RECEIVED
BUREAU OF WASTE MANAGEMENT
05 JUL 21 P 4:21

09/06/05

REPORT
SUBSURFACE INVESTIGATION
JUNE 2005
MARYLAND SQUARE SHOPPING CENTER
3661 SOUTH MARYLAND PARKWAY
LAS VEGAS, NEVADA
FOR AL PHILLIPS THE CLEANER

H-000086

URS Corporation
Job No. 26698724.00005
July 2005

July 11, 2005

National Drycleaners, Inc.
4510 W. 63rd Terrace
Prairie Village, KS 66208

Attn: Mr. Randy Jackson

Al Phillips the Cleaner
3250 Ali Baba Lane, Suites C-F
Las Vegas, NV 89118

Attn: Mr. Stephen Mailloux

Re: **Subsurface Investigation, June 2005**
Maryland Square Shopping Center
3661 South Maryland Parkway, Las Vegas, Nevada

Gentlemen:

URS Corporation is pleased to submit the June 2005 subsurface investigation report for the Maryland Square Shopping Center. In this investigation, a series of soil borings were advanced to evaluate residual source area impact inside the facility, a series of new monitoring wells were installed to further delineate the extent of shallow groundwater impact, and 24 monitoring wells were sampled for laboratory analyses of volatile organic compounds dissolved in groundwater. Monitoring well MW-11 was not sampled due to the presence of petroleum hydrocarbons in the well. Analysis of total organic carbon, total iron and manganese, chloride, nitrate, sulfate, and alkalinity was also performed for several groundwater samples. This report is the first submitted by URS for the site. Prior reports were submitted by Converse Consultants and SECOR.

The Nevada Division of Environmental Protection (NDEP) requires the following statements to be provided by the responsible Environmental Manager for this project (per NRS 459.500):

"I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein."

"I, Scott Ball, hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state, and local statutes, regulations and ordinances."

Sincerely,
URS Corporation

Scott Ball, CEM #1316
Expires Oct 15, 2005
Project Manager

cc: Sara Arav-Piper, NDEP

REPORT
SUBSURFACE INVESTIGATION
JUNE 2005
MARYLAND SQUARE SHOPPING CENTER
3661 SOUTH MARYLAND PARKWAY
LAS VEGAS, NEVADA

Prepared for:

Al Phillips the Cleaner
3250 W. Ali Baba Lane, Suites C-F
Las Vegas, Nevada 89118

and

National Drycleaners, Inc.
4510 W. 63rd Terrace
Prairie Village, KS 66208

Prepared by:

URS Corporation
7180 Pollock Drive, Suite 200
Las Vegas, Nevada 89119

Job No. 26698724.00005
July 2005

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1.0 INTRODUCTION AND BACKGROUND

This report presents the results of the June 2005 subsurface investigation at the former Al Phillips the Cleaner (Al Phillips), Maryland Square Shopping Center located at 3661 South Maryland Parkway in Las Vegas, Nevada (Figure 1). This report includes the results of borehole drilling and soil sampling in the vacant tenant space formerly occupied by the cleaners, groundwater monitoring well drilling and installation and groundwater sampling of existing and new monitoring wells during April, May, and June 2005. This investigation was performed following the Revised Work Plan, Proposed Subsurface Investigation dated September 10, 2004. URS Corporation (URS), on behalf of Al Phillips, conducted the work. As required by State law, this project is being performed under the supervision of a certified Environmental Manager.

Al Phillips recently took over control of assessment activities at the site from the Herman Kishner Trust. Prior to URS site investigations, Converse Consultants (Converse) performed several subsurface assessments and groundwater sampling at the former Al Phillips facility from August 2000 through March 2004. Converse's findings indicate that PCE was detected in soil beneath the former facility and in groundwater adjacent to, and down gradient from, the facility. URS reviewed eleven Converse reports (see References) and other documents obtained from Converse and the Nevada Department of Environmental Protection (NDEP). URS then evaluated the data to assess whether or not the PCE source area for the groundwater plume, the lateral and vertical extent of the groundwater plume, the geology of the site, and the nature of PCE concentrations in the groundwater plume were characterized. Based upon Converse's reports, concentrations of PCE above regulatory levels are present in soil beneath the former facility and in groundwater. Al Phillips and URS met with NDEP on April 29, 2004 to discuss the transfer of site responsibility to Al Phillips from the Herman Kishner Trust. Following this meeting, a work plan for additional characterization was prepared with a final revised plan issued September 10, 2004 as noted above.

In addition to the data provided by Converse, URS obtained findings from SECOR International Incorporated (SECOR, 2004) regarding the presence of a hydrocarbon plume in down gradient monitoring well MW-11. This monitoring well is located on the Boulevard Mall Property, east of the former Al Phillips site. This well was sampled on February 12, 2004 by representatives from both SECOR and Converse. Analysis of the samples determined that a phase-separated liquid, identified as a weathered gasoline, was present in the groundwater from the well.

2.0 SUBSURFACE INVESTIGATION

The purpose of this subsurface investigation was to evaluate residual source materials at the former facility and to further evaluate the extent of groundwater impact. The tasks identified in the Work Plan (URS, 2004) were accomplished by performing the following elements:

- Seven boreholes were drilled inside and around the former Al Phillips facility for soil sampling
- Five new groundwater monitoring wells were installed near the downgradient edge of the groundwater plume
- New groundwater monitoring well elevations were surveyed after installation
- Existing and new monitoring wells were tested for volatile organic compounds (VOCs) and other water characteristics, including inorganic compound and biological tests needed to help plan remedial activities
- Remedial alternatives (including biological methods) targeted on the source area and/or near the center of the groundwater plume were evaluated.

2.1 BOREHOLE LOCATIONS AND DEPTHS

Seven soil-sampling boreholes were drilled, using a track-mounted hollow stem auger drill rig (Photographs 1 through 4) and hand auger, inside and behind the former facility. Figure 2 shows the locations of the soil sampling boreholes. Selected photographs of the drilling and borehole locations are provided in Appendix A. These boreholes were drilled to further evaluate the nature of the source area, and were drilled so as not to encounter groundwater. Prior soil sampling performed by Converse at the building (boreholes B-1 through B-5) identified PCE ranging from 19 micrograms per kilogram (µg/Kg) to 15,000 µg/Kg in soil at a depth of four feet below the concrete floor near the area where the dry cleaning equipment was located (Figure 2). URS drilled three boreholes (B-6, B-7, and B-8) in this area. Boreholes B-6 (Photograph 2) and B-7 were intended to confirm the findings of previous boreholes B-1 and B-2 and to further investigate soil conditions and PCE concentrations at greater depths. Boreholes B-9 (Photograph 3) and B-10 (Photograph 4) were drilled adjacent to the floor drain trench (Photograph 5) in the former dry cleaning unit inside the building. Borehole B-11 was drilled in the half basement (Photograph 6) where a former boiler was located, and borehole B-12 was drilled near the back of the facility, in the alleyway, adjacent to a sump. Boreholes B-8 through B-12 were intended to further investigate the character of the source area at the former facility. The depth to groundwater was approximated at 16 feet below ground surface (bgs) on the west side of the facility and 20 feet bgs on the east. As such, the target depth for

the soil sampling boreholes (Figure 2) was approximately 13 to 17 feet to avoid intercepting groundwater.

Due to the difficulty of drill rig access to the back of the building, borehole B-11 was installed with a hand-auger to a depth of approximately 2.5 feet bgs before encountering refusal. Similarly, borehole B-12 was installed to a depth of approximately 3.5 feet bgs before encountering refusal.

2.2 SOIL SAMPLING

Soil samples were collected from boreholes B-6 through B-10 at the former Al Phillips facility at 5 feet, 10 feet, and 15 feet bgs (Figures 2 and 3). Boreholes B-11 and B-12 were sampled at depths of 2.5 and 3.5 feet bgs, respectively. Logs for these boreholes are provided in Appendix B. Soil samples obtained from these boreholes, inside and adjacent to the former facility, were collected in 6-inch stainless steel sleeves using a drive sampler. The ends of the sample tubes were covered with Teflon sheets, and sealed with end caps.

Sleeved soil samples were numbered by borehole number and the depth at which the samples were collected (i.e. B-1-5). Sleeved soil samples were labeled with the date and time the sample was collected, the sample and borehole number, and name of the firm and signature of the individual collecting the sample. The samples were then placed in sealed plastic bags and stored in a cooler with ice to chill the sample after collection. Chain-of-custody forms were filled out with all the appropriate sample information and accompanied the sleeved soil samples to the analytical laboratory.

Soil boreholes were backfilled to near ground surface using a neat cement grout and then capped with concrete flush with the ground surface.

Soil collected in the stainless steel sampling sleeves, and the grab soil samples, were observed by URS field personnel and logged in accordance with the Unified Soil Classification System (USCS). A portion of the sleeved soil samples, and the grab soil samples, were placed in a self-sealing plastic bag, the bag marked with the borehole number and sampling depth, then the bag was placed in the sun for at leased 15 minutes to allow soil vapors to off gas into the bag. URS field personnel then field-screened the bagged soil samples for the presence of VOCs using a photo ionization detector (PID). The results of the PID field screening were then recorded on the borehole log.

The soil lithography encountered beneath the building during drilling activities included sands, silts, and caliche. Fine, red-brown, dry, stiff sand was encountered from beneath the concrete to approximately 3 feet bgs. A 1- to 3-foot-thick fine sandy, light brown, slightly moist, firm silt with some gravel was beneath the sand. These soils overlaid a 7- to 9-foot-thick horizon of cream-colored, dry to slightly moist, hard caliche that contained gravel. Beneath the caliche was a 4- to 5-

foot-thick, fine, sandy, light gray-brown, slightly moist silt. Toward the north end of the building a fine, gray to white, moist, hard sand was encountered at approximately 15.5 feet bgs. Figure 3 is a cross-section through boreholes B-6, B-8, and B-10, of the soil encountered beneath the building during drilling. The lithology beneath the building is documented on the borehole logs in (Appendix B).

Excess soil from drilling and soil sampling was placed in DOT-approved 55-gallon drums. URS field personnel labeled the drums, identifying them as containing soil cuttings and referencing the date, well number, firm, and signature of the URS personnel.

2.3 GROUNDWATER MONITORING WELL LOCATIONS AND DEPTH

As proposed in the work plan, six new groundwater monitoring wells (MW-17, MW-18, and MW-22 through MW-25) were installed using a truck-mounted hollow stem auger drill rig; five near the downgradient edge of the groundwater plume and one on the east side of the former facility. Figure 4 shows the approximate locations of these six new monitoring wells as well as wells installed by Converse (MW-1 through MW-16, and MW-19 through MW-21). Selected photographs of well locations and installation are provided in Appendix A. The rationale for placement of these wells was to further evaluate the source area of the plume, the groundwater PCE concentrations, and the eastern extent of the plume. These monitoring wells were also utilized to measure the depth to groundwater across the area so that the direction of groundwater flow and gradient beneath the area could be calculated. These six wells were drilled in the following locations:

MW-17 – in the parking lot on the east side of the former Al Phillips facility between existing wells MW-1 and MW-7,
MW-18 – in Algonquin Drive and north of Ottawa Drive (360 feet east of the mall),
MW-22 – in Seneca Lane south of Cherokee Lane (600 feet east of the mall),
MW-23 – in Seneca Lane north of Ottawa Drive (750 feet east of the mall),
MW-24 – in Seneca Circle south of Ottawa Drive (620 feet east of the mall), and
MW-25 – in Seneca Lane north of Ottawa Drive (1,050 feet east of the mall).

