3. Unimatic shall also complete the horizontal and vertical delineation of the PCB contamination to the RDCSCC including offsite areas, such as, SB-27, SB-38, TP-1 and PE-2. The depths for the horizontal delineation samples shall be collected at a depth consistent with the elevated levels detected at these areas. Be advised that all off-site areas shall be remediated to the RDCSCC of 0.49ppm.

4. Unimatic has stated that the trenches and the northern waste water discharge pipe were utilized to dispose the waste water which containes PCB-laden lubricants used in the die casting process. However, these trenches have not been investigated. As a result, Unimatic is required to collect samples for PCB analysis inside the building at all trench areas and in the areas where the two waste water (outfall) pipes originated and ran through pursuant to the Technical Requirements for Site Remediation (TRSR) N.J.A.C. 7:26E. In addition, Unimatic shall also sample for PCBs along the northern waste water pipe at depths 0-6" below the pipe in accordance with the TRSR.

5. Unimatic shall clarify whether the discharge points of the waste water pipe (former abandoned outfall pipe) have been sampled for PCBs pursuant to the TRSR. If so, Unimatic shall provide the information on the sampling results and the depths of the sampling points. If not, Unimatic shall sample the discharge points at a proper depth pursuant to the TRSR. Be advised that, at a minimum, samples shall be collected 0-6" below the discharge point of the pipes. Unimatic shall also depict the exact location of the discharge points on a revised map.

6. The proposal to place an asphalt cap only for the soils with PCB concentrations between 25ppm and 100ppm is not acceptable. Unimatic is advised that an engineering control is required when the contaminant levels are above the NJDEP non-residential soil cleanup criteria. Therefore, Unimatic shall propose engineering and institutional controls for soils with PCB contamination above 2ppm. For soils with PCB concentrations above 0.49ppm, an institutional control shall be proposed.

7. The soil boring log indicated elevated PID readings at boring SB-49 (134ppm). Additionally, the log showed elevated PID readings at boring SB-36, but the actual readings were not provided due to malfunction of the field testing equipment. Unimatic shall clarify if these high PID readings were addressed. If not, Unimatic shall provide an explanation or a proposal to address them pursuant to the TRSR.

Historic Fill

1. Unimatic shall propose additional sampling in the non-operational area to demonstrate that the metal contamination found in TP-1 is a result of historic fill. In addition, Unimatic shall clarify whether samples TP-5 and TP-6 were analyzed. If so, the results shall be provided to NJDEP pursuant to the TRSR.

2. Unimatic has backfilled the historical excavations with stone. Pursuant to the TRSR 7:26E-6.4(b), the fill material used to restore the site shall be similar in physical properties to the material removed. Therefore, for future excavations, Unimatic shall backfill in accordance with the TRSR.

Septic Systems

The proposed no further action for this area is not acceptable. Unimatic shall propose to sample both septic systems in accordance with the TRSR.

Miscellaneous

1. Upon further review of the Remedial Action Report dated April 3, 2002, page 3, it is noticed that the leaking drum containing purple-colored liquid has not been investigated in accordance with the

TRSR. Since the substance is unknown, Unimatic is required to collect samples in this area and analyze for priority pollutants (PP+40).

2. Unimatic shall submit a complete site map which depicts the excavated areas (indicating the depths of the excavation) with the historical sampling locations and depths including the post-excavation sample names and the areas of concern (aboveground or underground storage tank areas, etc.) pursuant to the TRSR.

Ground Water Investigation

1. After soil remediation, Unimatic shall propose either an active or passive ground water remedial action. If passive, Unimatic shall propose a monitoring program to address historical soil and well point hot spots.

2. The proposed Classification Exception Area (CEA) is considered premature at this time. After soil remediation, Unimatic shall demonstrate that the ground water contamination is fully delineated both horizontally and vertically. CEA shall be established based on this information. Unimatic shall submit all required information pursuant to the Technical Requirements for Site Remediation (N.J.A.C. 7:26E-8.3).

Baseline Ecological Evaluation

The Baseline Ecological Evaluation is acceptable. Since there are pathways to environmentally sensitive areas, further ecological evaluation may be required depending on the future results of the investigation/remediation.

Analytical Data Package

1. The submitted missing Quality Assurance/Quality Control (QA/QC) data package in response to the inspection report indicates that SB-1, SB-2 (Empty Drum Storage Area) and SB-13 were not prepared by the laboratory and no surrogates were added to these samples. Please clarify where the samples were prepared. Unimatic shall incorporate re-sampling and re-analysis of these samples to the investigation plan since these data are rejected due to the improper preparation of the samples.

2. It is noticed that the Chain of Custory (COC) form provided by Aqua Pro-Tech Laboratories has no designated column for temperature. As a result, temperatures were not recorded (except for the samples mentioned in item 4 below). This is not acceptable. For future submissions, temperature shall be reported, especially for volatile organic compound analysis.

3. Unimatic collected a sample at boring SB-25 for volatile organic compound (VO) analysis due to high PID reading and the results showed no presence of target compounds. However, the chain of custody indicated a temperature of 22°C. Unimatic shall clarify what this temperature is or propose to re-sample and re-analyze this sample.

4. The analytical data for TP-1 through TP-4 were not found in the submitted package. Unimatic shall submit them in the next report.

If you have any questions regarding this letter, please contact the Case Manager, Yang Cao, at (609) 633-0753.

Sincerely,

Joseph J. Nowak

Joseph J. Nowak, Supervisor
Bureau of Northern Case Management

c: Benjamin Alter, GZA GeoEnvironmental, Inc.
Health Officer, West Caldwell Health Department

GZA
GeoEnvironmental, Inc.

Engineers and Scientists

December 31, 2002
File No. 75342.00

Ms. Yang Cao, Case Manager
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Re: Unimatic Manufacturing Corp.
25 Sherwood Lane, Fairfield, Essex County, New Jersey
ISRA Case No. E20010335

Dear Ms. Cao:

GZA GeoEnvironmental, Inc. (GZA) submits this letter to the Department on behalf of our client, Unimatic Manufacturing Corp., regarding the above referenced Site. The purpose of this letter is to propose a small modification to the Remedial Investigation Report/Remedial Action Workplan (RIR/RAW) that GZA submitted to the Department on October 29, 2002.

The third paragraph of Section 8.3 of the RIR/RAW specifies the installation of a chain link fence around the deed-restricted area after completion of the remediation activities as one of several engineering controls. However, the management of Frameware, Inc., the current Site owner, and the new owner of the former General Hose property object to the installation of the proposed fence for business reasons. Under 40 CFR §761.61(a)(4)(i)(B)(3), "bulk PCB remediation waste" (the type of PCB waste we are proposing to remediate) may remain in "low occupancy areas" (such as are found at the Site), if the Site is covered with a proper cap. No fencing is required. In our Workplan, we have proposed the installation of a properly engineered cap over the impacted area. Therefore, please ignore the fence discussion when you review the RIR/RAW for the Site.

If you have any questions, please contact me at (973) 256-7800. Thank you.

Very truly yours,
GZA GeoEnvironmental, Inc.

Benjamin Alter

Benjamin Alter, P.G.
Vice President

cc: Kathy Smith, Unimatic
William J. Friedman, Esq.

RECEIVED

GZA
GeoEnvironmental, Inc.

Engineers and Scientists

November 18, 2002
File No. 75342.00

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Re: Unimatic Manufacturing Corp.
25 Sherwood Lane, Fairfield, Essex County, New Jersey
ISRA Case No. E20010335

Dear Ms. Cao:

GZA GeoEnvironmental, Inc. (GZA) hereby encloses four formatted HAZSITE diskettes on behalf of our client, Unimatic Manufacturing Corp., regarding the above referenced Site. This diskette accompanies the Remedial Investigation Report/Remedial Action Workplan (RIR/RAW) that GZA submitted to the Department on October 29, 2002.

If you have any questions, please contact me at (973) 256-7800. Thank you.

Very truly yours,
GZA GeoEnvironmental, Inc.

Benjamin Alter

Benjamin Alter, P.G.
Vice President

Enclosures: Four HAZSITE diskettes

cc: Kathy Smith, Unimatic, w/o enclosures
William J. Friedman, Esq., w/o enclosures

A Subsidiary of GZA GeoEnvironmental Technologies, Inc.

An Equal Opportunity Employer M/F/V/H

GZA
GeoEnvironmental, Inc.

Engineers and Scientists

October 29, 2002
File No. 75342.00

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Re: Remediation Investigation Report/Remedial Action Work Plan
25 Sherwood Lane
Fairfield, New Jersey
ISRA Case # E20010335
Spill Case #01-06-28-1610-13

Dear Ms. Cao:

On behalf of our client, Unimatic Manufacturing (Unimatic), GZA GeoEnvironmental, Inc. (GZA) is sending you a Remedial Investigation Report/Remedial Action Work Plan (RIR/RAW) for the above referenced Site. It documents the investigation and delineation activities associated with polychlorinated biphenyls (PCBs) in the soils and groundwater associated with the former wastewater pipe. It also includes the results of a baseline ecological evaluation, and provides a RAW to mitigate the residual contamination at the Site.

