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Geology
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Remediation
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Remediation Report for New Paltz Plaza (Site No. 356021) Volume 1 of 2

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1.0 INTRODUCTION

Alpha Geoscience (Alpha) has prepared this Remediation Report on behalf of New Paltz Plaza Properties, L.P. (NPPP) as part of a Voluntary Cleanup Agreement (Index No. W3-0782-97-10, executed December 17, 1997) with the New York State Department of Environmental Conservation (NYSDEC). The report presents the results of remedial activities performed at the New Paltz Plaza Shopping Center, which includes the Revonak Dry Cleaners inactive hazardous waste site (Site No. 356021), in New Paltz, New York. The location of the site is shown in Figure 1. The work described herein was performed pursuant to the Remediation Plan for New Paltz Plaza, dated October 27, 1997. The remedial activities were based on the information and data obtained at the site during previous work, and include the test pit investigation and interim remediation completed on February 13, 1997, and the remedial excavation and ground water monitoring completed in January, 1998. The objective of the remedial activities was to remove and dispose of soil which may be acting as a continuing source of ground water contamination for volatile organic compounds (VOCs), and to monitor ground water to evaluate the effectiveness of the remediation. Criteria for remediation were consistent with NYSDEC DHWR TAGM 94-4046, Determination of Soil Cleanup Objectives and Cleanup Levels, dated January 24, 1994.

Remediation of petroleum from a historical release was performed in conjunction with remediation of volatile organic compounds (VOCs). The methods, results and findings for the petroleum remediation are presented in The Petroleum Remediation Report for the New Paltz Plaza, dated June 17, 1998.

1.1 Site Description

The New Paltz Plaza lies within an area of light commercial business, with some rural/residential areas to the north of the Plaza. To the south of the Plaza are several commercial establishments, to the east of the Plaza is a wooded area (recently developed for commercial use) and the New York State Thruway, and to the west of the Plaza is the Village of New Paltz. The Plaza consists of buildings and adjacent asphalt covered parking areas. Overhead utility service runs along the eastern boundary of the Plaza property, with overhead connections to the Plaza. The Plaza is served by municipal

water lines, which are located under the asphalt pavement on the east side of the Plaza. The Plaza also has sewer service, located under the asphalt pavement generally on the east side of the Plaza, with connections to the individual Plaza tenants.

The Plaza is served by the Town of New Paltz Water Department, which draws its water from the Village of New Paltz water system. The Village water system is supplied by surface water reservoirs more than five miles from the site. A review of a USGS well database and interviews with public works officials by Flour Daniels GTI indicated that four ground water wells are located within one mile of the site. The closest downgradient well is a domestic well approximately one-half mile from the property to the northeast. The well is 111 feet deep and the depth to water is approximately 15 feet below grade. The remaining wells are upgradient or cross-gradient from the property.

The soil on the east side of the Plaza consists of a mixture of cobbles, gravel, sand, silt and clay. Bedrock was encountered at depths of 6.5 to 9.0 feet in soil borings drilled at the site and during the February, 1997 test pit investigation. The depth to ground water is approximately two to four feet below grade and fluctuates seasonally. The ground water flow direction is generally to the north, as identified in previous reports, and as further described herein.

1.2 Background

Available information and documents indicate that the NYSDEC initially became involved with this site in early 1991 when a ground water monitoring program was initiated as a result of the discovery of a petroleum product discharge from an underground storage tank and piping associated with a former supermarket on the shopping center premises. December 1991 ground water sampling results indicated that chlorinated VOCs were present, in addition to petroleum constituents. Specifically, tetrachloroethylene (PCE) and trichloroethylene (TCE) were identified and attributed to the dry cleaning tenant within the shopping center. A 0.05 acre area associated with the dry cleaning tenant was subsequently listed in the New York State Registry of Inactive Hazardous Waste sites as a Class 2 site, priority 3 (low priority) as Site No. 356021.

1.3 Previous Investigations

Several investigations were completed on behalf of the owner, New Paltz Plaza Associates, LLC , during 1995 and 1996, pursuant to a NYSDEC Order on Consent (Index No. W3-0667-93-11). These investigations included a soil gas survey, soil borings and soil sampling, test pits, temporary well installation, ground water sampling and analysis, floor drain survey, sewer line investigation and a soil probe investigation of soil and ground water. These prior investigations did not identify a discrete, continuing source area of highly contaminated soil that posed a threat to ground water quality, even through ground water samples from well MW-2 consistently contained high levels of VOCs.

Based on the results of previous investigations, the NYSDEC approved a plan for an investigation program submitted by Alpha Geoscience, dated January 24, 1997, on behalf of NPPP. The results of this investigation, submitted to the NYSDEC on February 25, 1997, identified an area (test pits TP-9, TP-9E and TP-16) of elevated PCE in the upper two to three feet of soil immediately behind (east of) the dry cleaning facility. Sampling results from test pits TP-14, TP-14E, and TP-17 also indicated elevated levels of PCE and petroleum-related compounds in the soil and ground water near well MW-2. Contaminated soil excavated during the test pit program was disposed off site as described herein. A copy of the February 25, 1997 report is presented in Appendix A.

2.0 FIELD METHODS

2.1 Remedial Excavation

Excavating began at the limits of the test pits which were excavated in February, 1997. A track hoe was used to excavate soil from areas where contaminated soil was suspected based on the results of the February, 1997 test pit excavation. Soil was sampled, screened and analyzed, as described below, to initially determine the limits of excavation. Excavation proceeded until screening and analytical criteria were met, or until utilities or the building foundation precluded further excavating. Excavated soil was managed according to criteria specified in the Remediation Plan. The extent of the remedial excavation, as measured from fixed points at the site, is shown in Figure 2.

The remedial excavation was documented by an Alpha geologist/hydrogeologist. Alpha personnel recorded the excavation dimensions, soil texture and grain size, ground water occurrence, photoionization detector (PID) measurements, visual or olfactory evidence of petroleum contamination, and a record of samples submitted for laboratory and field gas chromatograph (GC) analysis in a dedicated project field book. Copies of the project field book and daily activity logs are presented in Appendix B.

At the completion of remedial activities, excavations were backfilled using either excavated soil approved by a NYSDEC on-site representative, or soil from an off-site source. The backfill was tamped to minimize settlement. Crushed stone was placed in the upper 6 to 12 inches of each backfilled area to support traffic and parking.

2.1.1 Soil Sampling, Screening and Analysis

A total of 58 soil samples were collected from the remedial excavation to determine the nature and concentration of contaminants in the soil. The locations of the remedial excavation samples are shown in Figure 3. Samples were initially screened for organic vapors using a PID at the excavation and were subsequently evaluated by headspace analysis. Analysis using the field GC assisted in determining the disposition of soil as petroleum-contaminated, solvent-contaminated, or potentially within acceptable cleanup criteria. Selected soil samples were submitted for analysis to a NYSDOH-approved laboratory to confirm the field GC results, in accordance with the Remediation Plan. A detailed description of the screening and analytical procedures is provided in the following sections.

Soil was excavated, and was immediately screened within the backhoe bucket using the on-site PID. If the PID detected a concentration greater than one (1) ppm above background, the soil was placed in a rolloff to be managed and disposed as hazardous waste, unless petroleum odors were present, in which case the soil was placed into a designated petroleum-contaminated rolloff. Soil placed into the petroleum-contaminated rolloff was analyzed by the on-site GC at a rate of approximately one sample for each cubic yard to ensure that the tetrachloroethylene limit specified in NYSDEC TAGM 94-4046 (1.4 ppm) was not exceeded.

If the PID did not record a value greater than one ppm, the soil was placed on plastic and sampled, and was analyzed by the on-site GC. The results of the on-site GC were used to determine whether the soil was placed in the hazardous rolloff, the petroleum rolloff, or remained on the plastic to be used as backfill. A value of 1.4 ppm of tetrachloroethylene, as determined by the GC and confirmed by laboratory analysis, was used as the cutoff to determine whether or not the soil was hazardous waste.

A sample identification system was implemented to insure accurate correlation between the soil samples and the staged soil piles. Each sample was labeled with a unique sample number, and was plotted on a map of the excavation area. An additional suffix of "A" and "B" was used to distinguish the two containers for each sample. A surveyors stake or pin flag was placed in each staged soil pile and labeled with the sample number (or numbers) corresponding to the pile. A field log was maintained listing the sample number, sample depth, the date of collection, the initial PID reading, the GC result, and whether or not the sample was submitted for laboratory analysis.

All samples submitted for laboratory analysis were collected in clean glass jars provided by the laboratory. Each jar was filled completely with soil to minimize air space and volatilization. After collection, each sample was labeled with a unique identification number and placed in a cooler for preservation. Selected samples were transported to a NYSDOH-certified laboratory using chain of custody procedures. One duplicate soil sample was analyzed for each ten samples submitted for laboratory analysis. Table 1 presents a summary of the analyses performed on all the soil samples submitted for laboratory analyses during remedial activities.

2.1.2 Dewatering

Dewatering was performed during excavating activities to remove contaminated water and provide for safe excavating below the water table. Excavating below the water table was possible due to the relatively low permeability of the soil. The water was pumped into temporary holding tanks on site or evacuated directly using a vacuum truck. The water was transported and disposed off site as described in Section 3.3.

2.1.3 Field Screening Analytical Method

Soil samples collected during the soil removal procedures were quantitatively screened on site for concentrations of benzene, toluene, ethylbenzene, total xylenes, tetrachloroethene, and trichloroethene by gas chromatographic (GC)/purge and trap procedures. A detailed description of the equipment, and procedure for initial and continuing calibration, and sample preparation and analysis is included in Appendix C. Field analysis quality control procedures are also described in Appendix C.