2.4 GROUNDWATER MONITORING WELL INSTALLATION

Four-inch inside diameter, Schedule 40 PVC groundwater monitoring wells were installed in boreholes MW-17, MW-18, and MW-22 through MW-25. Boreholes MW-22 (Photograph 11) and MW-24 (Photograph 13) were drilled first, the wells installed, developed, sampled, and the groundwater samples analyzed on a rush basis to evaluate if PCE was detected above the U.S. Environmental Protection Agency (EPA) Maximum Contaminant Level (MCL) of 5 micrograms per liter (µg/L) in groundwater at these locations. PCE was detected above the MCL in the groundwater collected from well MW-23; therefore, an additional monitoring well (MW-25, Photograph 14) was

drilled and installed further to the east, downgradient from well MW-23 (Photograph 12), as outlined in the work plan. Following installation of wells MW-22 through MW-24, boreholes MW-17 (Photograph 9) and MW-18 (Photograph 10) were drilled and wells installed.

Grab soil samples were collected from drill cuttings at groundwater monitoring well boreholes at 10-foot intervals beginning at 10 feet bgs, because the vadose zone at these locations was not suspected of containing contaminants. These soil samples were collected for geologic logging and field screening purposes only and were not containerized or submitted to an analytical laboratory for chemical analysis.

A truck-mounted hollow stem auger drill rig was used to drill the boreholes and install the monitoring wells. Boreholes were drilled to a target depth ranging from 30 to 35 feet bgs. Table 3 lists the particulars of the construction of each well. In general, the construction included a 15- to 20-foot section of 0.02 inch slotted well screen, with solid well casing in the upper portion of the well; Monterey No. 2 (or equivalent) filter pack sand in the annular space surrounding the screen, to three feet above the screen; approximately two feet of hydrated bentonite pellets on top of the filter pack sand; and a neat cement grout on top of the bentonite seal to within 2 feet bgs. The monitoring wells were finished at the surface using a traffic-rated well vault surrounded by concrete from 2 feet bgs to the ground surface.

Excess soil cuttings from well drilling were placed in DOT-approved 55-gallon drums and the drums were labeled and stored at the former Al Phillips facility. In addition, the six new monitoring wells were surveyed by a Nevada licensed Land Surveyor to a vertical datum so that water level measurements could be used to establish local groundwater flow direction and gradient.

2.5 WELL DEVELOPMENT

Development of the six new monitoring wells (MW-17, MW-18, and MW-22 through MW-25) was performed the day after placement of the wells. This gave the well materials time to set up so that the wells were not damaged during development. The wells were developed to remove suspended sediment and prepare for groundwater sampling. Screened sections of the wells were surged using a surge block. After surging, a bailer was lowered into the wells and groundwater was then extracted until a minimum of three well volumes had been removed. Development water was placed in DOT-approved 55-gallon drums and the drums were labeled and stored at the former facility.

2.6 GROUNDWATER SAMPLING

Following development of the six new monitoring wells, 24 groundwater-monitoring wells were sampled. Well MW-11 was not sampled, as petroleum hydrocarbons were detected during monitoring. This sampling event in the second quarter 2005 will be the baseline for comparing

future PCE concentrations within the contaminant plume. An electronic water level meter, accurate to the nearest +/- 0.01 feet, was used to measure depth to water in each well. Total well depths were also measured by lowering the weighted probe to the bottom of the well and recording the depth to the nearest 0.1 feet.

Monitoring wells were then purged prior to sampling. A minimum of three casing volumes of groundwater was purged using a submersible pump and/or a dedicated bailer. When used, the pump was decontaminated before and after use in each well. Casing volumes were calculated based on total well depth, standing water level, and casing diameter. Water quality parameters were monitored during well purging to evaluate when stable values have been attained. Temperature, pH and specific conductance (SC), dissolved oxygen (DO), turbidity, and oxidation reduction potential (ORP) were monitored during well purging. The depth to water, water quality measurements, and purge volumes were entered in the purge log.

Purge water and decontamination water was placed in DOT-approved 55 gallon drums. The drums were labeled and stored at the former Al Phillips facility.

Monitoring wells were sampled using a clean disposable bailer. The type, size, and number of groundwater containers, along with the preservative (if applicable), are listed in Table 1. Groundwater samples were collected in four different types of containers based on the selected analysis. Water samples to be analyzed for VOCs were collected in three 40-milliliter clear glass VOA vials pre-preserved with hydrochloric acid. Three VOA vials were collected in case one breaks during transport. The VOA vials were filled so that there was no headspace. Water samples to be analyzed for TOC were collected in 500-milliliter amber glass bottles pre-preserved with sulfuric acid. Two bottles were collected from each monitor well just in case one broke during transport. Groundwater samples to be analyzed for dissolved iron and manganese were collected in one liter clear plastic bottles that contained no preservative. These samples were filtered and preserved with nitric acid by the laboratory prior to analysis. Groundwater samples to be analyzed for chloride, nitrate, sulfate, and alkalinity were also collected in one liter clear plastic bottles that contained no preservative. Groundwater samples were transferred from the disposable bailer directly into the appropriate sample containers and were numbered by well number on the sample container.

Groundwater samples were labeled with the date and time the sample was collected, the sample and well number, and name of the firm and signature of the individual collecting the sample. The sample containers were sealed, labeled, and stored in a cooler with ice. Chain-of-custody forms (Appendix C) were filled out with all the appropriate sample information, and accompanied the samples to the analytical laboratory. Field meter probes were decontaminated before and after use at each well.

2.7 FIELD DOCUMENTATION

Field activities were documented in writing and photographs taken (Appendix A). Field personnel completed borehole logs, well construction logs, well development logs, and sample purge logs. In addition, a daily field log was kept to record field activities. Each daily field log was dated and signed by field personnel. Photographs (Appendix A) were taken to record field activities and to be used in this report as appropriate.

3.0 QUALITY CONTROL

The type and number of field quality control samples collected during the investigation were limited. Quality control samples consisted of field duplicates, equipment or rinsate blanks, and trip blanks. Duplicate samples are typically collected at a frequency of approximately 10 percent of the total investigative samples for each matrix. Contamination of samples introduced by reuse of equipment can be detected by means of analyzing an equipment or rinsate sample. Rinsate blanks are typically collected at a frequency of approximately 10 percent of the total investigative samples. Rinsate blanks consisting of the final rinse water are typically collected for non-disposable or non-dedicated sampling equipment after decontamination has been performed. Trip blanks are used to investigate the integrity of the transport of samples to and from the laboratory. Typically, one trip blank per cooler per day is used.

Laboratory QA samples are called Laboratory Control Samples (LCS) and include method blank and matrix spikes. The LCS is based on the use of a standard control matrix to generate precise and accurate data that are compared daily to the control limits. LCS information, in conjunction with method blank data, is used to assess daily laboratory performance. Matrix Spikes (MS) use an actual environmental sample to generate precision and accuracy that may be affected by the matrix. Typically, the MS is performed in duplicate as an MS/MSD pair. MS/MSD precision and accuracy information, supplemented with field blank results, are used to assess the effect of the matrix and field conditions on analytical data.

3.1 DUPLICATE SAMPLES

The initial sampling event included collection and analysis of two duplicate soil samples during the assessment at the former facility, and collection and analysis of two duplicate groundwater samples from groundwater monitoring wells during the groundwater-sampling event. These soil and groundwater samples were analyzed for VOC.

3.2 RINSEATE/EQUIPMENT BLANKS

Two equipment blanks were collected during the soil assessment at the former facility as the sample drive heads were cleaned and reused. Rinsate and equipment blanks were not collected during the groundwater assessment because groundwater samples were collected using disposable bailers.

3.3 TRIP BLANKS

Five trip blanks were used and analyzed.

4.0 FIELD DATA AND TEST RESULTS

4.1 BOREHOLE ANALYSES AND CHEMISTRY

The borehole soil samples were analyzed for VOCs by U.S. EPA Method 8260B. The laboratory analytical reports and chain-of-custody forms are provided in Appendix C.

The EPA Region 9 Preliminary Remedial Goal (PRG) for PCE in soil is a maximum concentration of 3,400 µg /Kg for soil located on an industrial parcel. The Clark County zoning for the subject site is General Commercial (C2). As this classification is not considered residential and as it is unlikely that the site would be used as residential, the EPA industrial PRG is an applicable soil action level for the site.

Based on analytical results from the soil samples collected during the April 2005 drilling and sampling event, only three soil samples (B-8-5, B-10-10, and B-10-15) exceeded the maximum soil PRG for PCE. Soil samples from boreholes B-6, B-7, B-9, B-11, and B-12 did not contain PCE that exceeded the industrial soil PRG limit. Table 2 summarizes the soil analytical data from the April 2005 borehole drilling and sampling, as well as that previously performed by Converse (2002). The highest soil concentration of PCE detected was 120,000 µg/Kg in borehole B-10 at 10 feet bgs. Borehole B-10 is located north of the location of the former dry cleaning unit (Figure 2). The PCE concentration in borehole B-10 at 15 feet is 3,500 µg /Kg. The second highest concentration of PCE, at 4,700 µg /Kg, was detected in borehole B-8 at 5 feet bgs. Borehole B-8 is located south of the former dry cleaning unit (Figure 2).

Figure 2 lists the concentrations of PCE detected in soil beneath the former facility, at the respective depths, and the approximate lateral extent of PCE-contaminated soil that exceeds the EPA industrial soil PCE PRG. This approximate lateral extent is based on a conservative assumption of the concentration contour for the EPA industrial soil PCE PRG. Figure 3 is a cross-section of the soil lithology and PCE-contaminated soil beneath the former facility, and shows the approximate locations of soil boreholes B-1, B-2, and B-4 drilled by Converse (2002), boreholes B-6, B-8, and B-10 drilled by URS, the concentrations of PCE detected in soil samples form these boreholes, the approximate lateral and vertical extent of PCE in soil that exceeds the EPA industrial soil PRG, and the approximate depth to groundwater beneath the building.

4.2 WATER LEVELS AND GRADIENT

The depth to water in each of the monitoring wells was measured on May 19, 2005 and is listed on Table 3. The depth to groundwater ranged from approximately 8.71 feet below top of casing in well MW-18 to 23.41 feet in well MW-16. Table 3 also lists a summary of the same monitoring well

construction characteristics and historic water level measurements. Figure 5 shows hydrographs for the shallow wells during the last five years. In general, groundwater elevation has increased by 3 to 4 feet since the January 2004 sampling event. This may be indicative of artificial recharging efforts of the Southern Nevada Water Authority. The general flow direction for the shallow aquifer varies from approximately N65°E to N80°E, as indicated by the groundwater contours and flow directions shown on Figure 6. As quarterly sampling continues, a better picture of quarterly water levels and their fluctuation will be evaluated.