Please approve the measures outlined in the RAW at your earliest convenience so that we can begin implementing the recommended remedial measures. If you have any questions, please contact me at (973) 256-7800. Thank you.

Very truly yours,
GZA GeoEnvironmental, Inc.

Benjamin Alter

Benjamin Alter, P.G.
Vice President

Enclosure

cc: William J. Friedman, Esq., Brach Eichler, w/enclosure
Kathy Smith, Unimatic, w/enclosure

An Equal Opportunity Employer M/F/V/H

REMEDIAL INVESTIGATION REPORT/
REMEDIAL ACTION WORKPLAN
25 SHERWOOD LANE
FAIRFIELD, NEW JERSEY
ISRA CASE # E20010335
CASE NO. 01-06-28-1610-13

VOLUME 1 OF 2

PREPARED FOR:
Unimatic Manufacturing Corporation
17 Toms Point Lane
Lincoln Park, New Jersey

PREPARED BY:
GZA GeoEnvironmental, Inc.
65 Willowbrook Boulevard
Wayne, New Jersey 07470

October 29, 2002
File No. 75342.00

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1.00 INTRODUCTION

1.10 PROJECT AUTHORIZATION

GZA GeoEnvironmental, Inc. (GZA) presents the results of a Remedial Investigation (RI), and a Remedial Action Work Plan (RAW) for polychlorinated biphenyls (PCBs) prepared on behalf of Unimatic Manufacturing Corporation (Unimatic), for a property known as25 Sherwood Lane, Fairfield, New Jersey (Site). We submit this report to the New Jersey Department of Environmental Protection (NJDEP) in compliance with the Industrial Site Recovery Act (ISRA) for Case #E20010335.

1.20 PROJECT OBJECTIVES

The objective of the Remedial Investigation was to evaluate and delineate the presence of PCBs in the soil and groundwater, and prepare a work plan for the remediation of the PCBs.

1.30 SCOPE OF SERVICES

GZA's scope of services consisted of the following activities:

- Installing test borings to delineate soils impacted with PCBs on and off the Site to the NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC) of 0.49 milligrams per kilogram (mg/kg), in accordance with the Technical Requirements for Site Remediation (TRSR);
- Install temporary and permanent groundwater monitoring wells to assess the presence of PCBs in the groundwater at the Site;
- Collecting soil and groundwater samples for analytical testing; and
- Preparing a RAW in accordance with the TRSR.

Our findings are subject to modification if subsequent information for the Site is developed by GZA or any other party.

2.00 BACKGROUND SITE INFORMATION

The Site is located in an industrial area at the eastern end of Sherwood Lane (see **Figure 1**). The Fairfield Tax Assessor's office identifies the Site as Block 2302, Lot 8, covering 1.23 acres. The Site contains a one-story building and a partially paved parking lot, with a small landscaped area in front of the building to the south. Unimatic constructed the building in 1955, originally to serve as a tool shop, and later for die-casting. The Site is currently occupied by Frameworks, LLC, which uses the building to manufacture and distribute picture frame hardware and fasteners.

Adjoining properties include former General Hose Products, now Tul-Fra, Inc., to the east, National Precision Tools Co. to the south, a light industrial building to the west, and a water easement owned by Jersey City Municipal Utilities Authority to the north.

3.00 ENVIRONMENTAL SETTING

The following subsections provide information regarding the general physiographic, hydrologic, and soil conditions in the area of the Site.

3.10 REGIONAL PHYSIOGRAPHY

According to the Engineering Soil Survey of New Jersey, produced by Rutgers University in 1951, the Site is located within the Piedmont Plateau subdivision of the Appalachian geographic province. Soil geology in the Site area is classified as GS-24pi, and is found on the lower rises and other low areas of the undulating plains in this area, and on the more poorly drained deposits along the valleys east of the Watchung Mountains. GS-24pi soil types in this area include silty sands, silty gravels, sandy gravels, and gravelly sands.

3.20 GROUNDWATER CONDITIONS

Based on a review of the U.S. Geological Survey topographical map (Pompton Plains Quadrangle, 1955, photorevised 1981), the Site is located approximately 190 feet above the National Geodetic Vertical Datum (NGVD). The Passaic River is located approximately ½ mile northeast of the Site. An unnamed tributary to the Deepavaal Brook is located approximately 1,000 feet north of the Site, and an intermittent stream bed borders the Site to the north.

Based on the United States Environmental Protection Agency (USEPA) Record of Decision (ROD) from the Caldwell Trucking investigation (EPA/ROD/RO2-89/096 dated 09/28/89), groundwater in the Site area flows north-northeast. However, localized flow direction may vary as a result of underground utilities, septic systems, or heterogeneous subsurface conditions. During GZA's investigation, groundwater was encountered between 16 and 21 feet below grade (bg) and was found to flow to the northwest.

3.30 SOIL CONDITIONS

Soils encountered during the subsurface investigation primarily consisted of red-brown, medium to coarse sandy soils, with some silts and cobbles. Artificial fill, composed of construction material, cobbles and medium to coarse sand, was encountered up to approximately 9' bg in the northern portion of the Site.

4.00 PREVIOUS SITE INVESTIGATIONS

This report follows four previous ISRA and related submittals regarding subsurface investigations and remediations at this Site and submitted to the NJDEP, as follows:

- *Preliminary Assessment Report dated February 15, 2002*. The Preliminary Assessment (PA) report documented the presence of several Areas of Concern (AOCs) at the Site, including a former wastewater pipe located on the northeast portion of the Site, and fill materials north of the building.

- *Site Investigation Report dated February 15, 2002.* GZA installed soil borings and test pits in the AOCs identified in the PA Report. No exceedances of soil standards were found in any of the AOCs except for the wastewater pipe and the fill area, where elevated concentrations of PCBs and total organics were noted. A sample from the wastewater pipe also contained antimony and copper, two targeted Priority Pollutant metals, at concentrations above their RDCSCC.

- *UST and AST Closure Report dated January 16, 2002*. GZA supervised the removal of three ASTs and a UST that contained naphtha, a non-PCB-containing petroleum distillate. Evidence of surface spillage was noted near the ASTs, assumed to be from overfilling of the ASTs, and GZA excavated approximately 96 tons of petroleum-contaminated soil in that area. GZA's composite waste classification sample of the staged soils unexpectedly contained hazardous levels of PCBs.

- *Remedial Action Report dated March 13, 2002*. From November 2001 to January 2002, GZA supervised the excavation of 2,358.73 tons of PCB-impacted soils from the area below and around the former wastewater pipe in the northeastern portion of the Site and from the former AST area. The soils were classified as hazardous waste due to their PCB content and were shipped to the CWM landfill in Model City for disposal. After the soils were removed, the impacted area was backfilled, regraded, and topped with several inches of structural stone to allow the area to be used by trucks servicing the facility operations.

  The excavation activities succeeded in remediating most of the impacted soils at the Site. However, the following areas remained undelineated:

  - The northern adjoining property (Jersey City Water Company). The post-excavation soil sample collected along the northern property boundary contained total PCBs at a concentration exceeding the RDCSCC;
  - The eastern adjoining property (former General Hose Property). Post-excavation soil samples collected along the eastern property boundary near the southernmost extent of the former wastewater pipe contained total PCBs at concentrations above the RDCSCC;
  - The area around the southernmost portion of the wastewater pipe, where it entered the building; and
  - The area around the former ASTs.

5.00 SOIL INVESTIGATION

GZA conducted a subsurface investigation in the above mentioned areas to complete the delineation of PCBs to residential standards. The on-Site soil investigation was conducted in a phased approach. The first mobilization, which occurred on April 15 and 19, 2002 ("First Mobilization"), involved the installation of boreholes on the Site while access to the adjoining properties was under negotiation. GZA returned to the Site on June 17 and 18 ("Second Mobilization") to complete the delineation where exceedances of the RDCSCC were detected during the April sampling event. After obtaining access from the property owner, GZA installed boreholes and collected soil samples on July 18, 2002 on the eastern adjoining property. After obtaining access from the property owner, GZA installed boreholes and collected soil samples on October 17, 2002 on the northern adjoining property.

Borehole locations are shown in the Site plan (see **Figure 2**). A summary of the soil analytical results is included as **Table 1**. Laboratory reports for these sampling events are included in **Appendixes D, E, F, and G**.

5.10 ON-SITE SOIL INVESTIGATION

Depending on local soil conditions and the proposed depths of the boreholes, GZA used a Geoprobe operated by AWT Environmental Services (AWT) of Sayreville, New Jersey, or Environmental Probing Investigations (EPI) of Cream Ridge, New Jersey, or a hollow stem auger rig operated by ADT/Diamond of Neptune, New Jersey (ADT), to install the boreholes. The Geoprobe unit was set up with a hydraulic hammer to drive a standard 2-inch diameter, 48-inch long sampler installed with a clear acetate liner. Drilling fluids were not used. The driller inserted a new acetate liner between each sample, and cleaned the in-hole boring equipment between sample locations.