2.2 Ground Water Monitoring

The effectiveness of the remedial excavation will be evaluated by monitoring of ground water quality at the site. Four overburden monitoring wells (MW-6, MW-7, MW-8 and MW-9) and three bedrock monitoring wells (BR-1, BR-2 and BR-3) were installed at the site following remediation. The locations of these seven new wells, shown on Figure 4, are consistent with the locations proposed in the Remediation Work Plan. The well construction logs for the new wells are provided in Appendix D. Table 2 presents a summary of the well construction details. The seven new wells and the four existing wells will serve as a network for ground water monitoring.

Four monitoring wells (MW-1, MW-2, MW-3 and MW-4) were previously installed at the site in response to a petroleum release (Spill No. 9102195) at the former Great American Supermarket. Each of these wells (MW-1, MW-2, MW-3 and MW-4) were arbitrarily installed to a depth of 10 feet into the ground water. As a result, several of the wells apparently penetrate the upper few feet of bedrock and are screened across the bedrock/soil interface. Construction logs for these wells are provided in Appendix D. These wells will continue to be sampled during the first year of monitoring to allow comparison of post-remedial ground water quality with historical ground water data. Continued use of wells MW-1 through MW-4 will be evaluated after the first year of monitoring by comparing sampling results from these wells to results obtained from newly installed overburden and bedrock wells.

2.2.1 Overburden Well Installation

The soil borings for the overburden monitoring wells were advanced using a truck-mounted drill rig equipped with 4 ¼-inch inside diameter (ID) hollow stem augers. Split spoon samples were collected by driving the sampler with a 140-pound hammer falling 30 inches, until either 24 inches of soil was penetrated or 100 blows were applied with less than six inches of penetration.

Each sample was examined and recorded on boring logs including a soil description, moisture content, job designation, boring and sample number, depth penetration record, and length of recovery. Copies of the boring logs are included in Appendix E. A portion of each soil sample was placed in airtight plastic bags and laboratory-supplied glass jars. The soil in the bags was field-screened via headspace analysis using a PID, and the soil in the jars was placed in a chilled cooler for potential laboratory analysis. Copies of the organic vapor screening logs are included in Appendix F.

At the conclusion of drilling, a total of three soil samples and one duplicate sample were selected for laboratory analysis. The sample from boring MW-9 was selected based on a slightly elevated photoionization detector (PID) reading of 1.8 parts per million (ppm) above instrument background. The duplicate sample was also collected from boring MW-9. One sample each from borings MW-7 and MW-8 was selected from the interval which corresponds to the bottom of each well because there were no elevated PID measurements at these boring locations. Table 1 presents the soil sample analytical methods. The results of the sample analyses were used to characterize the drill cuttings for disposal. The drill cuttings from each boring location were staged on and covered with plastic sheeting pending laboratory analytical results.

The overburden wells are constructed of 2-inch, threaded joint, Schedule 40 PVC pipe with varying lengths of No. 10-slot screen. The length of screen at each location was selected based on the depth to bedrock, and accounted for installation of the bentonite seal and the protective casing. The annular space around, and from approximately one foot below and above the well screen, was filled with a Grade 1 filter sand pack. A bentonite seal at least one foot thick was installed above the sand pack and hydrated. Lockable, flush mount, steel protective casings were cemented at each well to prevent unauthorized access and provide well protection. Copies of the overburden well completion logs are included in Appendix D.

2.2.2 Bedrock Monitoring Well Installation

Three bedrock monitoring wells, designated BR-1, BR-2,and BR-3, were installed adjacent to overburden wells MW-6, MW-7,and MW-9, respectively (Figure 4). No split spoon sampling was performed at the bedrock well locations because continuous sampling was performed at each adjacent overburden well location. Samples of the drill cuttings from the bedrock borings were examined and recorded on boring logs.

Borings were drilled approximately one foot into the top of bedrock utilizing 6 ¼-inch ID hollow stem augers. Approximately one to two feet of a bentonite/cement mixture was placed in the augers and a 4-inch ID steel casing was set. The annular space between the 4-inch casing and the boring was then grouted to the surface while removing the augers. The grout was allowed to cure for a minimum of 48 hours prior to drilling into bedrock. A four-inch outer diameter (OD) air hammer assembly was used to drill approximately ten feet below the casing into the bedrock completing the well as an open bedrock hole. The cuttings from drilling activities were stockpiled and covered with plastic sheeting. Each well was completed with a flush mount protective road box. Copies of the bedrock well completion logs are presented in Appendix D and the borings logs are included in Appendix E.

2.2.3 Monitoring Well Development

Each, newly-installed, overburden and bedrock monitoring well was developed for the following reasons:

- To remove residual formational silts and clays, thereby reducing turbidity during sampling that could potentially interfere with chemical analysis; and,

- To increase the hydraulic communication between the saturated zone and the well and improve the well yield.

Well development was performed after forty-eight hours elapsed since well installation. Well development was accomplished using the dedicated bailer technique, or by using a submersible pump. Field parameters were measured after every well volume of water was removed. Well development

was terminated after the turbidity, pH, conductance and temperature of the purge water equilibrated (i.e., no substantial change after three consecutive well volumes) or as recharge of the well allowed. Water generated during well development was temporarily containerized and subsequently transferred to a vacuum truck for off-site disposal. Copies of the ground water sampling forms, which were used to record well development information, are included in Appendix G.

2.2.4 Ground Water Sampling

A ground water sample was collected from a previously installed recovery well, designated RW-1, at the request of the NYSDEC on December 12, 1997. Approximately 1,500 gallons of water was evacuated from RW-1 by a vacuum truck prior to collecting the sample.

Ground water samples were collected from each of the eleven monitoring wells. The initial round of sampling was conducted at least one week after well development. The sampling event included an examination of the existing on-site recovery well for free petroleum product. Volatile samples were collected in accordance with the procedures outlined in the Ground Water Sampling Protocol presented in Appendix H. Table 3 summarizes the analytical methods for the ground water sampling event. Ground water generated during purging was temporarily containerized and subsequently transported off site for disposal. Copies of the ground water sampling forms are included in Appendix G.

2.2.5 Surveying

Each of the eleven monitoring wells were surveyed to determine their relative location and top-of-casing elevation. An arbitrary datum of 100.0 feet was used to survey each well vertically (elevation) to an accuracy of 0.01 foot. The wells were located and are shown on Figure 4 relative to other structures and features at the site.

3.0 RESULTS

3.1 Remedial Excavation

Remedial excavating of the areas outlined in the Remediation Plan was performed during the period from December 2 through December 12, 1997. The final excavation was irregular in shape, covering an area of approximately 900 square feet and extending to the top of bedrock, approximately seven to nine feet below ground surface. Figure 2 depicts the outline of the excavated area relative to other surface features. The excavation connected or intercepted previously excavated test pits to ensure that as much impacted soil was excavated as practical. The lateral extent of the excavation was limited to the west by the building and to the northwest by a water main. Excavating was performed around site sewer and water lines (Figure 4), to the extent practicable. Some soil was necessarily left in place beneath these utilities for support.

The soils encountered during excavating consisted of various layers of silty clay, clayey silt, and sand. The permeability of the soils is generally low as evidenced by the relatively slow seepage of ground water into the excavation. Ground water accumulation in the excavation was easily controlled by occasional pumping. Ground water seepage was greatest from lenses of sandy soil suggesting that preferential flow paths are likely present at the site.

The excavation was backfilled with crushed stone after receiving laboratory results of confirmatory samples. Sample results were reviewed with NYSDEC personnel who provided the approval to backfill based on the sample analytical results.

3.1.1 Soil PID Screening

The excavated soil was initially screened in the backhoe bucket utilizing the PID. The results of PID screening indicated 29 samples with a measurement greater than 1.0 ppm. PID measurements of these samples ranged from 1.5 ppm to greater than 60 ppm. A copy of the organic vapor screening log is included in Appendix F. The 29 samples all exhibited a petroleum odor and associated soil was staged as non-hazardous, petroleum-contaminated soil, pending the results of field GC and laboratory analyses. Analysis of soil samples collected from the remedial excavation by both GC and the

laboratory show that concentrations of solvent-related VOCs were below the NYSDEC TAGM 4046 soil cleanup objectives (Table 4). The soil was subsequently placed in a rolloff for off-site disposal.

3.1.2 Gas Chromatograph Analysis

Soil samples collected during excavation activities were analyzed in the field laboratory for the presence or absence of tetrachloroethene (PCE), trichloroethene (TCE), benzene, toluene, ethylbenzene and m,p and o-xylene. A total of 58 samples and six duplicate samples were analyzed during remedial excavation. Table 4 is a summary of the results of the GC field analysis and Figure 3 depicts the locations of the sample points.

The results of GC analyses indicate there were no samples with a concentration of PCE greater than the hazardous waste criteria of 1.4 ppm. The concentrations of PCE ranged from less than 50 ppb (the instrument detection limit) at 32 locations, to a maximum concentration of 597 ppb detected at location RE-22. Eighteen samples measured less than 100 ppb, five samples measured from 100 ppb to 200 ppb, and the remaining three samples measured from 415 ppb to 501 ppb.