4.3 GROUNDWATER ANALYSES AND CHEMISTRY

Table 4 summarizes field measurements of groundwater temperature, pH, specific conductance (SC), DO, ORP, and turbidity in the monitoring wells. Groundwater temperatures ranged from 23.1 to 28.1 degrees Centigrade (°C) and pH measured during this sampling event ranged from 6.76 to 7.16. Groundwater SC in the intermediate well (MW-9) was 2,680 microsiemens (equivalent to ohms) per centimeter (µS/cm), while the SC of shallow groundwater wells ranged from 1,300 to 4,000 µS/cm. Field measurements of DO concentration in the groundwater are used to monitor the extent of natural attenuation occurring within the aquifer. DO concentrations below 0.5 milligrams per liter (mg/L) are considered characteristic of anaerobic conditions (Wiedemeier et al, 1998). DO concentrations during this sampling event in the shallow and intermediate wells ranged from 1.5 to 5.9 mg/L, and 7.6 mg/L, respectively. ORP values for shallow wells ranged from –253 to 219 millivolts (mV), while the intermediate well had an ORP of 130 mV. The average ORP value for the shallow wells during this event is 115 mV.

The groundwater samples were analyzed for VOCs, dissolved iron and manganese, chloride, nitrate and sulfate, alkalinity, and total organic carbon (TOC), by U.S. EPA Methods 8260B, 200.8, 300 and 310.1, and 415.1, respectively. The laboratory analytical reports and chain-of-custody forms are provided in Appendix C.

The Nevada Drinking Water Standards Maximum Contaminant Level (MCL) for PCE in groundwater is 5 micrograms per liter (µg/L). Analytical results for groundwater collected during this sampling event from shallow wells MW-1, MW-2, and MW-4 through MW-6, MW-8, MW-13, MW-14, and MW-17 through MW-25 exceeded the PCE MCL. The analytical results for groundwater collected from intermediate well MW-9 also exceeded the PCE MCL. Table 5 summarizes the analytical data for PCE detected in the wells. Figure 7 shows the PCE concentrations vs. time in the shallow wells. The highest concentration of PCE detected was 5,310 µg/L in shallow well MW-13. Well MW-13 is located down gradient from the site on the Boulevard Mall property. PCE was not detected in shallow wells MW-3, MW-7, MW-10, MW-12, MW-15, and MW-16. PCE was detected at 993 µg/L in well MW-25, which is the farthest down gradient (east) well. Figures 8 shows the monitoring well locations, respective PCE concentrations for

shallow and intermediate wells, and the estimated PCE plume area for the shallow aquifer for this current sampling event.

Trichloroethene (TCE), a degradation compound of PCE, was detected in groundwater this sampling event, in wells MW-2, MW-6, MW-8, and MW-14 at 17, 13, 5.6 and 5.5 µg/L, respectively. TCE is a first order reductive dechlorination (anaerobic conditions) degradation compound of PCE. Based on prior groundwater analytical results, TCE has been detected at similar concentrations in wells MW-2 and MW-6 in prior sampling events (Converse, 2004).

A secondary degradation compound detected in groundwater samples this sampling event was cis-1,2-dichloroethene, at 9.7 to 11 µg/L. This compound has been detected at low concentrations in samples from prior sampling events and is potentially derived from breakdown of the PCE impact.

Table 6 summaries the results of laboratory testing for ionic compounds for the May 2005 sampling event. This is the first sampling event during which these parameters have been monitored. Iron concentrations were non-detect (<0.30 mg/L) in all samples and manganese was not detected at or above the detection limit of <0.0050 mg/L, with the exception of well MW-6, which had a dissolved manganese concentration of 0.040 mg/L. The anions, chloride, nitrate and sulfate ranged from 170 to 270 mg/L, 5.9 to 23.9 mg/L and 1,562 to 1,618 mg/L, respectively. Total alkalinity laboratory concentrations ranged from non-detect (< 1.0 mg/L) to 19 mg/L. Total organic carbon (TOC) concentrations ranged from 1.7 to 6.0 mg/L.

Two monitoring wells, MW-12 and MW-13 were sampled for Dechlorinating Bacteria. Well MW-12 had a concentration of Dehalococcoides spp at <5.43E + 00 cells/mL, while well MW-13 had a concentration of <2.6E + 00 cells/mL (Table 7).

5.0 CONCLUSIONS

5.1 SOIL SAMPLING

In general, analytical data from the laboratory indicates that majority of the soil samples from the seven boreholes drilled inside the building in April 2005 by URS, as well as the five boreholes sampled previously by Converse (2002), contain concentrations of PCE below and above the EPA PRG for industrial sites. As listed in Table 2, all soil samples at their corresponding depths contain concentrations of PCE below the 3,400 µg/Kg industrial soil PRG except for soil sample B-8-5 from borehole B-8 at 5 feet bgs, samples B-10-10 and B-10-15 from borehole B-10 at 10 and 15 feet bgs, and soil sample B-1 collected by Converse from borehole B-1 at 2.5 feet bgs. No real correlation is evident between the analytical results for soil samples collected by Converse (2002) and URS (2004) due to the difference in sampling locations and depth.

The property on which the former Al Phillips site sits was recently sold by the Clark County School District to a private corporation. URS is attempting to contact the new property owner to obtain information regarding their plans for the property and any future development. Once this information is obtained, an evaluation of the appropriate remedial action can be performed to decrease the concentration of PCE in soil beneath the building below the EPA industrial soil PRG of 3.400 µg/Kg. Based on the subsurface investigation, some of the soils surrounding boreholes B-1, B-8, and B-10 would need to be remediated (Figures 2 and 3). Based on the assumptions identified in Section 4.2, approximately 378 in-place cubic yards of PCE-contaminated soil that exceeds the EPA industrial soil PRG is present beneath the subject site. If the new property owner intends to change the property's current commercial zoning classification to residential use, then the EPA's residential soil PRG of 1,500 µg/Kg would apply. At this PRG, soil from borehole B-6 at a depth of 15 feet bgs would also require remediation. Approximately 100 in-place cubic yards of additional PCE-contaminated soil would require remediation if the residential soil PCE PRG were applied to the site. However, it is unlikely that the subject property would be zoned for residential use.

5.2 GROUNDWATER SAMPLING CONCLUSIONS

Groundwater from monitoring well MW-11 was not sampled during this sampling event, due to the historic and current presence of petroleum hydrocarbons detected in the well.

In general, historical laboratory analytical data indicates that PCE concentration levels in monitoring wells have fluctuated over time, dating back to the first analysis by Converse in August 2000. The exception to this is monitoring well MW-13, which has shown an increase of PCE over time, with a large jump in concentration from January 2004 to May 2005, and well MW-14, which has shown a steady increase in PCE concentrations also. TCE, a first order reductive dechlorination (anaerobic

condition) degradation compound, was detected in monitoring wells MW-2, MW-6, MW-8, and MW-14 at 17, 13, 5.6 and 5.5 µg/L, respectively. TCE has been detected previously at similar concentrations in monitoring wells MW-2 and MW-6 in the past.

DO concentrations below 0.5 mg/L are considered characteristic of anaerobic conditions (Wiedemeier, et al, 1998). The DO readings from January 2004 and May 2005 are listed on Table 4. DO concentrations during this sampling event in the shallow and intermediate wells ranged from 1.5 to 5.9 mg/L, and 7.6 mg/L, respectively, with an average value of 2.5 mg/L in shallow wells. This suggests moderate aerobic conditions in groundwater. The average DO concentration has increased 29% from January 2004 (Converse) to May 2005 (URS) in monitoring wells measured during both sampling events.

This is the first sampling period that ORP has been monitored. ORP values for shallow wells ranged from –253 to 219 millivolts (mV), while the intermediate well had an ORP of 130 mV. The average ORP value for the shallow wells this event is 115 mV. In an oxidizing environment, a higher ORP will exist, while a lower ORP will exist in a reducing environment. The crossover point between groundwater being oxidizing or reducing is dependent upon the type of instrument used for monitoring, the chemical being oxidized or reduced and, to a lesser extent, the temperature and oxygen content of the water. This crossover point is typically somewhere between +100 to +200 mV.

The relationship between DO and ORP is generally that lower DO means lower ORP and conversely, higher DO means higher ORP. Comparison of the DO and ORP values cannot be performed at this time due to the fact that the May 2005 sampling event was the first in which ORP has been collected at this site. These values will continue to be monitored to further assess the existence of aerobic or anaerobic conditions at the site.

Dissolved iron concentrations in twenty-four (well MW-11 was not sampled) monitoring wells were non-detect (<0.30 mg/L), while dissolved manganese concentrations were non-detect (<0.0050 mg/L) in all wells except for well MW-6 which had a concentration of 0.040 mg/L. Groundwater samples submitted for metals analysis were filtered and preserved by the laboratory. Ferric iron (Fe+3) and manganese (Mn+4) are relatively insoluble. Therefore, any substantial concentrations of these elements would indicate the presence of the more soluble ferrous iron (Fe+2) or manganese (Mn+2) forms. In general, the lower the ORP the more dissolved Fe+2 may be formed. Because the May 2005 sampling event was the first in which ORP and iron concentrations were sampled, further analysis of these properties will not be possible until further analytical data is obtained. These values will continue to be monitored to further evaluate potential reductive groundwater conditions.

The concentrations for chloride, nitrate and sulfate ranged from 170 to 270 mg/L, 5.9 to 23.9 mg/L and 1,562 to 1,618 mg/L, respectively. Like iron and manganese, these values are typically monitored to evaluate reductive groundwater conditions and are tied to ORP results (decreased nitrate and sulfate concentrations). When this is accompanied by reductive dehalogenation, associated PCE concentrations will decline and chloride concentrations increase. When reductive dehalogenation does not occur with the reduction of nitrate and sulfate or conditions for reductive dehalogenation become less favorable (e.g., by increases in DO and ORP), concentrations of nitrate, sulfate, and chloride would not necessarily change. Once again, because the May 2005 sampling event was the first in which ORP and chloride, nitrate, and sulfate concentrations were sampled, further analysis of these properties will not be possible until further data is obtained. These data will be compared to future values to assist in further evaluation of conditions favorable to reductive dehalogenation.

The TOC laboratory concentrations obtained during this sampling event ranged from 1.7 to 6.0 mg/L. TOC is used as a relative indicator of the oxygen "sink" for oxidizing processes and the co-metabolic food source for anaerobes. Once a TOC baseline is obtained, TOC can be used to measure the longevity of carbon source residuals, such as Hydrogen Release Compound (HRC), that are furnished to enhance natural anaerobic degradation processes. TOC will continue to be monitored during future sampling events.

Based on the groundwater monitoring and analytical results obtained this quarter, it appears that the PCE groundwater plume is approximately 600 feet wide and a minimum of 2,600 feet long. The groundwater plume is relatively narrow and may follow an old paleochannel. Further quarterly monitoring will be performed to gather additional data to help characterize the plume and evaluate remedial options.

5.3 REMEDIAL EFFORTS

Al Phillips will focus future remedial efforts on both the PCE source area beneath the former facility, as well as the major section of the groundwater plume. As was stated in Section 5.1, the current property owner will be contacted to obtain information with respect to the future development of the site in an effort to evaluate what remedial options there are for cleanup of PCE-contaminated soil.