The hollow-stem auger drill rig was set up with a hydraulic hammer to drive a 2-inch inside diameter, 24 inch long, split-spoon sampler with a 140-pound hammer falling 30 inches. The split-spoon sampler was decontaminated between each sampling interval.

During the boring installation, GZA visually classified soils in accordance with the Modified Burmister System. A log of each boring was prepared with appropriate stratification lines, sample identification, sample depth interval, recovery, and date. During the second mobilization, no continuous split-spoon sampling was performed, and concurrently, no boring logs are included for this sampling event. Soil boring logs are included in **Appendix A**.

The soil cores were screened for airborne volatile compounds using a photoionization detector (PID). They were also visually assessed for evidence of contamination, and assessed for the presence of chemical odors. GZA had methanol-preserved bottles on hand in case there was evidence suggesting the presence of volatile organic compounds (VOCs) in the soils.

The one VOC soil sample (see Section 5.10.1) was obtained first by transferring approximately 10 grams of soil sample material to a clean, laboratory supplied, 40-milliliter

sample container preserved with methanol. Soils for PCB analysis were obtained by transferring soil material to clean, laboratory supplied, unpreserved 4-ounce sample containers. Samples were extracted from each acetate liner by scooping representative sample material from the representative soil stratum with a clean decontaminated, stainless steel spoon. Separate sampling equipment was used for each sample.

Samples were stored in an ice-packed cooler and delivered to Aqua Pro-Tech Laboratories in Fairfield, New Jersey (APL) for analysis using proper chain-of-custody procedures. APL is a New Jersey certified laboratory (certification #07010). APL analyzed the subsurface soil samples for VOCs, as applicable, using USEPA Method 8260, and for PCBs using EPA method 8082. After sampling was completed, the boreholes were backfilled with the displaced soil and leveled to ground surface. Additional drill cuttings were placed in a 55-gallon drum and stored on-Site for eventual disposal.

5.20 FIRST MOBILIZATION SAMPLING AND ANALYSIS

The first on-site mobilization adhered to the sampling program established in the Remedial Investigation Work Plan (RIWP) that GZA submitted to the NJDEP on February 19, 2002, with the addition of several boreholes to provide additional vertical delineation, as follows:

Soil Boring	Purpose of Borehole	Sampling Interval
SB-25	Delineate AST area to the north	6.0' to 6.5' bg
SB-26	Delineate AST area to the northwest	6.0' to 6.5' bg
SB-27	Delineate AST area to the west	6.0' to 6.5' bg
SB-28	Delineate AST area to the southwest	6.0' to 6.5' bg
SB-29	Delineate AST area vertically	10.0' to 10.5' bg
SB-36	Delineate southern excavation area vertically	19.0' to 19.5' bg
SB-41	Delineate along former northern outfall pipe	15.0' to 15.5' bg
SB-42	Delineate along former northern outfall pipe	15.0' to 15.5' bg
SB-43	Delineate southern excavation area vertically	19.0' to 19.5' bg
SB-45	Delineate vertically along southernmost extent of former wastewater pipe	15.0' to 15.5' bg
SB-46	Delineate vertically along southernmost extent of former wastewater pipe	15.0' to 15.5' bg
SB-51	Delineate southern excavation area vertically	19.0' to 19.5' bg

On April 15, 2002, AWT installed borings SB-41 and SB-42, as well as borings SB-47, SB-48a, SB-48b, and SB-49 that were installed for the purpose of collecting contingency samples if additional delineation to the south was warranted. Boring SB-50 was also installed that day for the purpose of collecting a contingency sample if additional delineation was warranted to the west of borehole SB-42. AWT was unable to reach the target depths in SB-41, SB-42 and SB-50. A soil sample was collected from a shallower depth (10.0' to 10.5') in borehole SB-41, and no soil samples were collected from boreholes SB-42 and SB-50.

On April 19, 2002, AWT installed borings SB-25, SB-26, SB-27, SB-28, SB-36, and SB-45. ADT also installed borings SB-29, SB-43, SB-46, and SB-51 using a hollow-stem auger drill

rig because the Geoprobe was unable to penetrate the compacted soils to the required depth in these areas. GZA recorded elevated PID readings at a depth of 3' bg in SB-25, and collected soil sample SB-25-3 from that interval to be analyzed for VOCs. No targeted VOCs were detected in SB-25-3.

Soil samples SB-25, SB-28, SB-36, and SB-46 contained total PCBs at a concentration below the RDCSCC, providing delineation as noted in the table above. Soil samples SB-26, SB-27, SB-29, SB-41, and SB-43 exhibited more than a fivefold decrease in total PCB concentrations from the initial characterization sample, providing a concentration gradient as defined in Section 7:26E-4.1(b)(2) of the TRSR. Soil samples SB-45 and SB-51 did not provide delineation, requiring further delineation at a later date.

5.30 SECOND MOBILIZATION SAMPLING AND ANALYSIS

On June 17 and 18, 2002, Lutz Brothers, Inc. (Lutz) of Linden, New Jersey, under GZA's supervision, installed borings SB-52 through SB-58 using a truck-mounted air rotary drill rig. An air rotary drill rig was utilized to ensure that the boreholes would attain the target depths in the tight soils at the Site. The air-rotary drill rig was set up using a 6-inch roller bit. Compressed air was supplied by a diesel-powered air compressor that produced an air stream through the drill stem and roller bit of 350 cubic feet per minute (cfm) at 125 pounds per square inch (psi). A 0.05-micron oil filter was placed in-line between the outlet of the air compressor and inlet of the drill stem to guard against potential oil being carried down the borehole.

Boreholes were installed as described in the Supplemental RIWP that GZA submitted to the NJDEP on June 7, 2002, as follows:

Soil Boring	Purpose of Borehole	Sampling Interval
SB-52	Attain targeted depth at SB-50	15.0' to 15.5' bg
SB-53	Attain targeted depth at SB-42	15.0' to 15.5' bg
SB-54	Attain targeted depth at SB-41	15.0' to 15.5' bg
SB-55	Delineate southern excavation area vertically	25.0' to 25.5' bg
SB-56	Delineate SB-51 vertically	25.0' to 25.5' bg
SB-57	Delineate SB-45 vertically	25.0' to 25.5' bg
SB-58	Delineate SB-~~51~~ vertically	25.0' to 25.5' bg

GZA collected a field blank for each day of sampling during the second mobilization to confirm that the sampling equipment did not contain targeted compounds that could cross-contaminate the samples.

Soil samples SB-52a, SB53a, SB-54a, SB-55a, SB-57, SB-58, and SB-59a contained total PCBs at a concentration below the RDCSCC, providing delineation as noted in the table above. Soil sample SB-56a exhibited more than a fivefold decrease in total PCB concentrations from the initial characterization sample, providing a concentration gradient. This round of sampling completed the soil delineation activities on the Site.

5.40 SOIL INVESTIGATION ON FORMER GENERAL HOSE PROPERTY

On July 18, 2002, EPI installed borings SB-30 through SB-35 and SB-59 through SB-64 using a truck-mounted Geoprobe drill rig. The objective of soil borings SB-30, SB-31, SB-34, SB-59, SB-60, and SB-61 were to provide a first line of delineation samples on the former General Hose property to the east of the impacted area on the Site. The other soil borings were installed to collect second line contingency samples if first line soil samples were impacted.

GZA collected a field blank to confirm that the sampling equipment did not contain targeted compounds that could cross-contaminate the samples. No targeted PCBs were detected in any of the first line of samples, providing delineation on the former General Hose property.

5.50 SOIL INVESTIGATION ON JERSEY CITY WATER AUTHORITY PROPERTY

On October 17, 2002, EPI installed borings SB-37 through SB-40 using a Dingo-mounted Geoprobe drill rig. The objective of the soil borings was to delineate the PCBs found on the northern Site boundary in sample PE-1 at a concentration of 0.73 mg/kg during the remediation activities. Soil borings SB-37 and SB-38 provided a first line of delineation samples, and soil borings SB-39 and SB-40 provided a second line of delineation samples. Since sample PE-1 was collected at a depth of 4.0' to 4.5' bg, this was the interval of interest in the delineation samples.

GZA installed the four boreholes to a depth of 8' bg, and field screened and logged the samples as described above. GZA collected a field blank to confirm that the sampling equipment did not contain targeted compounds that could cross-contaminate the samples. No indications of contamination were detected in any of the boreholes. All of the soil samples were collected in the 4.0' to 4.5' interval, except in SB-39, where there was no recovery in that interval, and the soil sample was instead collected from the 6.0' to 6.5' interval.

Soil sample SB-38 contained total PCBs at a concentration of 0.64 mg/kg, above the RDCSCC but below the NRDCSCC. No other samples contained targeted PCBs above the RDCSCC.

5.60 SUMMARY OF FINDINGS FOR SOILS

As a result of the soil delineation activities, GZA identified three PCB-impacted areas that require active remediation, as follows:

- Adjacent to the building, in the former AST area;
- Adjacent to the building, along the former trace of the former wastewater pipe; and
- In the southern portion of the excavation area, possibly including a portion of the former General Hose property to the east.