3.1.3 Laboratory Analysis

Laboratory analysis was performed on 24 percent of the samples to verify the field GC results. Fourteen soil samples and two duplicate samples were submitted for laboratory analysis. The laboratory results typically indicated lower concentrations of PCE than indicated by the field GC analysis. This discrepancy is attributed to loss of volatiles in the laboratory samples due to longer holding times (24 to48 hours) prior to analysis. Samples analyzed by field GC were typically extracted within 10 minutes of collection and analyzed within one hour. Comparison of the GC results with the laboratory results shows good correlation with respect to the types of compounds detected. The GC results, however, are considered more representative than the laboratory results of in situ soil concentrations.

Table 4 presents the results of both the field GC and corresponding laboratory analytical results. The laboratory results confirmed that none of the analyzed samples contained PCE in concentrations at, or greater than, the NYSDEC cleanup criteria of 1.4 ppm. The laboratory sample summary reports

are included in Appendix I. Category B deliverables were prepared and provided by the laboratory in accordance with the Remediation Plan. The full category B deliverable packages are available, if requested.

3.2 Ground Water Monitoring

Water level measurements and ground water samples were collected to determine the direction of ground water flow, vertical hydraulic gradient and to monitor ground water quality at the site, as part of the Remediation Plan. Quarterly sampling of the wells is scheduled for the first year of monitoring, in accordance with the Remediation Plan, and the results of the initial round of sampling are presented in Sections 3.2.2 and 3.2.3.

3.2.1 Soil Boring Sample Analysis

In accordance with the Remediation Plan, soil samples were collected during the drilling of the new monitoring wells. Samples were collected from three of the four overburden wells, including MW-7, MW-8 and MW-9. The results of laboratory analysis indicate low levels of PCE were detected in all three borings at concentrations that are substantially below the NYSDEC cleanup objective of 1.4 ppm (1400 ppb) for PCE. A summary of the soil boring analytical results is presented in Table 5. Low concentrations of related compounds were also substantially below their respective NYSDEC cleanup objective values. Analysis of sample S-4 from boring MW-7 at a depth of six to eight feet, indicates PCE was detected at a concentration of 17 ppb and TCE was detected at a concentration of 4.3 ppb. Analysis of sample S-5 from boring MW-8 at a depth of eight to ten feet, indicates PCE was detected at a concentration 5 ppb. Analysis of sample S-4 from boring MW-9 at a depth of eight to ten feet, indicates PCE was detected at a concentration of 150 ppb, TCE at 25 ppb, and cis-1,2-dichloroethene was detected at 73 ppb. Copies of the laboratory analytical reports for the soil samples are included in Appendix I.

3.2.2 Overburden Wells Ground Water Analysis

The ground water sample collected from the on-site recovery well (RW-1) in the former tank pit was analyzed using the on-site GC. A spotty sheen was noted on the water and no free product was

present after purging the well and allowing it to recover. The results of GC analysis of the recovery well sample, presented in Table 4, indicate total BTEX measured 29.7 ppb.

The initial round of quarterly ground water sampling was performed on January 20, 1998. Table 6 presents a summary of historical and recent water sampling results for select constituents. The laboratory analytical reports are included in Appendix I. Category B deliverables for the laboratory reports were prepared in accordance with the Remediation Plan and are available upon request.

Ground water samples were analyzed by EPA Method 8260 to provide an indication of the presence of both solvent and petroleum-type compounds. Samples from wells MW-2, MW-3, MW-4, MW-6, and BR-1 were also analyzed for base-neutral, compounds by EPA Method 8270.

The results of the analysis show that no semi-VOCs (i.e., base-neutral compounds) were detected in the ground water at or above the detection limits. Analysis of tentatively identified compounds (TICs) detected identified compounds in samples from wells MW-3, MW-4, MW-6, and BR-1 at very low estimated concentrations (less than 5 ppb).

Petroleum related VOCs were not detected in the ground water samples above the detection limits. The solvent-related VOCs which were detected primarily included PCE and TCE and their degradation by products (Table 5). Concentrations of solvent-related VOCs decreased in samples from wells MW-1 and MW-2, with respect to historical concentrations. Concentrations of solvent-related compounds appear to have increased slightly in well MW-4 and have remained essentially unchanged, at very low concentrations, in well MW-3.

Solvent-related VOCs were detected in each of the newly installed overburden wells (MW-6, MW-7, MW-8, and MW-9) with concentrations of total VOCs ranging from 7.8 ppb at well MW-8 to 1895.8 ppb at well MW-9. The concentrations of PCE ranged from 2.0 ppb in well MW-8 to 1,000 ppb in well MW-9. The results from the bedrock sampling, summarized below, indicate that PCE was not measured above the detection limit in well BR-3, which is the bedrock well adjacent to overburden well MW-9. This result suggests that the bedrock does not appear to be impacted from the ground water at location MW-9

3.2.3 Bedrock Wells Ground Water Analysis

The newly installed bedrock wells were sampled on January 20, 1998. The results of laboratory analysis indicates the presence of solvent-related VOCs in wells BR-1 and BR-2. The results from well BR-3 indicate that no VOCs were detected above the detection limits. Wells BR-1 and BR-2 results indicate that concentrations of total VOCs were 38 ppb and 229 ppb, respectively. Concentrations of PCE in these wells were 12 ppb and 130 ppb, respectively. A summary of the results of the bedrock well sampling are also included in Table 5 and the laboratory analytical reports are included in Appendix I.

3.2.4 Water Level Measurements

Depth to water measurements were recorded prior to sampling on January 20, 1998, and again on February 27, 1998. The depth to water measurements and survey elevations were used to calculate ground water elevations and to determine ground water flow direction in the overburden and bedrock. The data were also used to calculate the vertical hydraulic gradients at the three well pairs. Table 7 presents a summary of the water level elevations.

Ground water contour maps for both the overburden and the bedrock were developed from the water levels measured on January 20, 1998 and February 27, 1998. The ground water contour maps are presented in Figures 5, 6, 7 and 8. The ground water contour maps indicate that ground water flow is north to northwest in both the overburden and bedrock.

Measurement of water levels in adjacent overburden and bedrock wells (MW-6/BR-1 and MW-7/BR-2, and MW-9/BR-3) allowed calculation of the vertical hydraulic gradient at each of these locations. The vertical hydraulic gradient calculations are presented in Table 8. The calculations from the January 20, 1998 measurements indicate a slight downward vertical gradient, while the February 27, 1998 measurements indicate a slight upward gradient, with the exception of MW-7/BR-2 well pair. The water level in well MW-7 on the February 27, 1998 date is likely artificially elevated by surface water entering the well. The actual vertical gradient for this well pair may have been upward on this date.

Fluctuations in the water table within the overburden which occur more rapidly than changes in the potentiometric head in the bedrock may account for the change from a downward to an upward vertical gradient. It is also possible that the bedrock well water levels may not have stabilized by the January 20, 1998 measurement date, approximately one week after their installation, due to the low permeability of the bedrock. The February 27, 1998 measurements in the bedrock wells may be more representative of actual hydraulic conditions.

3.3 Waste Disposal

3.3.1 Soil Disposal

Approximately 223 tons of soil from the December, 1997 site remediation were transported and disposed at ESMI of New York. A copy of the Certificate of Treatment and Recycling for the soil is included in Appendix J.

Approximately five cubic yards of soil cuttings generated from well drilling activities were temporarily stockpiled on plastic sheeting. The laboratory analytical results of samples of this soil did not detect VOCs at or above the NYSDECs hazardous waste or petroleum-contaminated soil guidance values. Therefore, this soil was regraded on site.

3.3.2 Water Disposal

Approximately 10,000 gallons of water was generated from excavation dewatering, and well development and purging activities. The water was evacuated into a vacuum truck and transported by MC Environmental Services, Inc. to Mobil Oil Corporation, Glens Falls Wastewater Treatment Plant, Ira Conklin & Sons, Inc., or Paradise Oil for disposal. Copies of the manifests for disposal of water are included in Appendix J.

3.4 Laboratory Data Quality

Off-site laboratory data associated with the December, 1997 site remediation were reviewed for data quality, completeness and useability following the procedures described in the quality assurance

sections of the applicable analytical methods and the United States Environmental Protection Agency (USEPA) Functional Guidelines for Organic Data Review (February, 1994). The results of the review are presented in the Data Validation Reports located in Appendix K.

The results of the data validation review indicate that all laboratory data were valid and useable with the appropriate qualifications noted in the above referenced Data Validation Reports.

4.0 SUMMARY AND CONCLUSIONS

Extensive investigation and comprehensive remediation of the New Paltz Plaza, Revonak Cleaners site has been completed. Remediation efforts conducted during December, 1997, and during the February, 1997 test pit investigation, removed approximately 223 tons of contaminated soil and 10,000 gallons of contaminated water from the site. Excavated soil consisted of a mixture of silty clay, clayey silt, and sand. The low permeability of the site soil is evidenced by the small volume of ground water which seeped into the excavation. Observation of ground water seeping into the excavation at varying rates from individual soil layers and lenses suggests the presence of preferential ground water flow paths in the subsurface.

No VOCs were detected at concentrations greater than the NYSDEC TAGM 4046 soil cleanup objectives in post-excavation soil samples collected from the remedial excavation. No VOCs or semi-VOCs were detected above New York State ground water standards in wells MW-8 and BR-3. Concentrations of VOCs in well MW-3 were only slightly greater than the ground water standards. VOCs were detected in ground water at concentrations greater than ground water standards in wells MW-1, MW-2, MW-3, MW-4, MW-6, MW-7, MW-9, BR-1 and BR-2. The distribution of VOCs suggests that migration of ground water contamination may have occurred along preferential flow paths. These flow paths may include higher permeability soil or select backfill around utilities and the plaza foundation footer. The fill on the east side of the plaza was heterogeneous with some sandy layers which may enhance ground water movement. The results from bedrock water quality sampling suggest that the bedrock unit does not appear to be impacted in the area of well pair MW-9 and BR-3. The results of recent ground water samples will be evaluated with future monitoring events to determine if concentrations of VOCs in ground water are decreasing.