6.0 REFERENCES

Converse Consultants, 2000. Offsite Investigation, Maryland Square Shopping Center, Las Vegas, NV dated November 28, 2000.

-----, 2001. A through K Data Research Report, dated August 22, 2001.

-----, 2002a. Work Plan – Additional Site Investigation, dated January 11, 2002.

-----, 2002b. Additional Soil and Groundwater Investigation, dated November 13, 2002.

-----, 2003a. Additional Soil and Groundwater Investigation, dated May 16, 2003.

-----, 2003b. Preliminary Corrective Action Plan (CAP), dated June 27, 2003.

-----, 2003c. Work Plan – Additional Site Activities, dated September 12, 2003.

-----, 2003d. Groundwater Monitoring Report – 3rd Quarter 2003, dated October 31, 2003.

-----, 2004. Well Installation/Slug Testing/Groundwater Monitoring Report – 4th Quarter 2003 and 1st Quarter 2004, dated March 2004.

SECOR International Incorporated, 2004. Preliminary Well Assessment, Monitoring Well MW-11, West of Dillard's Boulevard Mall Property, Las Vegas, NV, dated March 29, 2004.

URS, 2004. Revised Work Plan, Proposed Subsurface Investigation, Former Al Phillips the Cleaner Site, Maryland Square Shopping Center, Las Vegas, NV, dated September 10, 2004.

Wiedemeier, T. H., et al. 1998. Technical protocol for evaluating natural attenuation of chlorinated solvents in ground water. U.S. Environmental Protection Agency, Office of Research and Development, Publication U.S. EPA/600/R-98/128.

TABLES

TABLE 1
SUMMARY OF SAMPLE CONTAINERS, ANALYTICAL METHODS AND PRESERVATION
Maryland Square Shopping Center

Sample Type	Type and Number of Container	Size of Container	Chemical Preservation	EPA Analytical Method	Holding Time
Soil	Stainless steel sleeve	Minimum 6 inch length	None	VOC by SW 8260B (1)	14 days
Groundwater	Clear glass	Three 40 milliliter VOA vials	HCl	VOC by SW 8260B (2)	14 days
	Amber glass	500 milliliter	H_2SO_4	TOC by SM-5310C	7 days
	Clear plastic	1 liter	HNO_3	Dissolved Iron and Manganese by 200.7 (filtered and preserved by laboratory)	6 months
	Clear plastic	1 liter	None	Chloride, nitrate and sulfate by SM4500Cl B/352.1/375.4	28 days, 48 hours, 28 days, respectively
	Clear plastic	1 liter (3)	None	Alkalinity by SM 2320B	14 days

Notes:
(1) Two duplicate soil sample were collected for analysis of VOC.
(2) Two duplicate groundwater sample were collected for analysis of VOC.
(3) Same sample bottle that chloride, nitrate and sulfate sample is collected in.
VOA = volatile organic analysis, HCl = hydrochloric acid, NHO_3 = nitric acid.

TABLE 2
PCE CONCENTRATIONS IN SOIL SAMPLES
Maryland Square Shopping Center

Borehole ID	Sample Depth (in ft.)	Sample Date	Concentration (in ug/kg) perchloroethylene (PCE)
B-1*	2.5	May-02	15,000
B-2*	4	May-02	110
B-3*	3	May-02	170
B-4*	4	May-02	110
B-5*	3	May-02	ND
B-6	5	Apr-05	830
	10		300
	15		1,500
B-7	5	Apr-05	850
	10		52
	15		69
B-8	5	Apr-05	4,700
	10		360
	15		640
	15(1)		180
B-9	5	Apr-05	ND
	10		38
	10(1)		50
	15		ND
B-10	5	Apr-05	1,200
	10		120,000
	15		3,500
B-11	2.5	Apr-05	46
B-12	3.5	Apr-05	ND

NOTES: ND = None Detected
Concentrations are ug/L
PCE is perchloroethylene (tetrachloroethene).
(1) = sample duplicate
* These boreholes were drilled by Converse

TABLE 3
SUMMARY OF WELL CHARACTERISTICS AND GROUNDWATER LEVELS
Maryland Square Shopping Center

Well ID	Install Date	Top of Casing (Elevation)	Screen Depth (in ft.)	Sample Date	GROUNDWATER DEPTH/ELEVATION DATA	
					Depth to Water (in ft.)	Elevation (in ft.)
SHALLOW WELLS						
MW-1	Aug-00	1,991.81	10-30	Oct 00	17.54	1974.27
		1,992.04		Sep 02	17.90	1974.14
				May 03	18.70	1973.34
				Sept 03	18.97	1973.07
				Jan 04	19.30	1972.74
				May 05	15.24	1976.80
MW-2	Oct-00	1,983.79	10-32	Oct 00	15.52	1968.27
		1,983.99		Sep 02	16.62	1967.37
				May 03	17.15	1966.84
		1,983.97		Sept 03	17.70	1966.27
				Jan 04	18.25	1965.72
				May 05	14.65	1969.32
MW-3	Oct-00	1,984.19	10-32	Oct 00	15.95	1968.24
		1,984.46		Sep 02	17.20	1967.26
				May 03	17.70	1966.76
		1,984.43		Sept 03	18.35	1966.08
				Jan 04	19.25	1965.18
				May 05	15.22	1969.21
MW-4	Oct-00	1,989.68	10-32	Oct 00	16.95	1972.73
		1,989.87		Sep 02	NM	NM
				May 03	18.71	1971.16
		1,989.85		Sept 03	19.05	1970.80
				Jan 04	19.86	1969.99
				May 05	15.83	1974.02
MW-5	Oct-00	1,988.93	10-32	Oct 00	16.20	1972.73
		1,989.18		Sep 02	17.00	1972.18
				May 03	17.80	1971.38
				Sept 03	18.07	1971.11
				Jan 04	18.65	1970.53
				May 05	14.87	1974.31
MW-6	Oct-00	1,988.72	10-32	Oct 00	17.41	1971.31
		1,989.01		Sep 02	18.26	1970.75
				May 03	18.87	1970.14
				Sept 03	19.25	1969.76
				Jan 04	19.74	1969.27
MW-6	Oct-00	1,989.01	10-32	May 05	16.21	1972.80
MW-7	Sep 02	1,990.28	10-30	Sep 02	18.27	1972.01
				May 03	16.60	1973.68
				Sept 03	16.79	-16.79

TABLE 3
SUMMARY OF WELL CHARACTERISTICS AND GROUNDWATER LEVELS
Maryland Square Shopping Center

Well ID	Install Date	Top of Casing (Elevation)	Screen Depth (in ft.)	Sample Date	GROUNDWATER DEPTH/ELEVATION DATA	
					Depth to Water (in ft.)	Elevation (in ft.)
MW-7	Sep 02	1,990.25	30-Oct	Jan 04	17.32	-17.32
				May 05	13.86	-13.86
MW-8	Sep 02	1,994.25	10-30	Sep 02	18.55	1975.70
				May 03	19.50	1974.75
		1,994.23		Sept 03	19.55	1974.68
				Jan 04	19.91	1974.32
				May 05	15.51	1978.72
MW-10	Sep 02	1,983.81	10-30	Sep 02	18.51	1965.30
				May 03	18.65	1965.16
		1,983.80		Sept 03	19.45	1964.35
				Jan 04	20.32	1963.48
				May 05	16.76	1967.04
MW-11	Sep 02	1,980.24	13.5-33.5	Sep 02	24.22	1956.02
				May 03	24.25	1955.99
				Sept 03	25.62	1954.62
				Jan 04	26.22	1954.02
				May 05	22.55	1957.69
MW-12	Sep 02	1,996.59	13.5-33.5	Sep 02	14.90	1981.69
				May 03	15.07	1981.52
		1,996.50		Sept 03	15.30	1981.20
				Jan 04	15.40	1981.10
				May 05	12.34	1984.16
MW-13	May-03	1,984.23	9-29	May 03	17.25	1966.98
				Sept 03	17.60	1966.60
		1,984.20		Jan 04	18.00	1966.20
				May 05	14.76	1969.44
MW-14	Nov-03	1,987.89	15-40	Jan 04	18.35	1969.54
				May 05	15.02	1972.87
MW-15	Nov-03	1,983.28	15-32	Jan 04	15.60	1967.68
				May 05	12.59	1970.69
MW-16	Nov-03	1,980.63	19-32	Jan 04	26.22	1954.41
				May 05	23.41	1957.22
MW-17*	Apr-05	1,990.92	15-30	May 05	15.07	1975.85
MW-18*	Apr-05	1,962.87	5-25	May 05	8.71	1954.16
MW-19	Nov-03	1,980.26	19-35	Jan 04	25.65	1954.61
				May 05	22.70	1957.56
MW-20	Nov-03	1,979.99	19-35	Jan 04	25.50	1954.49
				May 05	22.58	1957.41
MW-21	Nov-03	1,979.56	19-35	Jan 04	24.72	1954.84
				May 05	21.76	1957.80
MW-22*	Apr-05	1,974.76	15-35	May 05	23.04	1951.72

TABLE 3
SUMMARY OF WELL CHARACTERISTICS AND GROUNDWATER LEVELS
Maryland Square Shopping Center

Well ID	Install Date	Top of Casing (Elevation)	Screen Depth (in ft.)	Sample Date	GROUNDWATER DEPTH/ELEVATION DATA	
					Depth to Water (in ft.)	Elevation (in ft.)
MW-23*	Apr-05	1,962.32	5-25	May 05	13.06	1949.26
MW-24*	Apr-05	1,960.74	5-25	May 05	10.72	1950.02
MW-25*	Apr-05	1,960.74	5-25	May 05	16.01	1944.73
INTERMEDIATE WELL						
MW-9	Sep-02	1,992.26	48.5-50	Sep 02	18.46	1973.80
				May 03	19.15	1973.11
		1,992.26		Sept 03	19.02	1973.24
				Jan 04	19.05	1973.21
				May 05	15.36	1976.90

NOTES: All measurements are in feet. Top of casing elevation is in feet above mean sea level.
All wells are 2-inch diameter PVC casing and screen, unless indicated.
All wells installed prior to September 2003 were resurveyed in September of 2003.
NM = 'not measured'