6.00 GROUNDWATER INVESTIGATION

The following section describes the groundwater investigation that GZA conducted at the Site. A summary of the groundwater analytical results is included as **Table 2**. The laboratory report for the groundwater samples collected from the temporary monitoring wells (see Section 6.10) is included in **Appendix D.** The laboratory report for the groundwater samples collected from the permanent monitoring wells (see Section 6.20) is included in **Appendix E.**

6.10 TEMPORARY MONITORING WELL INSTALLATION AND SAMPLING

On April 19, 2002, AWT and ADT, under GZA's supervision, installed three temporary monitoring wells (GW-2, GW-3, and GW-4) using a truck-mounted Geoprobe drill rig (AWT) and a hollow-stem auger (ADT). GW-2 was installed in soil boring SB-36 to assess groundwater conditions in the most impacted portion of the excavation area for the former wastewater pipe. GW-3 was installed in soil boring SB-29 to assess groundwater conditions in the former AST area. GW-4 was installed along the northern portion of the building to provide triangulation so groundwater flow direction could be obtained. (Note: GZA had installed temporary well point GW-1 in 2001 as part of the original Site Investigation.)

Temporary monitoring wells GW-2 and GW-4 were completed to depths of approximately 22' bg, and GW-3 was completed to an approximate depth of 26' bg. Groundwater was encountered at approximately 16' bg in GW-2 and GW-4, and at 21' bg in GW-3. The wells were constructed of 10 feet of 0.10-inch slot polyvinyl chloride (PVC) screen across the top of the water table, and 5-foot sections of 1-inch inside-diameter PVC riser. GZA allowed a 3 to 4 hour stabilization period before collecting groundwater grab samples using a peristaltic pump. No prefiltering was performed, even though GZA was unable to remove all suspended soil particles in the groundwater grab samples. After sample collection, the well construction materials were removed, and the borings were backfilled with the drill cuttings to ground surface.

PCBs were detected in groundwater sample GW-2 at a concentration of 150 micrograms per liter (ug/l), in GW-3 at a concentration of 100 ug/l, and in GW-4 at a concentration of 440 ug/l, all above the GWQC of 0.5 ug/l (see **Table 2**). Because PCBs tightly sorb to soils, it appeared likely that the PCB detections in the groundwater grab samples were due to the presence of suspended particles in the samples. GZA requested that APL filter and reanalyze samples GW-2 and GW-3. The PCB concentrations in the two samples decreased by a factor of 7 in GW-2 and by a factor of 3 in GW-3, indicating a significant presence of PCB-contaminated suspended particles in the grab groundwater samples. Therefore, these results are not indicative of groundwater conditions at the sampled locations.

6.20 PERMANENT MONITORING WELL INSTALLATION AND SAMPLING

On June 17 and 18, 2002, Lutz Environmental, under GZA's supervision, installed permanent groundwater monitoring wells MW-1, MW-2, and MW-3 using a truck-mounted air-rotary drill rig. MW-2 was installed near temporary well GW-2, where the highest concentrations of PCBs in soils were detected on the Site. Assuming a northerly groundwater flow direction,

MW-1 was installed upgradient of the PCB-impacted area, and MW-3 was installed west of MW-2 to provide triangulation so groundwater flow direction could be determined.

The monitoring wells were completed to depths of approximately 30' bg. Groundwater was encountered between approximately 16' bg in MW-3 and 22' bg in MW-1. The wells were constructed of 15 feet of 0.10-inch slot PVC screen, and 15 feet of 2-inch inside-diameter PVC riser. Wells were installed so that the screened interval crossed the top of the water table. The annular space between the screen and the native material was filled with sand, extending 3 feet above the top of the screen. A bentonite-cement slurry was placed above the sand pack extending to the ground surface. Each well was then completed with a locking cap and a steel, flush-mount casing. Well construction diagrams and driller's monitoring well records are presented in **Appendix B**.

Following the installation of well materials, Lutz developed the wells using a submersible pump and dedicated polyethylene tubing until the development water was virtually free of turbidity. No odor or sheen was observed on the groundwater during well development or sampling. The purged water was stored on-Site in three 55-gallon drums for eventual disposal.

DAB Surveying, a New Jersey-licensed surveyor, surveyed the monitoring wells on June 26, 2002. Form B Certification Sheets are included in **Appendix B** of this report.

After a two-week stabilization period, GZA remobilized to the Site on July 3, 2002 to collect groundwater level measurements and groundwater samples for PCB analysis. A gauging event indicated that the water table is very flat at the Site, and that groundwater was flowing to the northwest (see **Figure 3**). GZA purged the wells using a peristaltic pump operating at less than 0.25 gallons per minute (gpm) to minimize the amount of suspended particles entering the borehole. Groundwater samples were collected once water quality parameters stabilized and no turbidity was recorded on the Horiba water quality meter. Well purge data sheets are included in **Appendix C**. GZA poured water into 1-liter laboratory-prepared jars and placed them in a cooler maintained at 4° C. The cooler was hand-delivered to APL using proper chain-of-custody procedures.

PCBs were detected in MW-2 at a concentration of 22.0 ug/l, above the GWQC. PCBs were not detected in MW-1 and MW-3 above the Method Detection Limit (MDL). No targeted compounds were detected above their MDLs in the field blank. Groundwater sample analytical results are summarized in **Table 2**.

GZA returned to the Site on August 6, 2002, to collect another round of water level measurements to confirm the flow direction. **Figure 4** is a groundwater contour map from that gauging event. It indicates that the top of the water table remained very flat, and that the groundwater flow direction was consistent with the direction measured on July 3, 2002.

7.00 BASELINE ECOLOGICAL EVALUATION

Pursuant to NJAC 7:26E-3.11, GZA performed a baseline ecological evaluation (BEE) for the Site. The objectives of this BEE were to:

- Identify environmentally sensitive areas (ESAs) within the Site boundaries and on properties adjacent to the Site;
- Identify contaminants of potential ecological concern (COPECs) detected at the Site; and
- Identify potential migration pathways for COPECs to the ESAs.

Section N.J.A.C. 7:1E-1.8, which is applicable to properties that are not in the Pinelands, defines ESAs as follows :

- Surface water bodies
- Sources of water supply
- Wetland and wetland transition areas
- Breeding areas for forest area nesting species, colonial water birds, or aquatic fur bearers
- Migratory stopover areas and wintering areas for migrant avian species
- Prime fishing areas
- Fish migratory pathways
- Shellfish harvesting waters
- Water areas supporting various species of submerged vegetation
- Forest areas, including prime forest land and unique forestland
- Habitat for Federal and State endangered or threatened plant and animal species
- Federal and State wilderness areas and preserved land
- Wild, scenic, recreational, or developed recreational rivers

7.1 CONTAMINANTS OF POTENTIAL ECOLOGICAL CONCERN

PCBs are the COPEC at the Site. PCBs are a group of synthetic chemicals in which one to ten chlorine atoms are attached to a biphenyl. The physical and chemical properties of PCBs vary depending upon the degree of chlorination. They are hydrophobic (poorly soluble in water) but highly lipophilic (extremely soluble in fat and oils) and tend to be stored and saved in fatty tissue. Therefore, they tend to separate out of aquatic media into biological tissue. Because they are persistent and tend to be poorly metabolized by living organisms, they bioaccumulate in the food chain and biomagnify, or increase in concentration at each succeeding trophic level. PCBs are also passed from one generation to the next before birth and from mother to offspring through breast milk.

7.2 SITE ECOLOGICAL FEATURES

The BEE does not pertain to areas that do not provide habitat for ecological receptors, have no history of process-related activities, or have no potential for migration of COPECs. As such, portions of the Site that were not inspected pursuant to this BEE included the Site building and footprint, paved/gravel parking areas immediately to the north of the Site building, driveways located along the east and west portions and landscaped areas at the main

entrance, adjacent to Sherwood Lane. Vegetation along the eastern and western property lines consists of some trees and early successional herbaceous species that provide minimal habitat space for biota.

The areas eliminated on adjacent properties include building structures and associated paved/parking and landscaped areas on the former General Hose property located to the east, on the National Precision Tools Co. to the south and at an office building to the west. These adjacent areas provide minimal habitat for ecological receptors and are not ESAs.

7.3 GEOGRAPHIC INFORMATION SYSTEM

GZA reviewed the NJDEP Geographic Information System (NJDEP-GIS) electronic database to identify ESAs within the Site boundaries and on properties immediately adjacent to the Site. The NJDEP-GIS stores cartographic and related environmental scientific and regulatory data. NJDEP-GIS represents the extracted information for themes or related groups of themes (e.g., wetlands, soils and streams) graphically. GZA used the NJDEP-GIS database to extract information for each theme specified on the Site. GZA queried a total of 47 themes, which are listed on **Table 3**; the resultant figures are included in **Appendix H**.