Based on the post-excavation confirmatory sample results, it is Alpha's opinion that no additional remedial excavation is necessary. The results of the initial round of ground water monitoring shows that concentrations of some VOCs in the ground water have decreased, compared to historical concentrations. The initial ground water monitoring has established a baseline of water quality for comparison to future sampling and analysis. Continued ground water monitoring results will provide the data necessary to define trends in the ground water quality. Decisions regarding future monitoring should be based on the results of the first complete year of ground water monitoring.

TABLE 1

Summary of Soil Sample Laboratory Analytical Methods
Remedial Excavation and Well Installation
New Paltz Plaza

Location	Sample ID	Analytical Method
Remedial Excavation	RE-4A	EPA Method 8260, TIC, Category B Deliverable
Remedial Excavation	RE-9A	EPA Method 8260, TIC, Category B Deliverable
Remedial Excavation	RE-9A (Dup)	EPA Method 8260, TIC, Category B Deliverable
Remedial Excavation	RE-14A	EPA Method 8260, TIC, Category B Deliverable
Remedial Excavation	RE-22A	EPA Method 8260, TIC, Category B Deliverable, TCLP EPA Method 8270 B/N, TIC, Category B Deliverable
Remedial Excavation	RE-25A	EPA Method 8260, TIC, Category B Deliverable
Remedial Excavation	RE-30A	EPA Method 8260, TIC, Category B Deliverable, EPA Method 8270 B/N, TIC, Category B Deliverable
Remedial Excavation	RE-33A	EPA Method 8260, TIC, Category B Deliverable
Remedial Excavation	RE-41A	EPA Method 8260, TIC, Category B Deliverable, EPA Method 8270 B/N, TIC, Category B Deliverable
Remedial Excavation	RE-43A	EPA Method 8260, TIC, Category B Deliverable, EPA Method 8270 B/N, TIC, Category B Deliverable
Remedial Excavation	RE-47A	EPA Method 8260, TIC, Category B Deliverable
Remedial Excavation	RE-49A	EPA Method 8260, TIC, Category B Deliverable
Remedial Excavation	RE-54A	EPA Method 8260, TIC, Category B Deliverable, TCLP EPA Method 8270 B/N, TIC, Category B Deliverable
Remedial Excavation	RE-55A	EPA Method 8260, TIC, Category B Deliverable, TCLP EPA Method 8270 B/N, TIC, Category B Deliverable
Remedial Excavation	RE-58A	EPA Method 8260, TIC, Category B Deliverable, TCLP EPA Method 8270 B/N, TIC, Category B Deliverable
Remedial Excavation	RE-58A (Dup)	EPA Method 8260, TIC, Category B Deliverable, TCLP EPA Method 8270 B/N, TIC, Category B Deliverable
MW-7	S-4	EPA Method 8260, TIC, Category B Deliverable
MW-8	S-5	EPA Method 8260, TIC, Category B Deliverable
MW-9	S-4	EPA Method 8260, TIC, Category B Deliverable
MW-9	S-4 (Dup)	EPA Method 8260, TIC, Category B Deliverable

Notes:
1. TCLP = Toxicity Characteristic Leaching Procedure
2. B/N = Base Neutrals
3. DUP = Duplicate Sample
4. TIC = Tentatively Identified Compound

TABLE 2

Summary of Monitoring Well Construction Details
Ground Water Monitoring Program
New Paltz Plaza

Well ID	Boring Total Depth (ft.)	Screen/Open Hole Interval (ft.)	Sand Pack Interval (ft.)
MW-6	7.7	3.1 - 7.1	2.6 - 7.7
BR-1	20.0	10.1 - 20.0	NA
MW-7	10.0	3.3 - 9.3	2.5 - 10.0
BR-2	19.5	9.2 - 19.5	NA
MW-8	11.5	4.3 - 10.8	3.8 - 11.5
MW-9	11.9	4.0 - 11.0	3.0 - 11.9
BR-3	23.5	13.2 - 23.5	NA

Notes:
1. MW wells are overburden, 2" I.D.
2. BR wells are open hole bedrock, 4" O.D.
3. NA = Not Applicable

TABLE 3

Summary of Ground Water Sample
Laboratory Analytical Methods
Ground Water Monitoring Program
New Paltz Plaza

Well/Sample ID	Analytical Method
MW-1	EPA Method 8260, TIC, Category B Deliverable
MW-2	EPA Method 8260, TIC, Category B Deliverable, EPA Method 8270 B/N, TIC, Category B Deliverable
MW-2 (Dup)	EPA Method 8260, TIC, Category B Deliverable, EPA Method 8270 B/N, TIC, Category B Deliverable
MW-3	EPA Method 8260, TIC, Category B Deliverable, EPA Method 8270 B/N, TIC, Category B Deliverable
MW-4	EPA Method 8260, TIC, Category B Deliverable, EPA Method 8270 B/N, TIC, Category B Deliverable
MW-6	EPA Method 8260, TIC, Category B Deliverable, EPA Method 8270 B/N, TIC, Category B Deliverable
MW-7	EPA Method 8260, TIC, Category B Deliverable
MW-8	EPA Method 8260, TIC, Category B Deliverable
MW-9	EPA Method 8260, TIC, Category B Deliverable
BR-1	EPA Method 8260, TIC, Category B Deliverable, EPA Method 8270 B/N, TIC, Category B Deliverable
BR-2	EPA Method 8260, TIC, Category B Deliverable
BR-3	EPA Method 8260, TIC, Category B Deliverable

Notes:
1. B/N = base neutrals.
2. Matrix spike and matrix spike duplicate samples were analyzed from well MW-4.
3. Dup = Duplicate Sample
4. TIC = Tentatively Identified Compound

Table 4
Summary of GC and Laboratory Soil Analytical Results
Remedial Excavation Program
New Paltz Plaza

Sampling Date	Sample Number	Analysis Method	PCE	TCE	Benzene	Toluene	Ethylbenzene	M&P Xylene	O Xylene
12/2/97	RE-1B	GC	<50	<50	<50	<50	<50	<50	<50
12/2/97	RE-2B	GC	<50	<50	<50	<50	<50	<50	<50
12/2/97	RE-3B	GC	<50	<50	<50	<50	<50	<50	<50
12/2/97	RE-4B	Lab	*13*	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*
		GC	**93**	<50	<50	<50	<50	<50	<50
12/2/97	RE-5B	GC	**94**	<50	<50	<50	<50	<50	<50
12/2/97	RE-6B	GC	<50	<50	<50	<50	<50	<50	<50
12/2/97	RE-7B	GC	<50	<50	<50	<50	<50	<50	<50
12/2/97	RE-8B	GC	<50	<50	<50	<50	<50	<50	<50
12/3/97	RE-9B	Lab	*<140*	*<140*	*<140*	*<140*	***260***	***170***	***100***
		GC	<50	<50	<50	**58**	**147**	**348**	<50
12/3/97	RE-9B Dup	Lab	*<140*	*<140*	*<140*	*<140*	***260***	***170***	***130***
		GC	**64**	<50	<50	<50	**230**	**457**	<50
12/3/97	RE-10B	GC	**85**	<50	<50	**57**	**102**	**302**	<50
12/3/97	RE-11B	GC	**96**	<50	<50	<50	<50	**547**	<50
12/3/97	RE-12B	GC	**415**	<50	<50	**53**	<50	**161**	<50
12/3/97	RE-13B	GC	<50	<50	<50	<50	<50	<50	<50
12/3/97	RE-14B	Lab	*3.4*	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*
		GC	**451**	<50	<50	<50	<50	<50	<50
12/3/97	RE-15B	GC	<50	<50	<50	<50	<50	<50	<50

Sampling Date	Sample Number	Analysis Method	PCE	TCE	Benzene	Toluene	Ethylbenzene	M&P Xylene	O Xylene
12/3/97	RE-16B	GC	<50	<50	<50	<50	<50	<50	<50
12/3/97	RE-17B	GC	<50	<50	<50	<50	<50	<50	<50
12/3/97	RE-17B Dup	GC	<50	<50	<50	<50	<50	<50	<50
12/3/97	RE-18B	GC	**94**	<50	<50	<50	<50	<50	<50
12/3/97	RE-19B	GC	**57**	<50	<50	**61**	**78**	**329**	<50
12/3/97	RE-20B	GC	**166**	<50	<50	**63**	**151**	**417**	**70**
12/3/97	RE-21B	GC	<50	<50	<50	<50	<50	<50	<50
12/3/97		Lab	***23***	***4.9***	***<5.7***	***<5.7***	***48***	***49***	***10***
	RE-22B	GC	**597**	**116**	<50	<50	<50	**73**	<50
12/4/97	RE-23B	GC	**70**	<50	<50	<50	<50	<50	<50
12/4/97	RE-24B	GC	**67**	<50	<50	<50	<50	<50	<50
12/4/97		Lab	***2.3***	***<1.1***	***<1.1***	***<1.1***	***<1.1***	***<1.1***	***<1.1***
	RE-25B	GC	**75**	<50	<50	<50	<50	<50	<50
12/4/97	RE-26B	GC	**69**	<50	<50	<50	**65**	**303**	<50
12/4/97	RE-27B	GC	**54**	<50	<50	<50	<50	**350**	<50
12/4/97	RE-28B	GC	<50	<50	<50	<50	<50	**114**	<50
12/5/97	RE-29B	GC	<50	<50	<50	<50	<50	<50	<50
12/5/97	RE-29E Dup	GC	<50	<50	<50	<50	<50	<50	<50
12/5/97		Lab	***<1.2***	***<1.2***	***<1.2***	***<1.2***	***<1.2***	***<1.2***	***<1.2***
	RE-30B	GC	<50	<50	<50	<50	<50	<50	<50
12/5/97	RE-31B	GC	<50	<50	<50	<50	<50	<50	<50