TABLE 4

SUMMARY OF FIELD WATER QUALITY MEASUREMENTS IN MONITORING WELLS

Maryland Square Shopping Center

Well ID	Sample Date	pH	Temperature (°C)	Specific Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)	Turbidity (ntu)
SHALLOW WELLS							
MW-1	Jan-04	6.97	22.5	3.48	0.93	NM	NM
	May-05	7.02	26.0	3.98	5.43	110	441
MW-2	Jan-04	7.05	23.2	3.10	1.13	NM	NM
	May-05	6.93	23.4	3.47	4.82	193	698
MW-3	Jan-04	6.87	22.4	2.91	0.97	NM	NM
	May-05	6.99	26.0	2.88	2.54	149	**
MW-4	Jan-04	6.95	22.0	2.71	1.23	NM	NM
	May-05	6.83	24.2	3.73	3.68	160	664
MW-5	Jan-04	6.72	22.3	2.61	1.20	NM	NM
	May-05	7.09	25.4	2.59	4.56	184	**
MW-6	Jan-04	6.97	22.4	2.31	1.19	NM	NM
	May-05	6.91	25.9	2.35	3	123	**
MW-7	Jan-04	7.00	22.4	2.23	0.93	NM	NM
	May-05	7.10	24.8	1.79	4.03	129	**
MW-8	Jan-04	6.99	22.0	2.16	1.04	NM	NM
	May-05	7.03	27.7	1.75	3.64	107	**
MW-10	Jan-04	7.00	24.4	3.13	1.03	NM	NM
	May-05	6.82	28.1	3.20	1.46	-253	25
MW-11	Jan-04	NM	NM	NM	NM	NM	NM
	May-05	NM	NM	NM	NM	NM	NM
MW-12	Jan-04	6.99	22.4	2.15	NM	NM	NM
	May-05	6.76	24.9	2.58	3.22	219	**
MW-13	Jan-04	6.61	22.2	3.29	1.07	NM	NM
	May-05	6.97	24.5	2.06	4.16	118	>999
MW-14	Jan-04	6.99	22.3	2.27	1.30	NM	NM
	May-05	6.95	24.7	3.23	NM	140	NM
MW-15	Jan-04	6.35	22.4	2.20	1.00	NM	NM
	May-05	6.99	25.1	2.33	2.85	164	**
MW-16	Jan-04	6.97	22.4	2.31	0.68	NM	NM
	May-05	7.12	25.2	2.88	1.10	-4	**
MW-17*	May-05	6.92	24.1	3.49	5.94	181	22
MW-18*	May-05	7.10	24.3	3.86	5.56	139	>999
MW-19	Jan-04	6.99	22.4	1.90	1.02	NM	NM

TABLE 4
SUMMARY OF FIELD WATER QUALITY MEASUREMENTS IN MONITORING WELLS
Maryland Square Shopping Center

Well ID	Sample Date	pH	Temperature (°C)	Specific Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)	Turbidity (ntu)
MW-19	May-05	7.13	25.0	1.86	5.76	130	**
MW-20	Jan-04	6.94	22.6	2.07	1.11	NM	NM
	May-05	7.16	23.6	1.32	4.97	131	**
MW-21	Jan-04	6.91	22.3	2.04	1.08	NM	NM
	May-05	7.07	24.6	2.82	2.88	131	**
MW-22*	May-05	6.79	24.1	3.89	1.68	46	474
MW-23*	May-05	7.00	24.5	3.63	2.56	121	**
MW-24*	May-05	6.97	23.1	3.56	1.48	76	>999
MW-25*	May-05	7.03	23.6	4.00	4.34	141	>999
Average		6.95	23.9	2.75	2.54	115	387
INTERMEDIATE WELLS							
MW-9	Jan-04	6.99	22.6	2.50	1.18	NM	NM
	May-05	7.14	26.1	2.68	7.56	130	296
Average		7.07	24.4	2.59	4.37	130	296

NOTES: * = wells installed in Apr 2005 by URS. ** = instrument failure
Monitoring well MW-11 not sampled due to detection of floating hydrocarbons in the well.
°C = degrees Celsius. uS = microsiemens (equivalent to umhos). mg/L = milligrams per liter.
mV = millivolts. Ntu = Nephelometric Turbidity Units

TABLE 5
SELECTED VOC CONCENTRATIONS IN MONITORING WELLS
Maryland Square Shopping Center

Well ID	Sample Date	Concentration (in ug/L)		
		perchloroethylene (PCE)	trichloroethene (TCE)	cis-1,2-Dichlorethene
SHALLOW WELLS				
MW-1	Aug 00	2,300	ND	ND
	Oct 00	NS	NS	NS
	Sep 02	2,000	ND	ND
	May 03	870	ND	ND
	Sep 03	2,300	ND	ND
	Nov 03	-	-	-
	Jan 04	1,700	ND	ND
	May 05	3,500	ND	ND
MW-2	Oct 00	3,000	18	18
	Sep 02	3,000	13	13
	May 03	1,400	ND	ND
	Sep 03	1,700	ND	ND
	Nov 03	-	-	-
	Jan 04	1,700	ND	ND
	May 05	2,050	17	9.7
MW-3	Oct 00	98	ND	ND
	Sep 02	ND	ND	ND
	May 03	7	ND	ND
	Sep 03	12	ND	ND
	Nov 03	-	-	-
	Jan 04	7	ND	ND
	May 05	ND	ND	ND
MW-4	Oct 00	14	ND	ND
	Sep 02	25	ND	ND
	May 03	24	ND	ND
	Sep 03	100	ND	ND
	Nov 03	-	-	-
	Jan 04	220	ND	ND
	May 05	25	ND	ND
MW-5	Oct 00	100	ND	ND
	Sep 02	110	ND	ND
	May 03	240	ND	ND
	Sep 03	220	ND	ND
	Nov 03	-	-	-
	Jan 04	370	ND	ND
	May 05	146	ND	ND
MW-6	Oct 00	2,200	13	8.1
	Sep 02	1,000	41	14
	May 03	710	22	ND
	Sep 03	1,300	ND	ND
	Nov 03	-	-	-
	Jan 04	2,400	ND	ND
	May 05	2,090	13	11
MW-7	Sep 02	ND	ND	ND

TABLE 5
SELECTED VOC CONCENTRATIONS IN MONITORING WELLS
Maryland Square Shopping Center

Well ID	Sample Date	Concentration (in ug/L)		
		perchloroethylene (PCE)	trichloroethene (TCE)	cis-1,2-Dichlorethene
MW-7	May 03	1.7	ND	ND
	Sep 03	2.0	ND	ND
	Nov 03	-	-	-
	Jan 04	11.0	ND	ND
	May 05	ND	ND	ND
MW-8	Sep 02	5.4	ND	ND
	May 03	3.2	ND	ND
	Sep 03	3.7	ND	ND
	Nov 03	-	-	-
	Jan 04	4.7	ND	ND
	May 05	5.6	5.6	ND
MW-10	Sep 02	ND	ND	ND
	May 03	ND	ND	ND
	Sep 03	15.0	ND	ND
	Nov 03	-	-	-
	Jan 04	ND	ND	ND
	May 05	ND	ND	ND
MW-11	Sep 02	ND	ND	ND
	May 03	ND	ND	ND
	Sep 03	NS[1]	NS[1]	NS[1]
	Nov 03	NS[1]	NS[1]	NS[1]
	Jan 04	NS[1]	NS[1]	NS[1]
	May 05	NS[1]	NS[1]	NS[1]
MW-12	Sep 02	ND	ND	ND
	May 03	1.3	ND	ND
	Sep 03	14.0	ND	ND
	Nov 03	-	-	-
	Jan 04	6.1	ND	ND
	May 05	ND	ND	ND
MW-13	May 03	2,100	ND	ND
	Sep 03	2,800	ND	ND
	Nov 03	-	-	-
	Jan 04	2,700	ND	ND
	May 05	5,310	ND	ND
MW-14	Nov 03	1,900	ND	ND
	Jan 04	2,100	ND	ND
	May 05	2,920	5.5	ND
MW-15	Nov 03	5.2	ND	ND
	Jan 04	2.7	ND	ND
	May 05	ND	ND	ND
MW-16	Nov 03	ND	ND	ND
	Jan 04	ND	ND	ND
MW-16	May 05	ND	ND	ND
MW-17	May 05	520	ND	ND

TABLE 5
SELECTED VOC CONCENTRATIONS IN MONITORING WELLS
Maryland Square Shopping Center

Well ID	Sample Date	Concentration (in ug/L)		
		perchloroethylene (PCE)	trichloroethene (TCE)	cis-1,2-Dichlorethene
MW-18	May 05	1,600	ND	ND
MW-19	Nov 03	1,100	ND	ND
	Jan 04	1,200	ND	ND
	May 05	873	ND	ND
MW-20	Nov 03	1,800	ND	ND
	Jan 04	290	2.8	ND
	May 05	1,460	ND	ND
MW-21	Nov 03	51	ND	ND
	Jan 04	55	ND	ND
	May 05	30	ND	ND
MW-22	May 05	ND	ND	ND
MW-23	May 05	1,430	ND	ND
MW-24	May 05	ND	ND	ND
MW-25	May 05	993	ND	ND
INTERMEDIATE WELL				
MW-9	Sep 02	670.0	ND	ND
	May 03	59.0	ND	ND
	Sep 03	9.2	ND	ND
	Nov 03	-	-	-
	Jan 04	10	ND	ND
	May 05	353	ND	ND

NOTES: ND = None Detected. NS = Not Sampled. ' - ' cells indicate no data available. ug/L = micrograms per liter.
The Maximum Contaminant Level for PCE in drinking water is 5 ug/L.
(1) = Monitoring Well MW-11 was not sampled due to detection of floating hydrocarbons in the well.

TABLE 6
SUMMARY OF OTHER ANALYTICAL DATA
Maryland Square Shopping Center

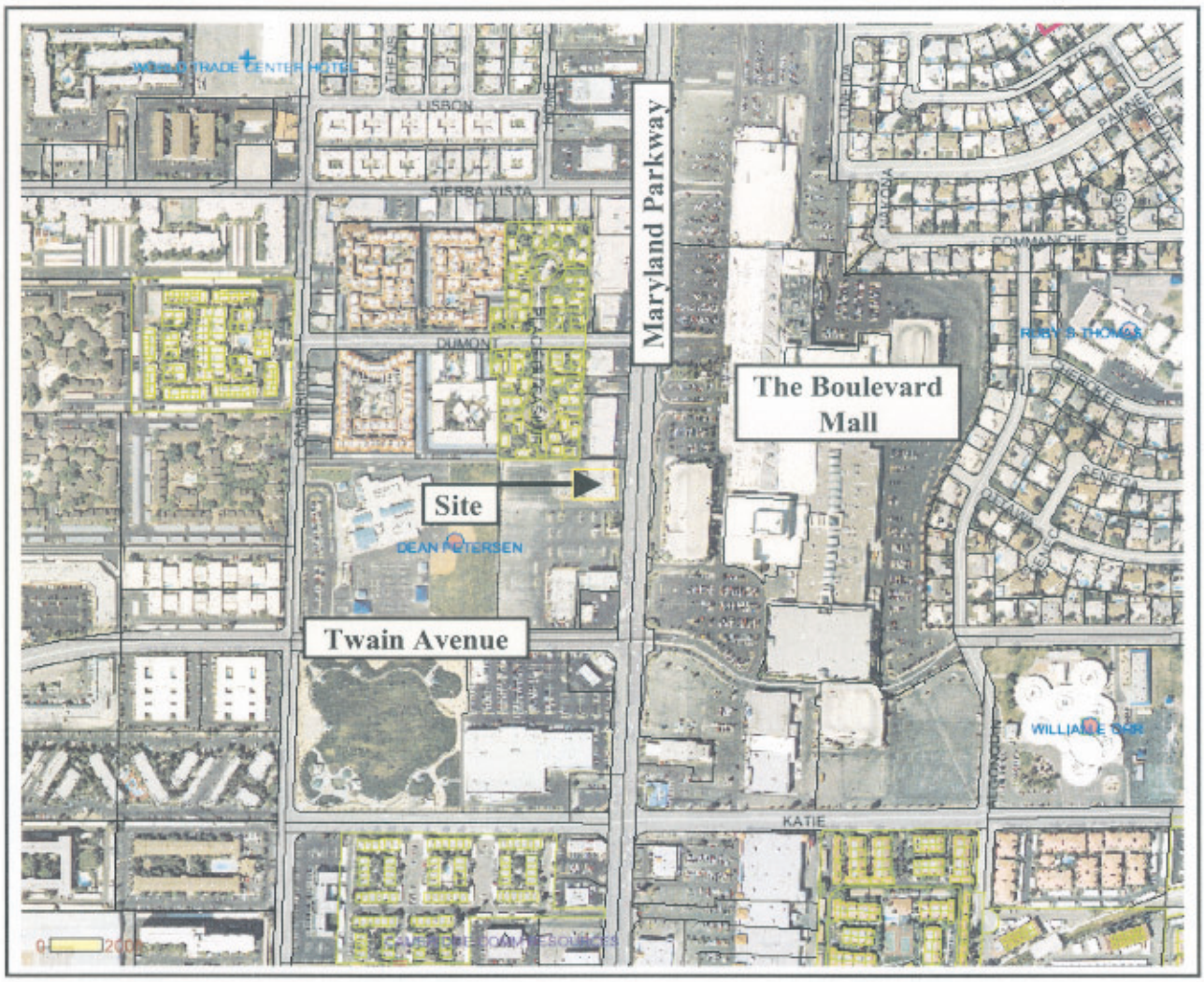
Well ID	Sample Date	Concentration (in mg/L)						
		Total Iron	Dissolved Manganese	Chloride	Nitrate as N	Sulfate	Total Alkalinity	Total Organic Carbon
SHALLOW WELLS								
MW-1	May 05	ND	ND	180	8.9	1,613	ND	5.1
MW-6	May 05	ND	0.040	200	10.5	1,615	ND	6.0
MW-12	May 05	ND	ND	270	23.9	1,618	16	4.8
MW-13	May 05	ND	ND	170	6.9	1,562	ND	1.7
MW-19	May 05	ND	ND	170	5.9	1,599	19	2.7
MW-23	May 05	ND	ND	200	7.5	1,596	ND	1.8
MW-25	May 05	ND	ND	180	5.9	1,616	ND	1.7
Average			0.040	196	10	1603	18	3.4
INTERMEDIATE WELL								
MW-9	May 05	ND	ND	110	5.2	1,094	ND	2.1
Average				110	5.2	1,094		2.1