Data downloads were unavailable for 7 of the 47 themes queried by GZA, and 17 themes did not apply to the Site. Three themes, such as the 1990 census, did not contain useful environmental data. No data was available from the soils database. Therefore, GZA extracted environmental data from 19 themes in the NJDEP-GIS database, as follows:

- The Passaic River is located approximately 3600 feet to the northeast of the Site. Deepavaal Brook is located approximately 3000 feet to the north, Green Brook is located approximately 2000 feet to the southwest, and three unnamed tributaries to the Deepavaal Brook are located approximately 1000 feet to the north.

- There is a biological monitoring site located approximately 3700 feet to the northeast of the Site at the convergence of Deepaval Brook and Peckman River.

- The NJDEP's Department Integrated Facility File (DIFF) does not list the Site as having current environmental permits. The adjacent property to the south, located at 24 Sherwood Lane (National Precision Tools) is listed under this database.

- The NJDEP known contaminated site listing includes the adjoining General Hose property located at 30 Sherwood Lane.

- The Site and adjacent properties are not listed as having ambient stream quality, water quality stations, watershed management areas, reference monitoring sites, coastal centers or fish index of biotic integrity sampling points;

- There are no wetlands on the Site or adjacent properties.

- NJDEP has not established any Classification Exception Areas (CEA) for the

groundwater beneath the Site.

- The Site and adjacent properties are not included under the Coastal Area Facilities Review Act (CAFRA).
- The Site and adjacent properties are not tidally influenced.
- No locations within the Site or adjacent properties are used by NJDEP to measure the water surface vertical movement to determine mean high water measurements.
- The Central New Jersey drought region covers the Site and adjacent properties.
- Land use for the Site and adjacent areas is listed as "other urban or built-up land."
- There are no open spaces owned by the State within the Site or adjacent properties.

7.4 ENVIRONMENTALLY SENSITIVE AREAS

The only ESA identified by GZA at the Site or on adjacent properties is a wooded area to the north of the Site building, beyond the property line, which extends to the northeast and northwest. This area, which is generally consistent with the Jersey City water pipeline right-of-way, is at a lower elevation than the Site building and adjacent properties, and consists of trees over 20 feet tall, thick bushes, vines and grasses. GZA does not know the burial depth of the water pipeline. GZA did not observe stressed or dead vegetation, discolored soils or a presence of seep or discharge in these areas. GZA did note deer tracks, and deer and raccoon droppings on the wet and muddy soils in the area immediately north of the Site. GZA observed debris consisting of tires, stoves, refrigerators and other appliances throughout the wooded areas to the northwest of the Site.

7.5 WELL SEARCH FINDINGS

GZA obtained a well search database from the NJDEP Bureau of Water Allocation for a ¼ mile radius from the Site to determine if there are sources of water supply within the Site or adjacent properties that are considered ESAs (see **Appendix H**). The database contained the following information regarding the Site and adjoining properties:

- The database contained records of two production wells at the Unimatic Site. On September 26 and 27, 2002, ADT-Diamond Drilling of Manasquan, New Jersey, a licensed driller, permanently closed these two production wells. The well closure forms are included in **Appendix J**. These two wells are no longer potential migration pathways for the purpose of the BEE.
- Thirteen monitoring wells were listed for the eastern adjoining former General Hose property, which GZA believes are related to the ongoing ISRA investigation on that property. GZA is not aware of any evidence of PCB contamination in any of these wells. Once closed, these wells will no longer be a potential migratory pathway for Site COPECs.

- Listed on the database were a well owned by Holmes Realty Co. on Sherwood Lane, no address given, and one located at 26 Sherwood Lane, an address which doesn't currently exist. While GZA cannot pinpoint the location of the wells based on the given information, all production wells in the area were ordered closed down in the early 1980s as part of the Caldwell Trucking Superfund case. Therefore, these wells were probably permanently abandoned if they were still usable at that time, and are no longer a potential migratory pathway.

GZA

7.6 MIGRATION PATHWAYS TO ENVIRONMENTALLY SENSITIVE AREAS

Since GZA removed the former wastewater pipe in 2001, there are no known underground migration pathways that could transport COPECs from the Site to adjacent areas. Since there are no catch basins or dry wells in the unpaved northern parking lot, surface water runoff from rain events moves via sheet flow into the wooded area to the north, with some infiltration into the soils. This runoff has the potential to carry COPECs remaining on the surface to the wooded area to the north of the Site. Groundwater containing COPECs also has the potential to flow into this wooded area. Therefore, without removal of all source materials or installation of engineering controls at the Site, there is a potential for COPECs to migrate off site into an ESA.

Once off site, the Jersey City water main may provide a pathway for COPECs to migrate to the east and the west of the Site, and will need to be addressed with engineering controls. The buried utilities to the south, along Sherwood Lane, are unlikely to be potential migratory paths since there is no known soil contamination on the southern portion of the facility and it is upgradient of the COPEC area. GZA did not identify other potential migratory pathways on adjoining Sites.

7.7 SUMMARY

The COPEC at the Site is PCBs. They are present in the soil and groundwater on the northeastern portions of the Site. There are no ESAs within the Site. An area of dense vegetation located to the north, northeast and northwest of the property line that provides a habitat for biota is the only ESA on adjoining properties. COPECs have the potential to migrate to the ESA via surface runoff. A buried water main in the ESA has the potential to carry COPECs to the east and west of the Site.

The molecular structure of PCBs and their hydrophobic behavior prevents them from travelling over long distances. There are no documented fats and oil that would facilitate the transport of the PCBs in the subsurface. Therefore, the contamination does not present a material ecological hazard to biota in the area.

8.00 REMEDIAL ACTION WORK PLAN

This section describes the recommended remedial actions at the Site, and provides estimated costs and a schedule for the implementation of the remedial actions.

8.1 APPROPRIATE PCB REMEDIATION STANDARDS

Because PCBs are specifically regulated under the federal Toxic Substances Control Act (TSCA), there is dual jurisdiction over PCB cleanups by the USEPA and the NJDEP. Accordingly, PCB cleanup levels in New Jersey are established with reference to USEPA regulations at 40 CFR Part 761. Those regulations base the appropriate PCB cleanup level in soil on the age of the PCB spill, the future intended use of the property, and the institutional and engineering controls that will be placed on the property. Section 761.61 provides cleanup and disposal options for "PCB remediation wastes," which are wastes containing PCBs from a spill, release, or other unauthorized disposal that occurred prior to April 18, 1978.

As documented in our PA report, Unimatic began to utilize floor trenches and the northern wastewater discharge pipe to dispose of its production wastewater in 1970. This wastewater carried PCB-laden lubricants used in the die casting process. The discharge pipe leaked, releasing PCBs to the subsurface. PCB production was phased out in the United States prior to the production ban date of July 1, 1979 established under TSCA. Although no date can be definitively set for the suspension of PCBs at the Site, it is logical that it ceased sometime in 1978, when PCB-containing products were no longer available for purchase by Unimatic.

Because of the years of when PCB releases occurred at the Unimatic Site, the PCB-contaminated soils qualify as PCB remediation waste. Pursuant to 40 CFR §761.50(b)(3), the cleanup and disposal of PCB remediation waste is regulated under Section 761.61. In turn, Section 761.61(a)(4) sets applicable remediation levels for bulk PCB remediation waste for low and high occupancy areas. The definition of a "low occupancy area" includes a location in a non-residential area such as the Site, with restricted access to sensitive populations. Therefore, the area where remediation is being conducted at the Site qualifies as a "low occupancy area."

Pursuant to Section 761.61(a)(4)(i)(B)(3), bulk PCB remediation wastes in low occupancy areas may remain at a cleanup Site at concentrations of up to 100 mg/kg if the Site is covered with a cap meeting the requirements of the Section. The cap is to consist of "a uniform placement of concrete, asphalt, or similar material of minimum thickness spread over the area where remediation waste was removed or left in place in order to prevent or minimize human exposure, infiltration of water, and erosion." Consequently, GZA proposes to complete its remediation by excavating PCB-contaminated soil with a concentration greater than 100 mg/kg, and installing an appropriate cap over PCB-contaminated soils with a concentration between 25 mg/kg and 100 mg/kg. Pursuant to the USEPA regulations, PCB-contaminated soils at concentrations less than 25 mg/kg do not require remediation.

8.2 SOIL EXCAVATION AND DISPOSAL

GZA will supervise the excavation of on-site and off-site soils containing total PCBs at a concentration above 100 mg/kg. Based on GZA's delineation activities, the approximate extent of these soils is indicated in **Figure 5**. The outlines of these areas are set at the midpoints between soil samples with concentrations of PCBs above and below the 100 mg/kg limit. GZA estimates that approximately 700 cubic yards, or appr. 1000 tons of soils, will be

excavated and removed from the property. Actual quantities are likely to vary depending on actual field conditions.

Prior to mobilization, GZA will prepare a Health And Safety Plan (HASP), see **Appendix K**, to be utilized by GZA personnel during the field activities. GZA will then engage a contractor to perform the soil excavation and loading activities. Prior to excavating, the contractor will use an earth mover to scrape the structural fill from the surface of the areas to be excavated. After the fill is removed, an excavator will remove the soils and load them directly onto trucks that will transport them to the CWM Model City facility (see **Appendix L** for information on the certification and qualification of the disposal facility and CWM's acceptance notification). A GZA representative will be present on Site to sign the manifests as agent for Unimatic.