Sampling Date	Sample Number	Analysis Method	PCE	TCE	Benzene	Toluene	Ethylbenzene	M&P Xylene	O Xylene
12/5/97	RE-32B	GC	<50	<50	<50	<50	<50	<50	<50
12/8/97		Lab	*2.8*	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*
	RE-33B	GC	**95**	<50	<50	<50	<50	<50	<50
12/8/97	RE-34B	GC	<50	<50	<50	<50	<50	**177**	<50
12/8/97	RE-35B	GC	<50	<50	<50	<50	**672**	**499**	<50
12/8/97	RE-36B	GC	<50	<50	<50	<50	<50	<50	<50
12/8/97	RE-37B	GC	**59**	<50	<50	<50	<50	<50	<50
12/8/97	RE-38B	GC	**112**	<50	<50	<50	<50	<50	<50
12/8/97	RE-39B	GC	**60**	<50	<50	<50	<50	**97**	<50
12/8/97	RE-39B Dup	GC	**91**	<50	<50	<50	<50	**199**	<50
12/8/97	RE-40B	GC	<50	<50	<50	<50	<50	<50	<50
12/8/97		Lab	*100*	*<5.6*	*<5.6*	*<5.6*	*10*	*23*	*<5.6*
	RE-41B	GC	**158**	<50	<50	<50	**53**	<50	<50
12/8/97	RE-42B	GC	**59**	<50	<50	**85**	**980**	**1043**	<50
12/8/97		Lab	*50*	*12*	*<5.7*	*<5.7*	*11*	*8.7*	*<5.7*
	RE-43B	GC	**501**	<50	<50	**63**	<50	**123**	<50
12/9/97	RE-44B	GC	<50	<50	<50	<50	<50	<50	<50
12/9/97	RE-45B	GC	<50	<50	<50	<50	<50	<50	<50
12/9/97	RE-46B	GC	<50	<50	<50	<50	<50	**86**	<50
12/9/97		Lab	*49*	*14*	*<1.2*	*<1.2*	*0.8*	*0.8*	*1.2*
	RE-47B	GC	**68**	<50	<50	<50	<50	<50	<50
12/9/97	RE-48B	GC	<50	<50	<50	<50	<50	<50	<50

Sampling Date	Sample Number	Analysis Method	PCE	TCE	Benzene	Toluene	Ethylbenzene	M&P Xylene	O Xylene
12/9/97		Lab	*120*	*10*	*<5.7*	*<5.7*	*<5.7*	*<5.7*	*<5.7*
	RE-49B	GC	**137**	<50	<50	<50	<50	**57**	<50
12/9/97	RE-49Dup	GC	**218**	<50	<50	<50	<50	<50	<50
12/9/97	RE-50B	GC	**200**	<50	<50	<50	<50	<50	<50
12/10/97	RE-51B	GC	**58**	<50	<50	<50	<50	<50	<50
12/10/97	RE-52B	GC	<50	<50	<50	<50	<50	<50	<50
12/11/97	RE-53B	GC	<50	<50	<50	<50	**78**	**154**	<50
12/11/97		Lab	*16*	*1.6*	*<1.2*	*<1.2*	*<1.2*	*<1.2*	*<1.2*
	RE-54B	GC	<50	<50	<50	<50	<50	<50	<50
12/11/97		Lab	*1.8*	*1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*	*<1.1*
	RE-55B	GC	**66**	<50	<50	<50	<50	<50	<50
12/11/97	RE-56B	GC	<50	<50	<50	<50	**143**	**274**	<50
12/11/97	RE-57B	GC	<50	<50	<50	<50	<50	<50	<50
12/11/97		Lab	*8.3*	*2.6*	*<1.2*	*<1.2*	*<1.2*	*0.8*	*<1.2*
	RE-58B	GC	<50	<50	<50	<50	<50	<50	<50
12/11/97		Lab	*8.4*	*3.1*	*<1.2*	*<1.2*	*<1.2*	*<1.2*	*<1.2*
	RE-58B Dup	GC	<50	<50	<50	<50	<50	<50	<50
12/12/97	RW-1	GC	**2.1**	**0.9**	**1.7**	**7.1**	**4**	**13.6**	**3.3**

Notes:
1. All results are in micrograms per kilogram (parts per billion)
2. Laboratory analytical resuls shown for GC-target parameters only. Appendix H contains copies of the full laboratory analytical results.

d:/.../npplaza/gcresult/gctable.xls

TABLE 5

Summary of Soil Boring Samples
Laboratory Analytical Results
New Paltz Plaza

Compound	MW-7 S-4 (6'-8')	MW-8 S-5 (8'-10')	MW-9 S-4 (8'-10')	MW-9 Dup (S-4 (8'-10')
cis-1,2-Dichloroethene	1.1J	ND	73	66
Trichloroethene	4.3	ND	25	21
Tetrachloroethene	17.0	5.0	150	140

Notes:
1. All results are in micrograms per kilogram.
2. ND = Not detected at or above laboratory practical quantitation limit.
3. J = estimated value.

TABLE 6

Summary of Ground Water Analytical Results
Revonak Dry Cleaners
Site No. 356021

Location	Sampling Date	Analysis Method	PCE	TCE	1,1,1-TCA	1,2-DCE	Vinyl Chloride	Total VOCs
MW-1	12/91	624	65.0	16.0	U	<5.0	U	U
	9/94	624	39.0	7.1	U	5.5	U	U
	2/21/96	8010	<1.0	<1.0	<1.0	<1.0	<1.0	ND
	3/7/96	8010	1.1	<1.0	<1.0	<1.0	<1.0	U
	3/19/96	8010	2.6	<1.0	<1.0	<1.0	<1.0	U
	2/7/97	8010	57	9.3	<1.0	7.7	<1.0	74
	1/20/98	8260	28	5	<1.0	4	<1.0	37
MW-2	12/91	624	3,100	1,400	<500	<500	U	U ?
	9/94	624	7,600	<500	<500	600	U	U ?
	2/5/96	8010	21,000	<500	550	<500	<500	21,550
	3/7/96	8010	31,000	<500	750	<500	<500	U ?
	3/19/96	8010	21,000	<200	590	420	<200	U ?
	3/19/96	8240	21,000	<1000	<1000	<1000	<2000	U ?
	3/22/96	8010	13,000	160	270	260	<500	13,690
	4/26/96	8010	15,000	<200	300	280	<1000	15,580
	2/7/97	8010	9,100	120	160	160	21	9,583
	1/20/98	8260	5,600	140	130	200	20	6,103
MW-2 (Dup)	1/20/98	8260	5,400	110	120	170	22	5,822
MW-3	12/91	624	15.0	3.0	U	<5.0	U	U
	9/94	624	<5.0	<5.0	U	10.0	U	U
	2/5/96	8010	2.9	<1.0	<1.0	7.0	1.8	11.7
	3/7/96	8010	<1.0	<1.0	<1.0	7.9	1.4	U
	3/19/96	8010	8.6	<1.0	<1.0	12.0	2.2	U
	2/7/97	8010	0.5	<1.0	<1.0	3.8	<1.0	4.3
	1/20/98	8260	0.7J	0.8J	<1.0	7	1	9.5
MW-4	12/91	624	178	8.0	U	<5.0	U	U
	9/94	624	200	18.0	U	36.0	U	U
	2/5/96	8010	310	32.0	<10.0	240	<10.0	582
	3/7/96	8010	110	10.0	<2.0	46.0	<2.0	U
	3/19/96	8010	290	26.0	<5.0	220	<5.0	U
	2/7/97	8010	88	24.0	0.8	120	2.2	235
	1/20/98	8260	210	41.0	0.8J	120J	45	418.8
MW-6	1/20/98	8260	41	14	<1.0	35	5.0	95
MW-7	1/20/98	8260	93	18	<1.0	32	4.0	147
MW-8	1/20/98	8260	2.0	0.8J	<1.0	3.0	2.0	7.8

Location	Sampling Date	Analysis Method	PCE	TCE	1,1,1-TCA	1,2-DCE	Vinyl Chloride	Total VOCs
MW-9	1/20/98	8260	1000	150	1.0	700	41.0	1,895.8
BR-1	1/20/98	8260	12	2.0	<1.0	20	4.0	38
BR-2	1/20/98	8260	130J	19	<1.0	65	13	229
BR-3	1/20/98	8260	0.6J	<1.0	<1.0	<1.0	<1.0	0.6

Notes:

1. All results are in micrograms per liter (parts per billion)
2. J = Quantifiable number detected below detection limit
3. U = Unavailable or Unknown
4. ND = Not detected at or above the practical quantitation limit
5. Ground water samples collected February,1996 from wells MW-1, MW-2, MW-3 and MW-4 were analyzed for aromatic volatile organics by Method 8020. All results were non-detectable.