NOTES: ND is none detected. mg/L is milligrams per liter. Empty cells indicate no sampling data available.
Total iron and manganese are total dissolved values as the samples were field filtered.
Empty cells indicate no sampling data available.
Shallow wells are approximately 25 ft deep; Intermediate wells are 30-40 ft deep.

TABLE 7
DECHLORINATING BACTERIA IN SELECTED MONITORING WELLS
Mayrland Square Shopping Center

Well ID	Sample Date	Dehalococcoides spp (in cells/mL)
MW-12	May-05	<5.43E + 00
MW-13	May-05	<2.6E + 00

FIGURES



Source: Clark County Assessors Web Site
Scale Shown Above

N

SITE LOCATION MAP

Al Phillips The Cleaner
Subsurface Investigation
Maryland Square Shopping Center
3661 South Maryland Parkway
Las Vegas, Nevada

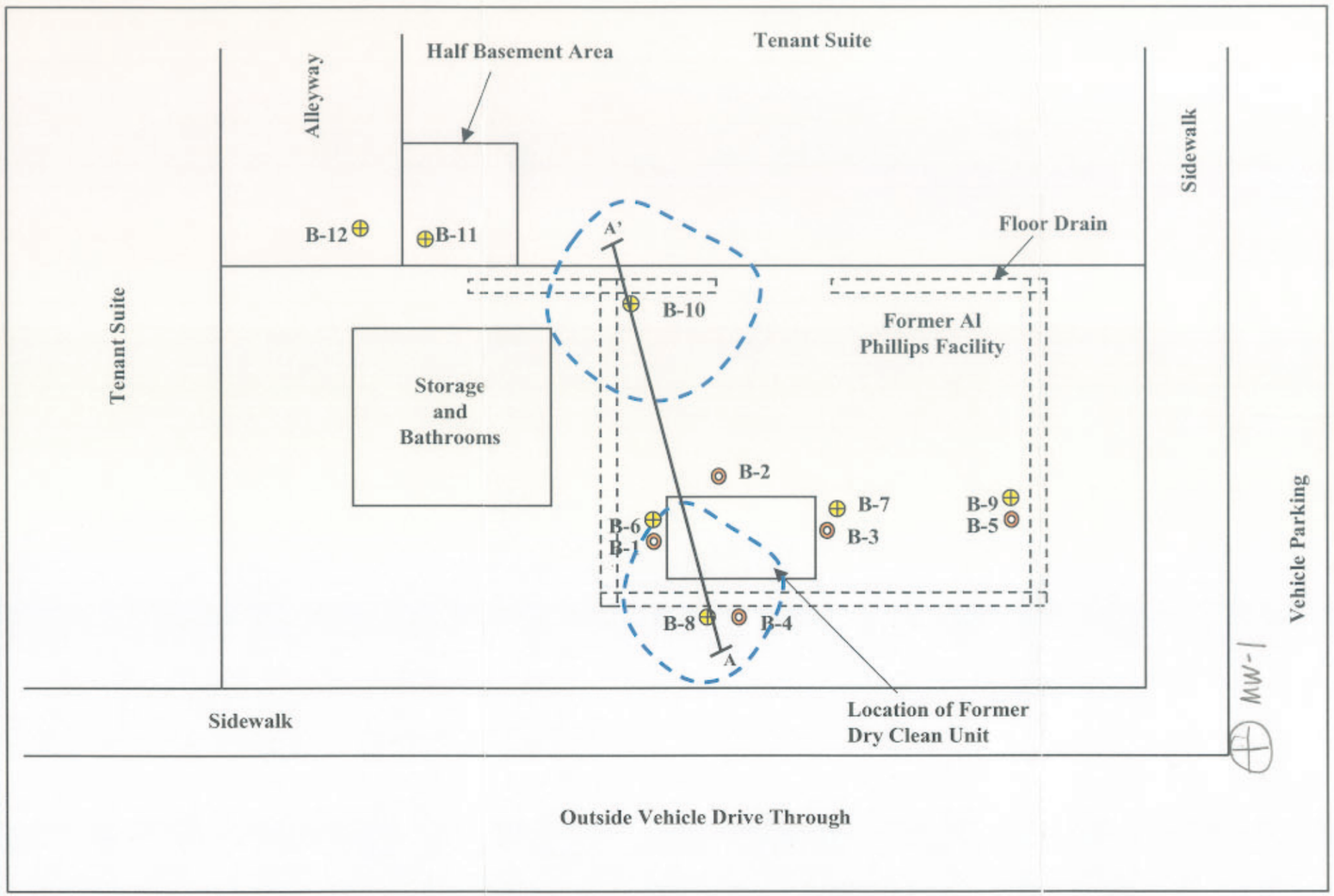
URS

June 2005
Job No. 26698724
Maryland Square Fig 1.ppt FIGURE 1

Concentration of PCE in URS Drilled Soil Boreholes (April 2005)

Borehole and Sample Depth	Concentration
B-6	
@ 5 feet	830
@ 10 feet	300
@ 15 feet	1,500
B-7	
@ 5 feet	850
@ 10 feet	52
@ 15 feet	69
B-8	
@ 5 feet	4,700
@ 10 feet	360
@ 15 feet	640
B-9	
@ 5 feet	ND
@ 10 feet	38
@ 15 feet	ND
B-10	
@ 5 feet	1,200
@ 10 feet	120,000
@ 15 feet	3,500
B-11	
@ 2.5 feet	46
B-12	
@ 3.5 feet	ND

Concentrations are in ug/kg. ND = none detected.



Source: Site Sketch
Not to Particular Scale

URS

N

Legend:

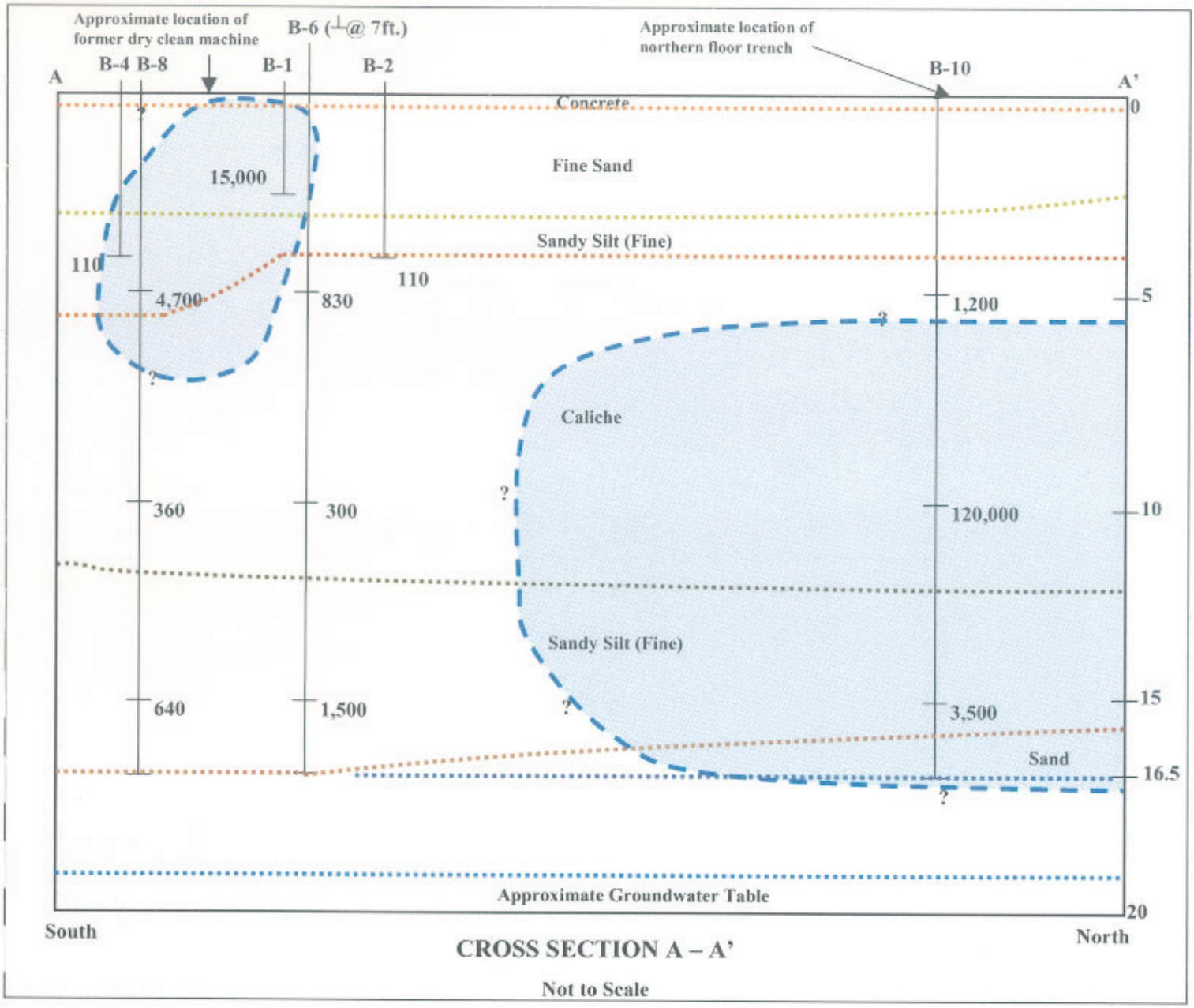
- Approximate Location of Borehole Installed by URS.
- Approximate Location of Borehole Installed by Converse.
- Approximate area of PCE contaminated soil >= 3,500 ug/kg industrial PRG.
- A – A' Approximate location of lithologic cross-section Figure 3.