GZA will screen the excavated soils for airborne organic vapors using a PID by holding the PID probe directly over the soil immediately after excavation. GZA will note visual and olfactory evidence of impact, if present. In addition, GZA will utilize a DataRAM dust monitor to screen for airborne dust particles, which will act as a surrogate for the presence of airborne PCBs. The excavation areas will be fenced off at the end of each work day for safety purposes.

GZA will collect post-excavation soil samples every 900 square feet along the bottom of the excavation and every 30 linear feet along the sidewalls. For field screening purposes, GZA will retain the services of a mobile laboratory that will be equipped with a gas chromatograph/mass spectrometer (GC/MS). The mobile laboratory will provide real-time analysis for Aroclor 1248, the predominant targeted PCB present in the soils in the remediation area, using USEPA Method 8270C. GZA will cease excavation onsite when the mobile laboratory records Aroclor 1248 in a sample at a concentration below 80 mg/kg, or 80% of the 100 mg/kg limit. This safety cushion will help ensure that the post-excavation soil samples sent to the laboratory will not exceed the 100 mg/kg limit. Off-site, on the former General Hose property to the east, the contractor will excavate any small amount of soil, if needed, to the unrestricted use standard of 0.49 mg/kg. GZA will cease excavation on the former General Hose property when the mobile laboratory records Aroclor 1248 in a sample at a concentration below 0.41 mg/kg, or 80% of the 0.49 mg/kg limit.

GZA will collect a field blank to confirm that the field equipment does not contain targeted compounds that could cross-contaminate the samples. GZA will containerize split portions of the soil samples that are analyzed by the mobile laboratory. If the mobile laboratory indicates that the post-excavation soil sample has an acceptable concentration of PCBs, then that sample will be placed in laboratory-prepared glassware and stored in a cooler maintained at 4^{0} Centigrade. GZA will deliver the samples to a New Jersey-certified laboratory along with quality control samples using proper chain-of-custody procedures. The laboratory will analyze the samples and the field and trip blanks for PCBs using USEPA Method 8082. GZA will request an expedited 3-day turnaround time on the soil analyses.

Upon receipt of acceptable post-excavation analytical results from the certified laboratory, the excavated areas will be backfilled with certified clean fill, graded, and covered again with

structural stone.

8.3 ENGINEERING AND INSTITUTIONAL CONTROLS

Figure 6 shows the areas that will require engineering controls after completion of the excavation and disposal activities. An impermeable engineered cap will be placed in these areas to prevent the migration of PCBs outside of the area and prevent or minimize human exposure, infiltration of water, and erosion. The cap will constitute a uniform placement of a minimum six-inch asphalt surface that will have sufficient strength to maintain its effectiveness and integrity when exposed to the environment. GZA will ensure that the cap complies with the permeability, sieve, liquid limit, and plasticity index parameters described in 40 CFR 761.75(b)(1)(ii) through (b)(1)(v).

Also on **Figure 6** is the area that will be subject to a restricted usage due to the presence of PCBs at concentrations above the RDCSCC. This area includes the area mentioned above that will be maintained with engineering controls. GZA will file for a Declaration of Environmental Restrictions (DER) for the entire area containing PCBs between the RDCSCC and 100 mg/kg. A portion of the adjoining Jersey City property will also be maintained under institutional controls.

The entire property from the front of the building and back will be fenced off to prevent unauthorized entrance to the on-site deed-restricted area. The fence will be a 5-foot tall galvanized steel chain-link fence with 2-inch line posts. It will run the length of the eastern property boundary, with cross-fencing equipped with lockable gates at the southeastern and northwestern corners of the building (see **Figure 6** for the location of the proposed fence.) A fence is already in place along the western property boundary, and the northern property boundary is virtually inaccessible due to dense vegetation. As such, the proposed fence will effectively restrict access to the remediation area while allowing the facility to function normally.

A GZA professional engineer licensed in the State of New Jersey will inspect the engineering controls as required by the TRSR. The controls will be repaired or replaced as necessary soon after the inspection. After completing the inspection, the engineer will certify to the NJDEP that the remedial action remains protective of the public health and safety and of the environment.

8.4 GROUNDWATER CLASSIFICATION EXCEPTION AREA REQUEST

As discussed in Section 6.2 of this report, Aroclor 1248, a targeted PCB compound, was detected in onsite monitoring well MW-2 at a concentration of 22.0 ug/l. This concentration exceeds the Class II-A GWQC of 0.5 ug/l for total PCBs. No other targeted compounds were present at detectable concentrations in MW-2. Downgradient monitoring well MW-3 does not contain detectable concentrations of PCBs.

PCBs such as Aroclor 1248 sorb tightly to soil, and are basically insoluble in water in the absence of an emulsifier, such as fats or oils. They do not readily partition into gaseous phase, and will remain in place in the environment for a prolonged period of time. The hydraulic

gradient at the Site is virtually flat, and the soils are very silty. For the purposes of establishing a CEA, GZA assumes that the compound in question is immobile at the Site.

GZA proposes to establish a CEA between MW-2 and MW-3 (see **Figure 7**). The following data apply to the proposed CEA:

Compound of Concern:	Aroclor 1248
Initial Concentration:	22.0 ug/l
GWQC:	0.5 ug/l
Mean log K_{ow}:	6.11[1]
Henry's Constant	3.5×10^{-3} [1]
Groundwater gradient	0.000625 ft/ft
Length of the CEA:	60 feet
Half-life:	Undetermined; persistent chemical

The persistence of PCBs in the environment increases with the degree of chlorination in the molecule. Aroclor 1248, which is approximately 42% chlorine, is expected to readily proceed through biotransformation reactions. Evidence that biotransformation is occurring at the Site is evidenced by the high concentrations of partially degraded, non-targeted PCBs, detected as base-neutral Tentatively Identified Compounds (TICs), in soil samples TP-1 and Outfall Pipe 1, collected during the original Site Investigation. GZA is not aware of any published biodegradation factors for Aroclor 1248. As such, GZA proposes to establish a 5-year planning horizon for the CEA.

GZA proposes to collect groundwater samples from MW-2 and MW-3 in September 2003, September 2004, and September 2005 to monitor the appropriateness of the CEA as a means to protect the public health and safety and the environment. Groundwater samples will be collected in accordance with New Jersey protocols and sent to a New Jersey-licensed laboratory to be analyzed for PCBs using USEPA Method 8082.

8.5 REMEDIAL ACTION REPORT PREPARATION

After the analytical results have been received and the excavation completed, GZA will generate a RA report that will include:

- A description of the excavation and sampling methodologies used;
- A scaled map showing excavation locations, engineering controls, and activity-restricted areas;
- A summary of analytical results;
- Reduced deliverable laboratory reports;
- A copy of the DER;
- HAZSITE electronic data submittals; and
- Signed waste manifests.

[1] Reference: Watts, Richard J. Hazardous Wastes: Sources, Pathways, Receptors. John Wiley & Sons, Inc., 1998.

8.6 PROPOSED COSTS AND COSTS TO DATE

To date, GZA has spent $682,940 on PCB-related investigation and remediation costs, and $60,578 on non-PCB related investigation and remediation costs. GZA estimates that it will cost $262,043 to implement the remaining proposed PCB-related remedial actions, for a total project expenditure of $1,005,561 and a total PCB-related expenditure of $944,983. A cost breakdown by activity is as follows:

Category	Expended to Date	Future Estimated Costs
	Non-PCB-Related Costs	
PA/SI/due diligence	$21,066	$0
AST/UST Closure	$33,212	$0
Production Well Closure	$6,300	$0
	PCB-Related Costs	
Excavation Contractor and Materials	$162,959	$38,706
Fence and Cap Construction	$0	$26,700
T&D of Contaminated Soils	$419,970	$170,363
Laboratory Analyses	$18,223	$10,258
Professional Labor	$74,364	$15,144
Other Direct Expenses	$7,424	$873
PCB Investigation/Remediation	$682,940	$262,043

8.7 SCHEDULE

GZA has secured the necessary regulatory permits to perform the recommended remedial activities. Once the NJDEP has approved the contents of this RAW, GZA will arrange to amend the off-site access agreement with the owner of the former General Hose property so that excavation activities can proceed across the property boundary if necessary. GZA will complete the first round of excavation activities within four weeks of obtaining off-site access. If post-excavation soil sample analytical results indicate that additional excavation phases are necessary, GZA will mobilize to the Site within a few days to implement the additional excavation. Once excavation activities are completed, GZA will backfill and grade the surface, and the entire remediation area will be paved with asphalt. The asphalt pavement will conform to USEPA cap requirements in the designated area. GZA will file the necessary forms for institutional controls with the NJDEP and local agencies within 30 days of completion of the remediation activities. The Remedial Action Report will be submitted to the State within 4 weeks of implementation of the Site engineering and institutional controls.