d:/../npplaza/summary/wtrres2.xls

TABLE 7
Ground Water Elevations
Ground Water Monitoring Program
New Paltz Plaza

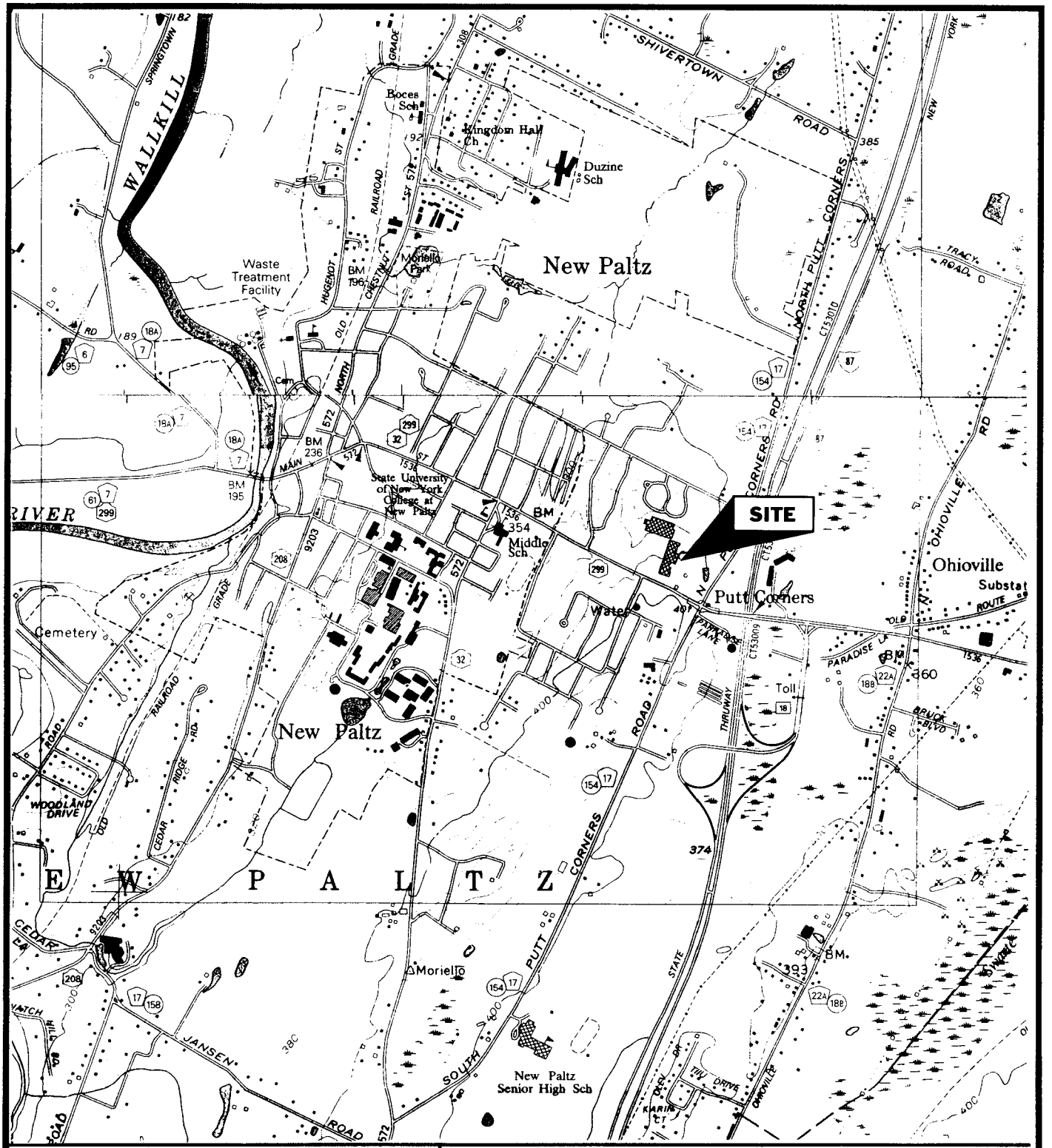
		Jan. 20, 1998		Feb. 27, 1998	
Well ID	Measuring Point Elevation	Depth to Water (ft.)	Water Level Elevation	Depth to Water (ft.)	Water Level Elevation
MW-1	97.90	1.57	96.33	1.42	96.48
MW-2	97.31	3.36	93.95	3.03	94.28
MW-3	97.62	2.65	94.97	2.44	95.18
MW-4	95.70	2.35	93.35	1.93	93.77
MW-6	96.90	3.23	93.67	3.07	93.83
MW-7	94.95	1.79	93.16	1.18*	93.77*
MW-8	94.42	3.30	91.12	3.02	91.4
MW-9	92.04	3.64	88.40	3.54	88.5
BR-1	96.78	3.18	93.60	2.82	93.96
BR-2	94.95	2.07	92.88	1.62	93.33
BR-3	91.77	3.49	88.28	3.12	88.65

Notes:
1. Measuring point elevations are from 1/20/98 survey data, using an arbitrary site datum.
2. * - MW-7 water level suspect, expandable plug was off the well, surfce water running into well.

TABLE 8
Vertical Hydraulic Gradient Calculations
Ground Water Monitoring Program
New Paltz Plaza

Well ID	Measurement Date	Screen Center Elevation	Open Hole Center Elevation	Difference In Elevation	Water Level Elevation	Head Differential	Vertical Hydraulic Gradient
MW-6	1/20/98	91.80		10.02	93.67	0.07	0.007
BR-1			81.78		93.60		(downward gradient)
MW-7	1/20/98	88.65		8.05	93.16	0.28	0.035
BR-2			80.60		92.88		(downward gradient)
MW-9	1/20/98	84.54		11.12	88.4	0.12	0.011
BR-3			73.42		88.28		(downward gradient)
MW-6	2/27/98	91.80		10.02	93.83	-0.13	-0.013
BR-1			81.78		93.96		(upward gradient)
MW-7	2/27/98	88.65		8.05	*93.77	0.44	0.055
BR-2			80.60		93.33		(downward gradient)*
MW-9	2/27/98	84.54		11.12	88.5	-0.15	-0.013
BR-3			73.42		88.65		(upward gradient)

Note: * Water level suspect, surface water running into well during water level measurement.



Clintondale and Rosendale
Quadrangles
New York State
Department of Transportation
7.5 Minute Series

SCALE:
2000 FT

ALPHA GEOSCIENCE

FIGURE 1
SITE LOCATION MAP

New Paltz Plaza
New Paltz, New York

Project No. 95141

REVONAK

NEW PALTZ PLAZA

STAIRWELL & DRAIN (TYP)

TP-9

TP-16

REMEDIAL EXCAVATION

MH-4

MH-3

FORMER TANK EXCAVATION STONE BACKFILL

TP-14E

TP-14

TP-17

utility pole

CB

TP-10

0 5

SCALE IN FEET

LEGEND

- SEWER LINE
- WATER SERVICE (1", 1-1/2")
- WATER MAIN (6")
- 12/1-12/97 EXCAVATION LIMITS
- CATCH BASIN - MANHOLE
- TEST PITS 2/4 - 13/97