SITE PLAN SHOWING SOIL BOREHOLES AND PCE CONCENTRATIONS

Al Phillips The Cleaner
June 2005
Subsurface Investigation
Maryland Square Shopping Center
3661 South Maryland Parkway
Las Vegas, Nevada

June 2005
Job No. 26698724
Maryland Square Fig 2.ppt

FIGURE 2



CROSS SECTION A – A'

Not to Scale

Legend:

Approximate lithologic boundary change.

Estimated vertical area of PCE contaminated soil >= 3,500 ug/kg PRGs level. (Based on April 2005 soil samples, URS)

350 PCE concentration in ug/mg at corresponding depth.

Notes:

EPA Region 9 PRGs level for PCE in industrial soil is 3,500 ug/kg.

Boreholes B-6, B-8, and B-10 have approximate depths of 16.5 feet below ground surface.

CROSS-SECTION OF PCE CONTAMINATED SOIL

Al Phillips The Cleaner

June 2005

Subsurface Investigation

Maryland Square Shopping Center

3661 South Maryland Parkway

Las Vegas, Nevada

URS

June 2005

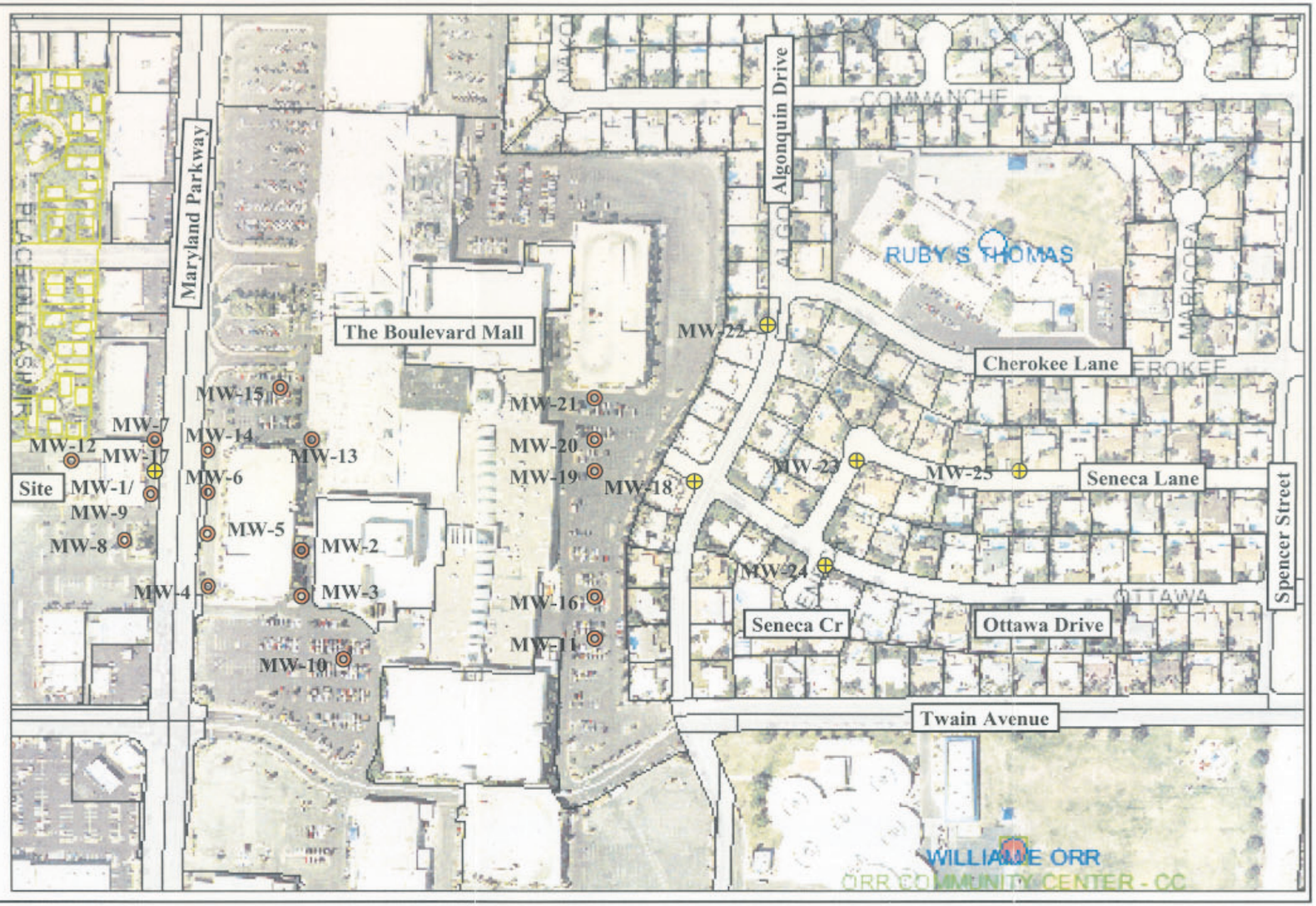
Job No. 26698724

Maryland Square Fig 3 6-30-05.ppt FIGURE 3

Groundwater Monitoring Wells

Wells Installed by Converse	Date Installed	Approximate Screen Depth (feet)
MW-1	Aug 00	10-30
MW-2	Oct 00	10-32
MW-3	Oct 00	10-32
MW-4	Oct 00	10-32
MW-5	Oct 00	10-32
MW-6	Oct 00	10-32
MW-7	Sept 02	10-30
MW-8	Sept 02	10-30
MW-9	Sept 02	48.5-50
MW-10	Sept 02	10-30
MW-11	Sept 02	13.5-33.5
MW-12	Sept 02	13.5-33.5
MW-13	May 03	9-29
MW-14	Nov 03	15-40
MW-15	Nov 03	15-31
MW-16	Nov 03	19-32
MW-19	Nov 03	19-35
MW-20	Nov 03	19-35
MW-21	Nov 03	19-35

Wells Installed by URS	Date Installed	Approximate Screen Depth (feet)
MW-17	Mar 05	15-30
MW-18	Mar 05	5-20
MW-22	Mar 05	15-35
MW-23	Mar 05	5-25
MW-24	Mar 05	5-25
MW-25	Mar 05	5-25



Source: Clark County Assessors Web Site
Not to Particular Scale

scale

URS

N

Legend:

⊕ Approximate Location of Monitoring Well Installed by URS.

◎ Approximate Location of Monitoring Well Installed by Converse.

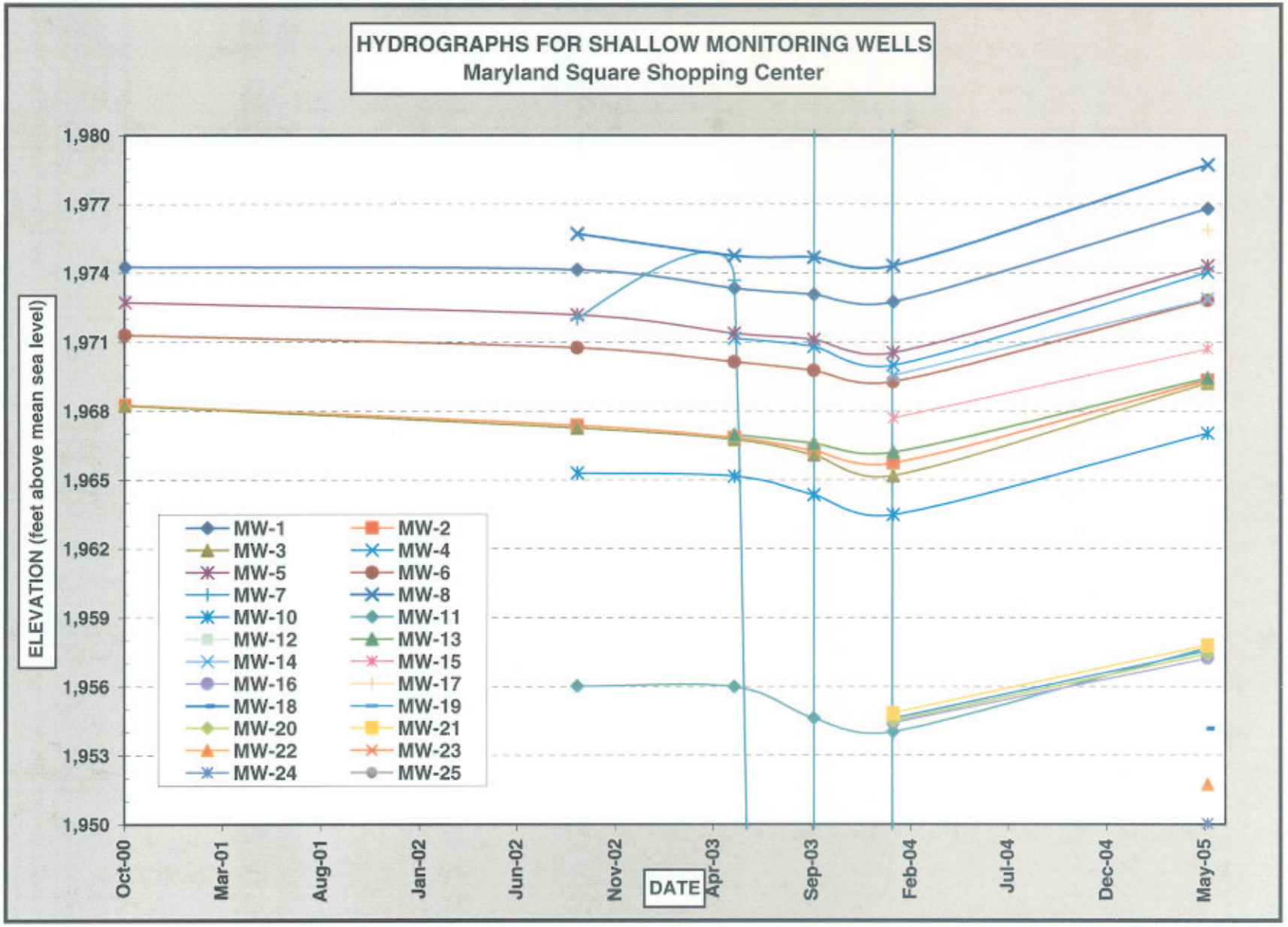
SITE PLAN SHOWING GROUNDWATER MONITORING WELL LOCATIONS

Al Phillips The Cleaner
June 2005
Subsurface Investigation
Maryland Square Shopping Center
3661 South Maryland Parkway
Las Vegas, Nevada