Table 1: Soil Analytical Results
Unimatic Manufacturing Co.
25 Sherwood Lane, Fairfield, New Jersey

Sample ID	Residential	SB-25	SB-26	SB-27	SB-28	SB-29	SB-30	SB-31	SB-34	SB-36	SB-37	SB-38	SB-39	SB-40	SB-41
Date Collected	Direct	4/19/02	4/19/02	4/19/02	4/19/02	4/19/02	7/18/02	7/18/02	7/18/02	4/19/02	10/17/02	10/17/02	10/17/02	10/17/02	4/19/02
Depth Collected (fbg)	Contact Soil	6.0-6.5	7.0-7.5	6.0-6.5	6.0-6.5	10.0-10.5	5.0-5.5	4.0-8.0*	5.0-5.5	19.0-19.5	4.0-4.5	4.0-4.5	6.0-6.5	4.0-4.5	10.0-10.5
Percent Solids	Cleanup	83.0%	89.0%	77.0%	83.0%	95.0%	84.8%	86.9%	80.0%	89.0%	84.3%	77.4%	78.2%	79.8%	83.0%
Dilution Factor	Criteria	1	1	50	1	5	1	1	1	1	1	1	1	1	1
PCB (mg/Kg)															
Aroclor 1242	0.49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	0.49	0.063	**0.92**	**20.8**	0.46	**3.20**	ND	ND	ND	ND	0.063	0.43	0.040	0.028	**1.30**
Aroclor 1254	0.49	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.028	0.17	0.023	0.015	ND
Aroclor 1260	0.49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.042	ND	ND	ND
Total PCBs	0.49	0.063	**0.92**	**20.8**	0.46	**3.20**	ND	ND	ND	ND	0.091	**0.64**	0.063	0.043	**1.30**

Sample ID	Residential	SB-43	SB-45	SB-46	SB-51	SB-52a	SB-53a	SB-54a	SB-55a	SB-56a	SB-57	SB-58	SB-59a	SB-60a	SB-61a
Date Collected	Direct	4/19/02	4/19/02	4/19/02	4/19/02	6/17/02	6/17/02	6/18/02	6/18/02	6/17/02	6/18/02	6/18/02	7/18/02	7/18/02	7/18/02
Depth Collected (fbg)	Contact Soil	19.0-19.5	15.0-15.5	15.0-15.5	20.0-20.5	15.0-15.5	15.0-15.5	15.0-15.5	25.0-25.5	25.0-25.5	15.0-15.5	19.5-20.0	6.0-6.5	7.5-8.0	15.0-15.5
Percent Solids	Cleanup	91.0%	85.0%	89.0%	87.0%	81.0%	90.0%	93.0%	88.0%	90.0%	84.0%	74.0%	90.7%	80.2%	87.1%
Dilution Factor	Criteria	5	100	1	200	1	1	1	1	1	1	1	1	1	1
PCB (mg/Kg)															
Aroclor 1242	0.49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	0.49	**3.30**	**154**	ND	**300**	ND	ND	0.023	0.20	**1.70**	0.22	ND	ND	ND	ND
Aroclor 1254	0.49	ND	ND	ND	ND	ND	ND	ND	0.03	0.20	0.03	ND	ND	ND	ND
Aroclor 1260	0.49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PCBs	0.49	**3.30**	**154**	ND	**300**	ND	ND	0.023	0.23	**1.90**	0.25	ND	ND	ND	ND

Notes:

Bold indicates an exceedance of the RDCSCC.

ND = Not detected

mg/Kg = milligrams per kilogram

* = Large sampling interval due to poor recovery in split spoon.

Table 3

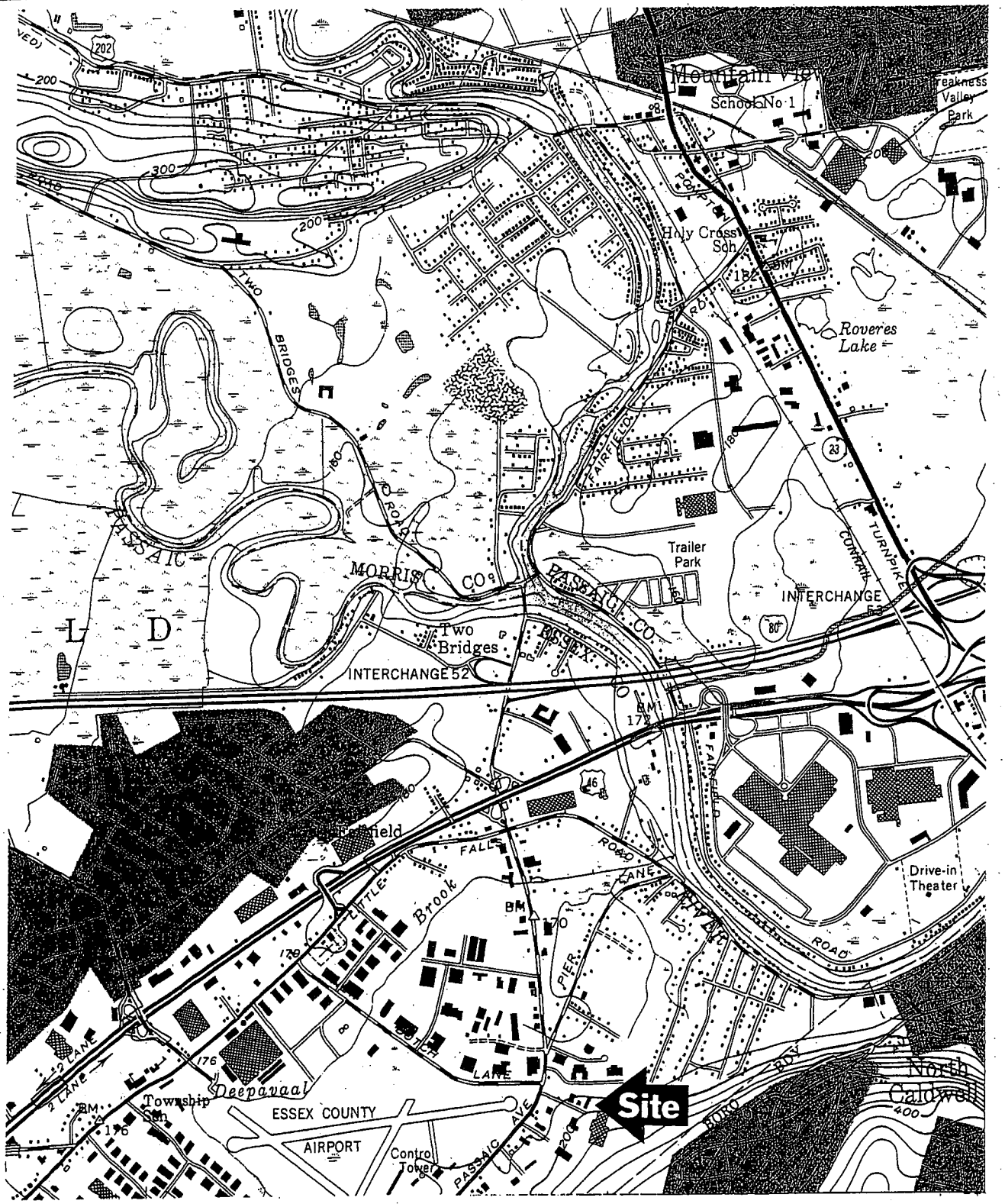
Themes Reviewed under NJDEP-GIS (NJDEP-Geographic Information System)
Unimatic Manufacturing Corporation
Fairfield, New Jersey

NJDEP-GIS Theme	Findings
Ambient Stream Quality Monitoring Sites (1998-2001)	See Appendix G
AMNET Biological Monitoring Sites (2000)	See Appendix G
AMNET Reference Monitoring Sites (2000)	See Appendix G
CAFRA	Not Applicable
Census Tract 1990	See Appendix G
Coastal Centers	Not Applicable
Coastal Flooding (100 years)	Not Applicable
Coastline	Not Applicable
Congress Districts	Not Applicable
County Boundary	See Appendix G
Counties of New Jersey	Not Applicable
DIFF	See Appendix G
Digital Elevation Grid (100 meters)	No download available
Digital Elevation Hillside (100 meters)	No download available
Drought Regions	See Appendix G
Elevation Contours	No download available
Fish Index of Biotic Integrity Sampling Points (2000)	See Appendix G
Golf Courses	Not Applicable
Groundwater Contaminated Areas (CEA)	See Appendix G
Head of Tide	See Appendix G
Historical Shorelines	Not Applicable
Hydrography (Rivers)	See Appendix G
Know Contaminated Sites (2001)	See Appendix G
Lakes (Open Water Areas)	Not Applicable
1986 Land Use/Land Cover	No download available
1995-97 Land Use/Land Cover	See Appendix G
Legislative Districts	Not Applicable
Linear Wetlands	See Appendix G
Municipalities by County	See Appendix G
Named Places	Not Applicable
Natural Heritage Priority Sites	Not Applicable
Open Space – State Owned	See Appendix G
Pinelands Area Boundary	Not Applicable