ALPHA GEOSCIENCE

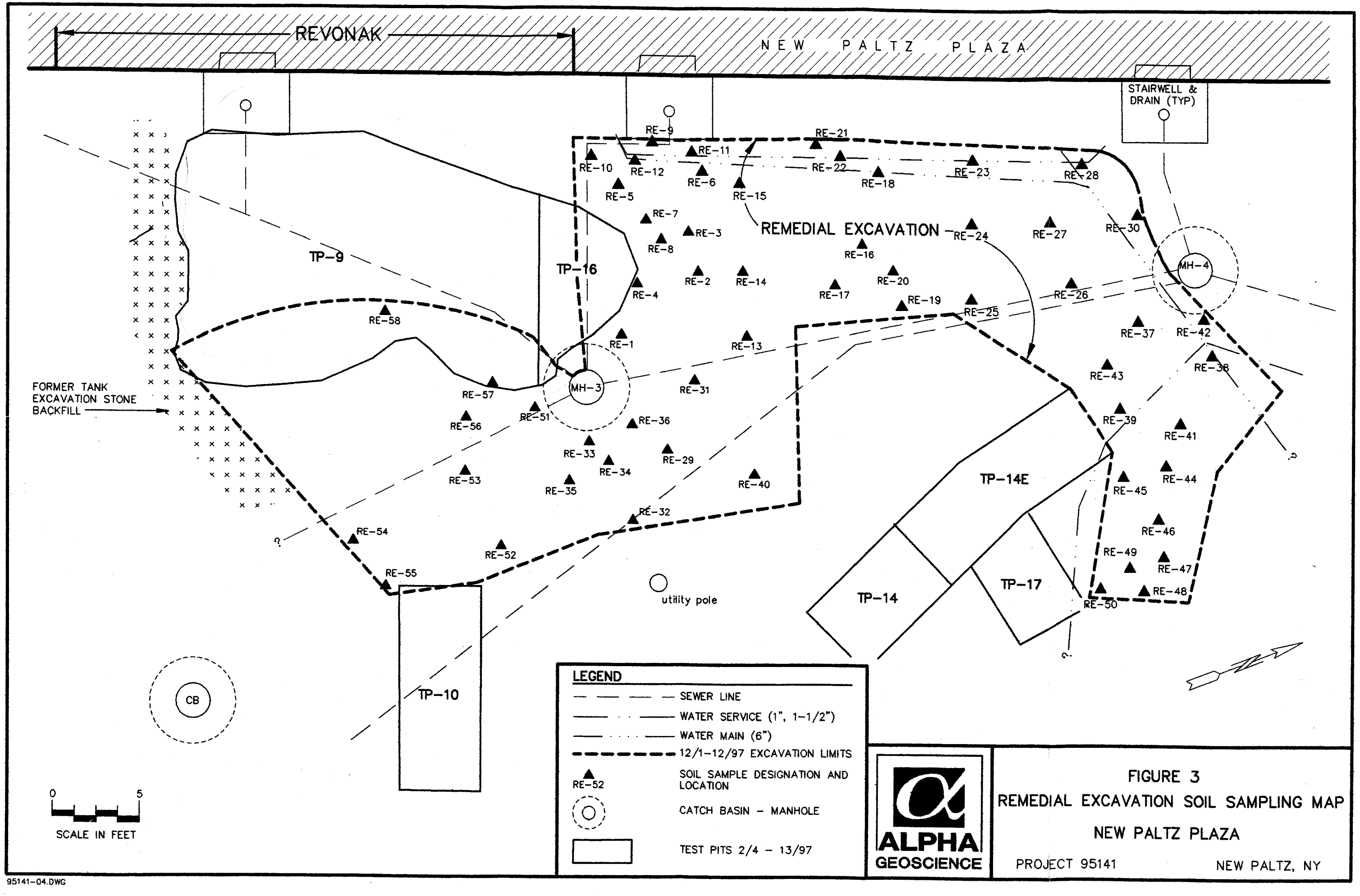
FIGURE 2

EXTENT OF REMEDIAL EXCAVATION

NEW PALTZ PLAZA

PROJECT 95141 NEW PALTZ, NY

95141-04.DWG

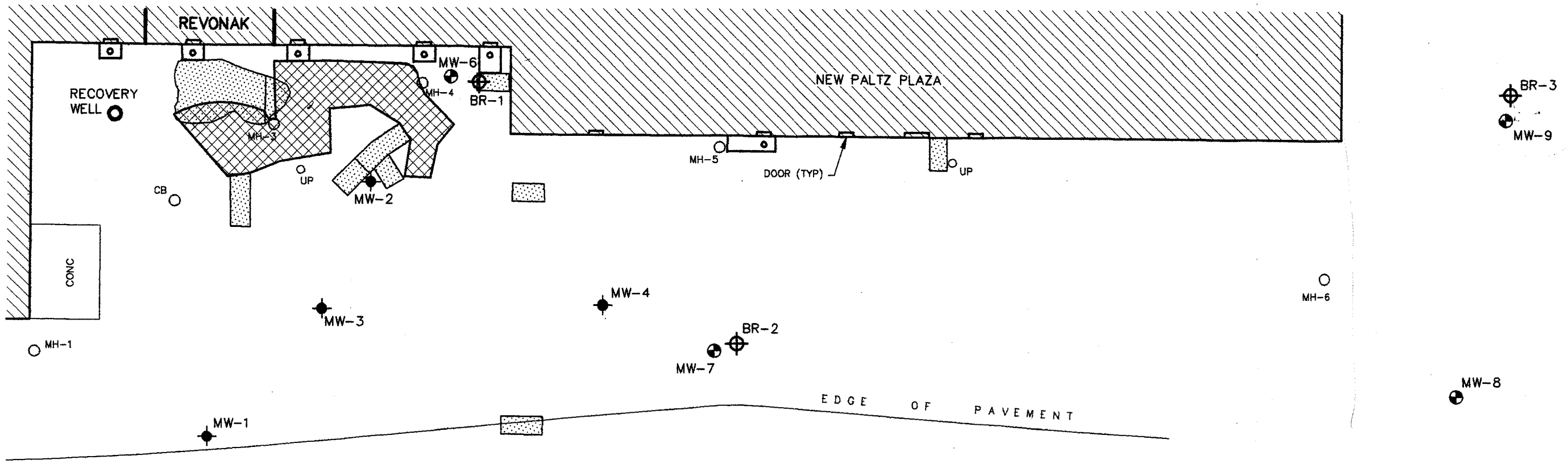


ALPHA GEOSCIENCE

FIGURE 3
REMEDIAL EXCAVATION SOIL SAMPLING MAP
NEW PALTZ PLAZA

PROJECT 95141 NEW PALTZ, NY

95141-04.DWG



LEGEND

MW-1	MONITORING WELL
BR-1	BEDROCK MONITORING WELL
MW-7	OVERBURDEN MONITORING WELL
	COMPLETED TEST PIT EXCAVATION (FEBRUARY 1997)
	REMEDIAL EXCAVATION AREA (DECEMBER 1997)
	STAIRWELL WITH DRAIN
UP	UTILITY POLE
MH-2	MANHOLE

0 25

SCALE IN FEET

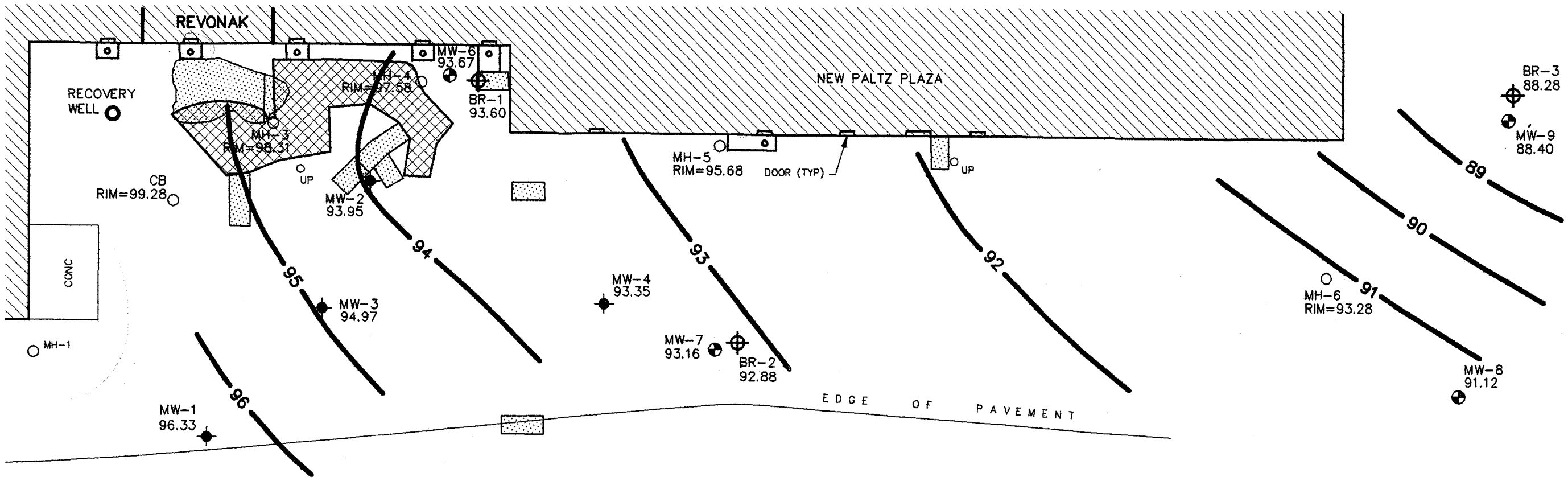
SOURCES: "SURVEY PREPARED FOR NEW PALTZ PLAZA ASSOCIATES" DATED 4/17/86 BY JOHN H. DIPPEL AND "GROUNDWATER CONTOUR MAP" DATED 9/91 BY ENVIRONMENTAL PRODUCTS & SERVICES, INC.

ALPHA GEOSCIENCE

FIGURE 4
MONITORING WELL LOCATION MAP
NEW PALTZ PLAZA

PROJECT 95141 NEW PALTZ, NY

95141-05.DWG



LEGEND

- 90 — GROUND WATER CONTOUR
- MW-1 — MONITORING WELL
- BR-1 — BEDROCK MONITORING WELL
- MW-7 — OVERBURDEN MONITORING WELL
- COMPLETED TEST PIT EXCAVATION (FEBRUARY 1997)
- REMEDIAL EXCAVATION AREA (DECEMBER 1997)
- STAIRWELL WITH DRAIN
- UP — UTILITY POLE
- MH-2 — MANHOLE

0 25

SCALE IN FEET

SOURCES: "SURVEY PREPARED FOR NEW PALTZ PLAZA ASSOCIATES" DATED 4/17/86 BY JOHN H. DIPPEL AND "GROUNDWATER CONTOUR MAP" DATED 9/91 BY ENVIRONMENTAL PRODUCTS & SERVICES, INC.