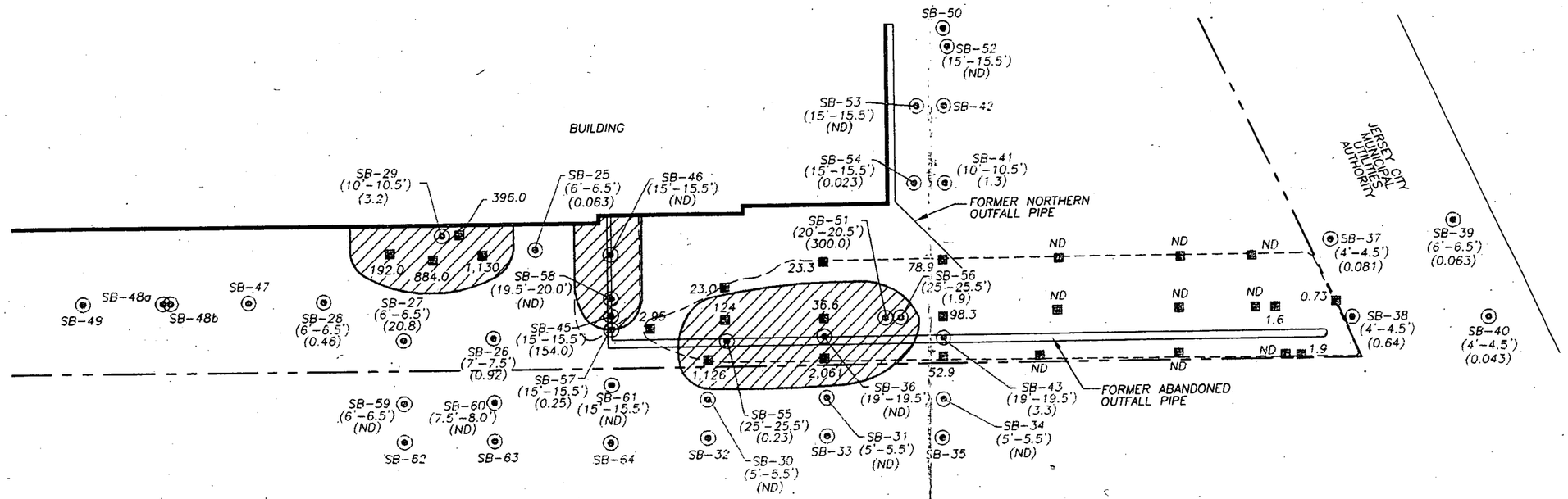
Table 3

Themes Reviewed under NJDEP-GIS (NJDEP-Geographic Information System)
Unimatic Manufacturing Corporation
Fairfield, New Jersey

Quadrangle Boundary	No download available
Quarter Quadrangle Boundary	No download available
Shoreline Structures	Not Applicable
Shoreline Type	Not Applicable
Soils	No data available for Essex County
Sole Source Aquifers	No download available
South Jersey Marsh	Not Applicable
State Boundary of New Jersey	Not Applicable
Streams	See Appendix G
Tidelines Grid	See Appendix G
Water Quality Stations (existing)	See Appendix G
Watershed Management Areas	See Appendix G
Watersheds by Name	See Appendix G
Wetlands	See Appendix G



DESCRIPTION/NOTES	UNIMATIC MANUFACTURING COMPANY 25 SHERWOOD LANE FAIRFIELD, NEW JERSEY 07004	PROJECT NO. 75342.00	FIGURE NO. Figure 1
Scale = 1 : 24,000 MAP TAKEN FROM THE POMTON PLAINS QUADRANGLE, DATED 1955, PHOTOREVISED 1981			
GZA GeoEnvironmental, Inc. 55 Millstream Blvd., Wayne, New Jersey 07470	NOTES: PROJECT MGR: BA DESIGNED BY: CS REVIEWED BY: BD DRAWN BY: CS DATE: 7/3/01	SITE LOCATION MAP	



LEGEND

192.0 ■	POST-EXCAVATION SAMPLE LOCATION, PCB CONCENTRATION
SB-46 (6'-6.5')(20.8) ⊙	DELINEATION SOIL SAMPLE LOCATION (SAMPLE DEPTH, PCB CONCENTRATION)
ND	NOT DETECTED
- - - - - - - - - -	EXCAVATION OUTLINE
—— - - ——	PROPERTY BOUNDARY
▨	AREAS TO BE EXCAVATED

NOTE:
ALL PCB SOIL CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg).

ALL SAMPLE DEPTHS IN FEET BELOW GRADE (fbg)

SCALE
0 15' 30'

REV. NO.	DESCRIPTION	BY	DATE

ACKNOWLEDGEMENT:

PROJECT MGR: B.A.
DESIGNED BY: C.S.
REVIEWED BY: B.A.
OPERATOR: E.M.
DATE: 10/22/2002

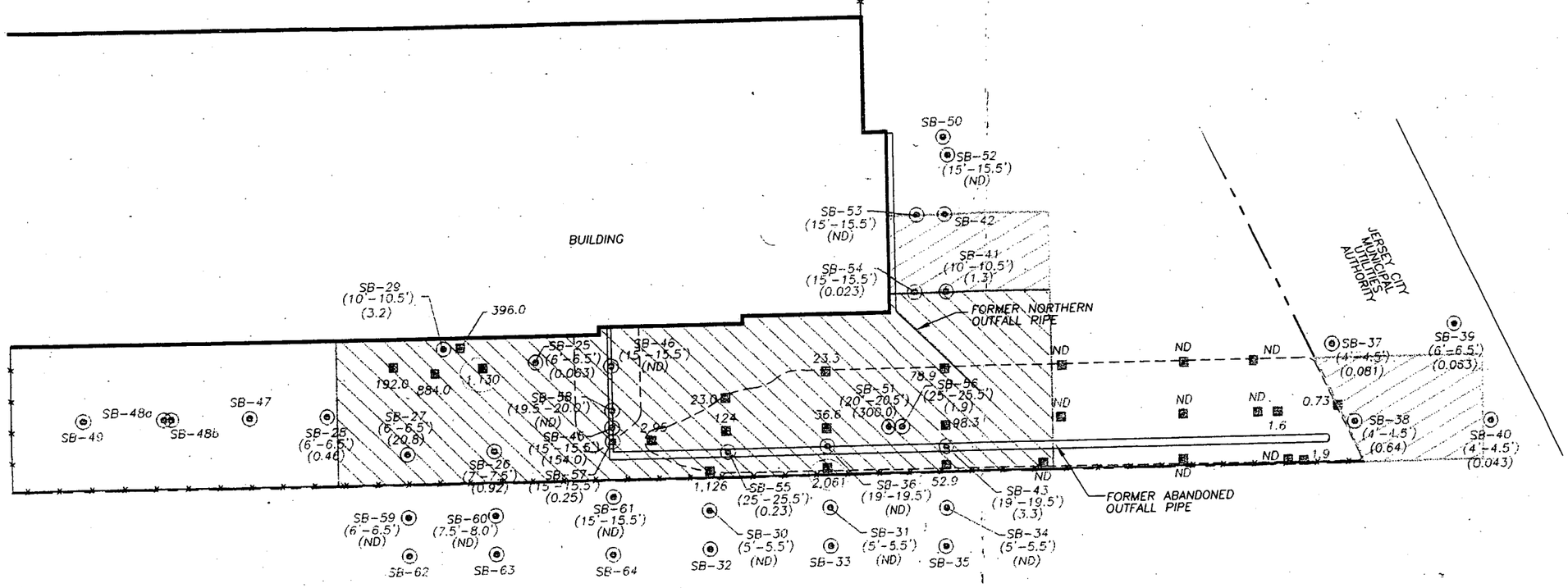
GZA GeoEnvironmental, Inc.

Unimatic Manufacturing Company
25 Sherwood Lane (Block 2302, Lot 8)
Fairfield, NJ 07004

Areas to be Excavated

PROJECT NO.
75342

FIGURE NO.
5



LEGEND

192.0 ■ POST-EXCAVATION SAMPLE LOCATION, PCB CONCENTRATION

SB-46 (6'-6.5')(20.8) ⊙ DELINEATION SOIL SAMPLE LOCATION, (SAMPLE DEPTH, PCB CONCENTRATION)

ND NOT DETECTED

EXCAVATION OUTLINE

PROPERTY BOUNDARY

PROPOSED CHAIN LINK FENCE

PROPOSED ENGINEERED CAP AND DEED RESTRICTED AREA

DEED RESTRICTED AREA WITHOUT AN ENGINEERED CAP

NOTE:
ALL PCB SOIL CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg).

ALL SAMPLE DEPTHS IN FEET BELOW GRADE (fbg)

SCALE
0 15' 30'

REV. NO.	DESCRIPTION	BY	DATE

ACKNOWLEDGEMENT:

PROJECT MGR: B.A.
DESIGNED BY: C.S.
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DATE: 10/22/2002

GZA GeoEnvironmental, Inc.

Unimatic Manufacturing Company
25 Sherwood Lane (Block 2302, Lot 8)
Fairfield, NJ 07004

Proposed Soil Engineering and Institutional Controls

PROJECT NO.
75342

FIGURE NO.
6