ALPHA GEOSCIENCE

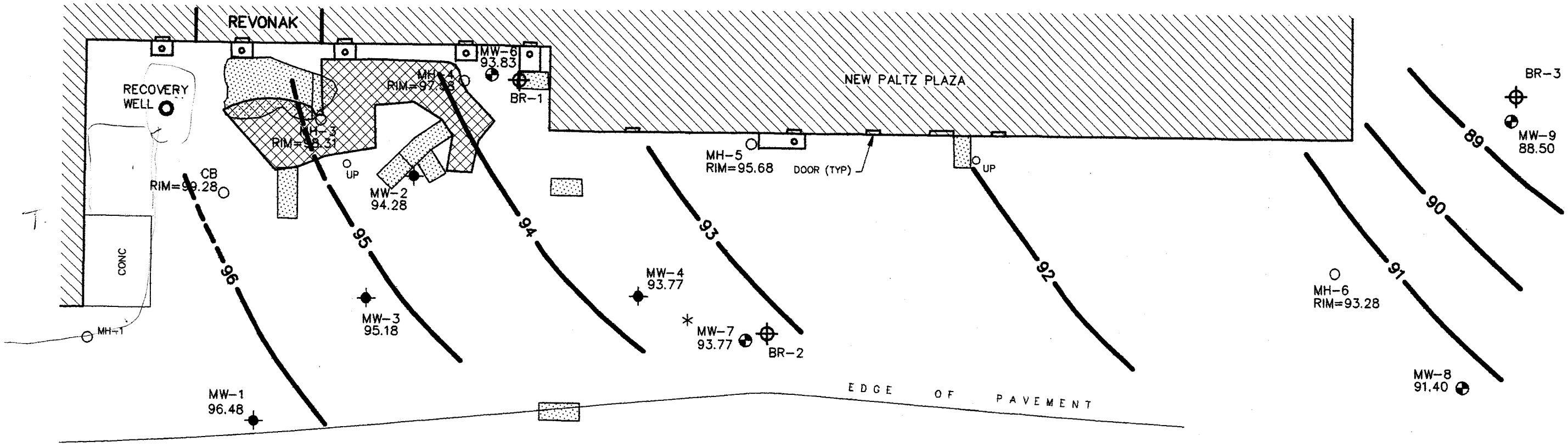
FIGURE 5

OVERBURDEN WELL GROUND WATER CONTOUR MAP

1/20/98 DATA

PROJECT 95141 NEW PALTZ, NY

95141-05.DWG



LEGEND

90	GROUND WATER CONTOUR
MW-1	MONITORING WELL
BR-1	BEDROCK MONITORING WELL
MW-7	OVERBURDEN MONITORING WELL
	COMPLETED TEST PIT EXCAVATION (FEBRUARY 1997)
	REMEDIAL EXCAVATION AREA (DECEMBER 1997)
	STAIRWELL WITH DRAIN
UP	UTILITY POLE
MH-2	MANHOLE

0 25

SCALE IN FEET

* WATER LEVEL SUSPECT, EXPANDABLE CAP WAS OFF WELL, SURFACE WATER RUNNING INTO WELL, MW-7 WATER LEVEL ELEVATION NOT USED TO CONTOUR.

SOURCES: "SURVEY PREPARED FOR NEW PALTZ PLAZA ASSOCIATES" DATED 4/17/86 BY JOHN H. DIPPEL AND "GROUNDWATER CONTOUR MAP" DATED 9/91 BY ENVIRONMENTAL PRODUCTS & SERVICES, INC.

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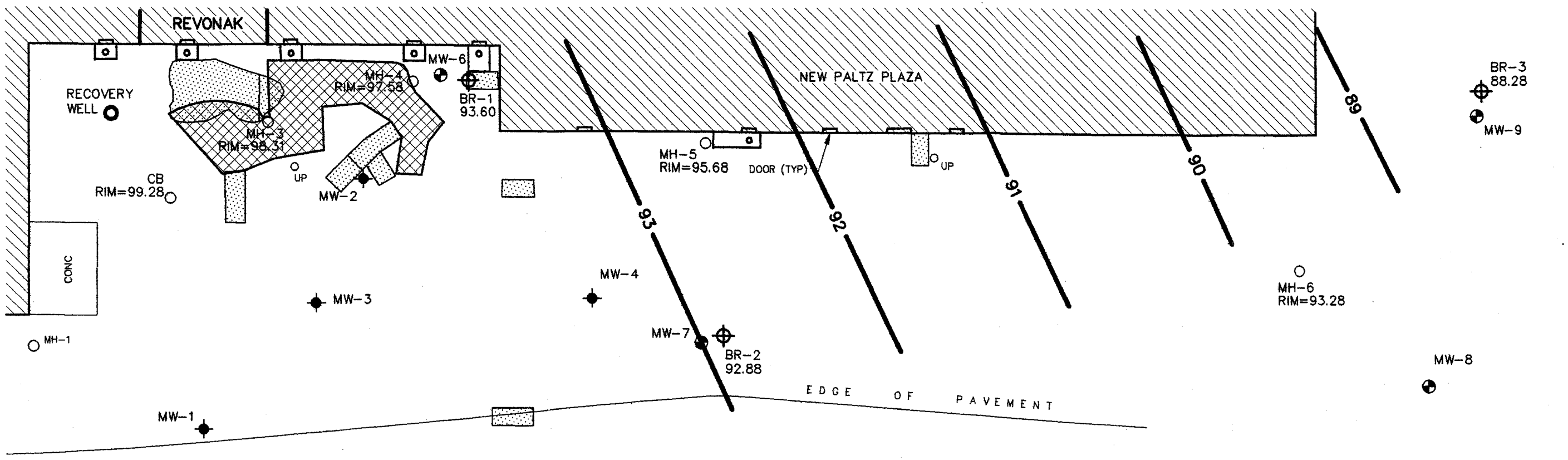
FIGURE 6

OVERBURDEN WELL GROUND WATER CONTOUR MAP

2/27/98 DATA

PROJECT 95141 NEW PALTZ, NY

95141-05.DWG



LEGEND

90	GROUND WATER CONTOUR
MW-1	MONITORING WELL
BR-1	BEDROCK MONITORING WELL
MW-7	OVERBURDEN MONITORING WELL
	COMPLETED TEST PIT EXCAVATION (FEBRUARY 1997)
	REMEDIAL EXCAVATION AREA (DECEMBER 1997)
	STAIRWELL WITH DRAIN
UP	UTILITY POLE
MH-2	MANHOLE

0 25

SCALE IN FEET

SOURCES: "SURVEY PREPARED FOR NEW PALTZ PLAZA ASSOCIATES" DATED 4/17/86 BY JOHN H. DIPPEL AND "GROUNDWATER CONTOUR MAP" DATED 9/91 BY ENVIRONMENTAL PRODUCTS & SERVICES, INC.

ALPHA GEOSCIENCE

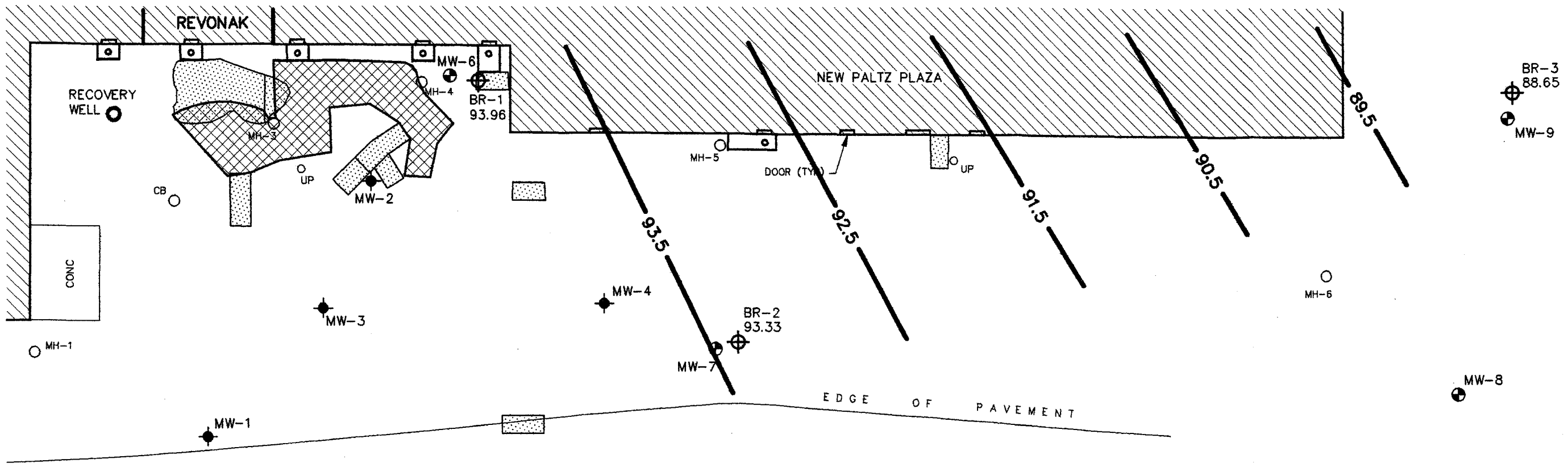
FIGURE 7

BEDROCK GROUND WATER CONTOUR MAP

1/20/98 DATA

PROJECT 95141 NEW PALTZ, NY

95141-05.DWG



LEGEND

91.5	GROUND WATER CONTOUR
MW-1	MONITORING WELL
BR-1	BEDROCK MONITORING WELL
MW-7	OVERBURDEN MONITORING WELL
	COMPLETED TEST PIT EXCAVATION (FEBRUARY 1997)
	REMEDIAL EXCAVATION AREA (DECEMBER 1997)
	STAIRWELL WITH DRAIN
UP	UTILITY POLE
MH-2	MANHOLE

0 25

SCALE IN FEET

SOURCES: "SURVEY PREPARED FOR NEW PALTZ PLAZA ASSOCIATES" DATED 4/17/86 BY JOHN H. DIPPEL AND "GROUNDWATER CONTOUR MAP" DATED 9/91 BY ENVIRONMENTAL PRODUCTS & SERVICES, INC.

ALPHA GEOSCIENCE

FIGURE 8

BEDROCK GROUND WATER CONTOUR MAP

2/27/98 DATA

PROJECT 95141 NEW PALTZ, NY

95141-05.DWG