June 2005
Job No. 26698724
Maryland Square Fig 4 6-30-05.ppt

FIGURE 4

FIGURE 5



p:\alphillips\maryland square\ms june 2005 report\ms jun 05 tbl-3 fig 5.xls

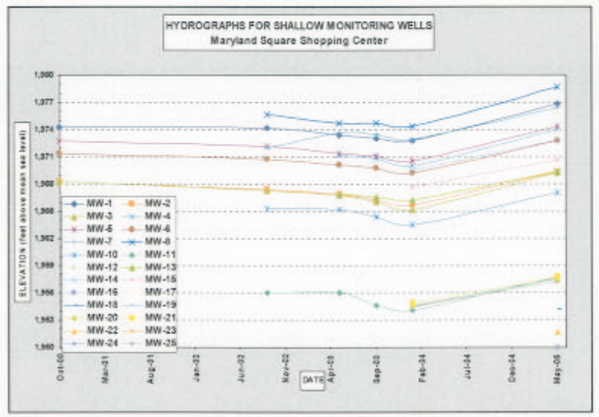
Groundwater Elevations In Shallow Monitoring Wells (May 2005)

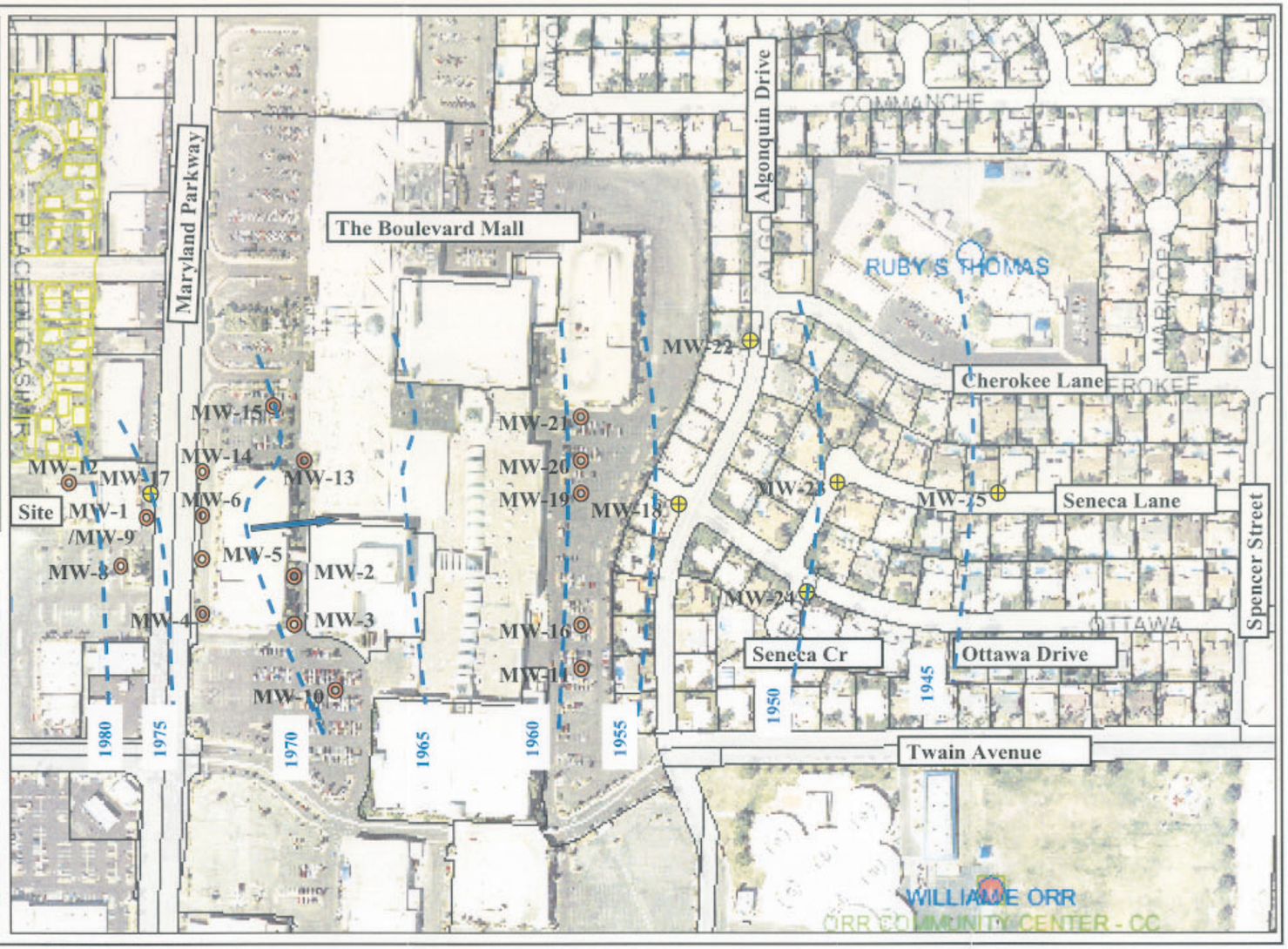
Well	Elevation	Well	Elevation
MW-1	1976.80	MW-14	1972.87
MW-2	1969.32	MW-15	1970.69
MW-3	1969.21	MW-16	1957.22
MW-4	1974.02	MW-17	1975.85
MW-5	1974.31	MW-18	1954.16
MW-6	1972.80	MW-19	1957.56
MW-7	1976.39	MW-20	1957.41
MW-8	1978.72	MW-21	1957.80
MW-10	1967.04	MW-22	1951.72
MW-11	1957.69	MW-23	1949.26
MW-12	1984.16	MW-24	1950.02
MW-13	1969.44	MW-25	1944.73

Groundwater Elevation in Intermediate Monitoring Well (May 2005)

Well	Elevation
MW-9	1976.90

Elevations are feet above means sea level.





Source: Clark County Assessors Web Site
Not to Particular Scale

URS

N

Legend:

- Approximate Location of Monitoring Well Installed by URS.
- Approximate Location of Monitoring Well Installed by Converse.
- Groundwater Elevation Contour Line
- Approximate Direction of Groundwater Flow

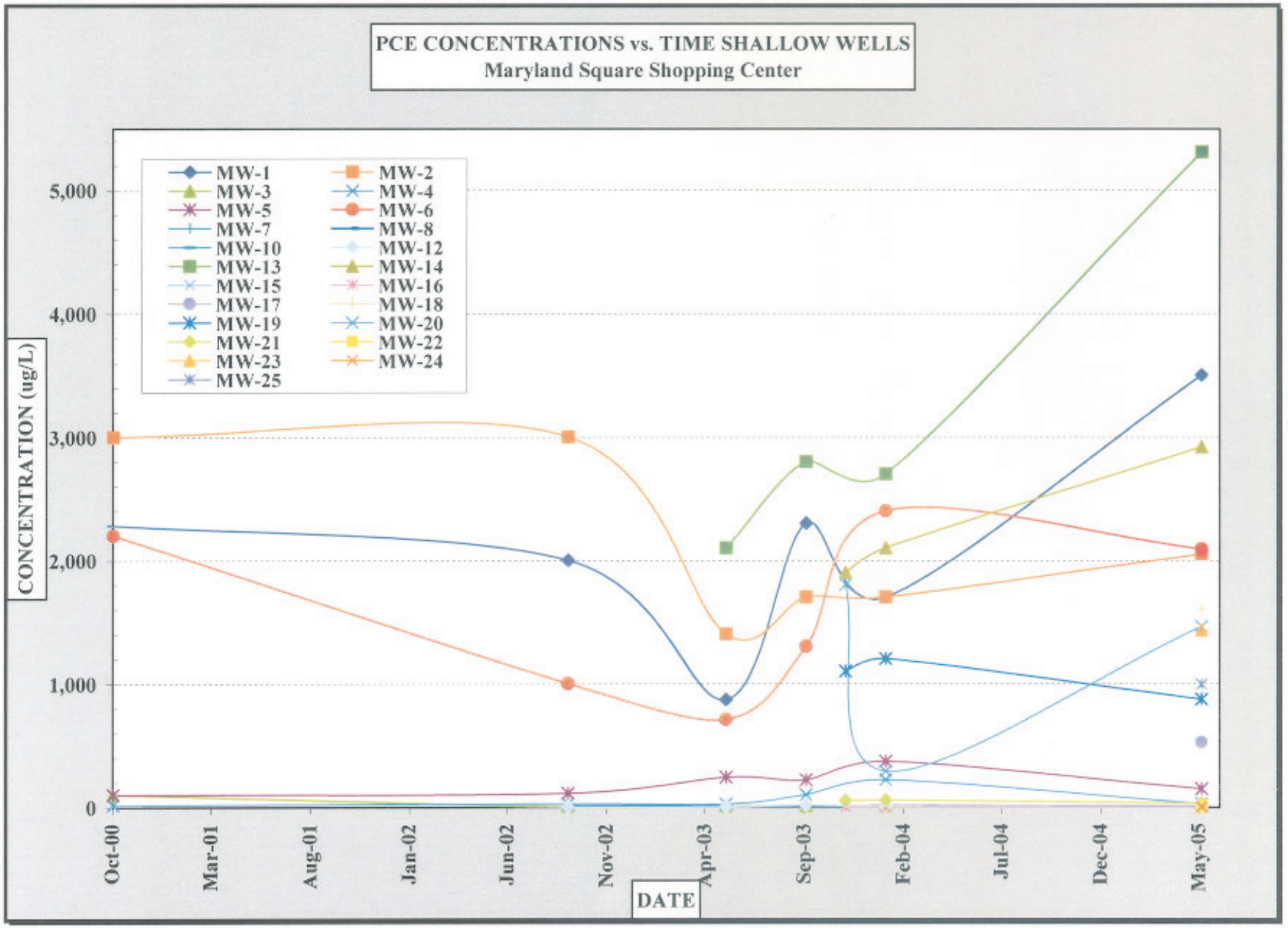
GROUNDWATER ELEVATION CONTOURS FOR SHALLOW WELLS

Al Phillips The Cleaners
June 2005
Subsurface Investigation
Maryland Square Shopping Center
3661 South Maryland Parkway
Las Vegas, Nevada

June 2005
Job No. 26698724
Maryland Square Fig 6 6-30-05.ppt

FIGURE 6

FIGURE 7



p:\alphillips\maryland square\ms june 2005 report\ms jun 05 tbl-5 fig 7b.xls

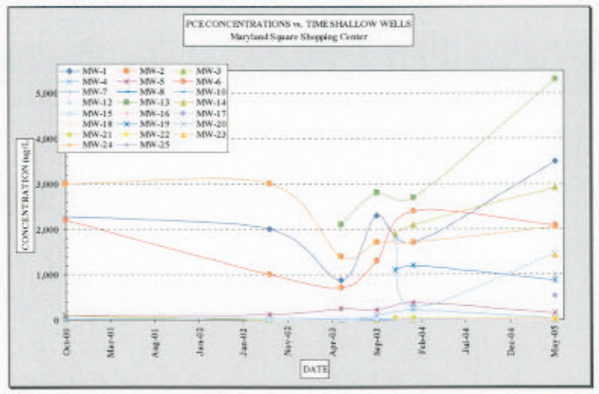
Concentrations of PCE in Shallow Monitoring Wells (May 2005)

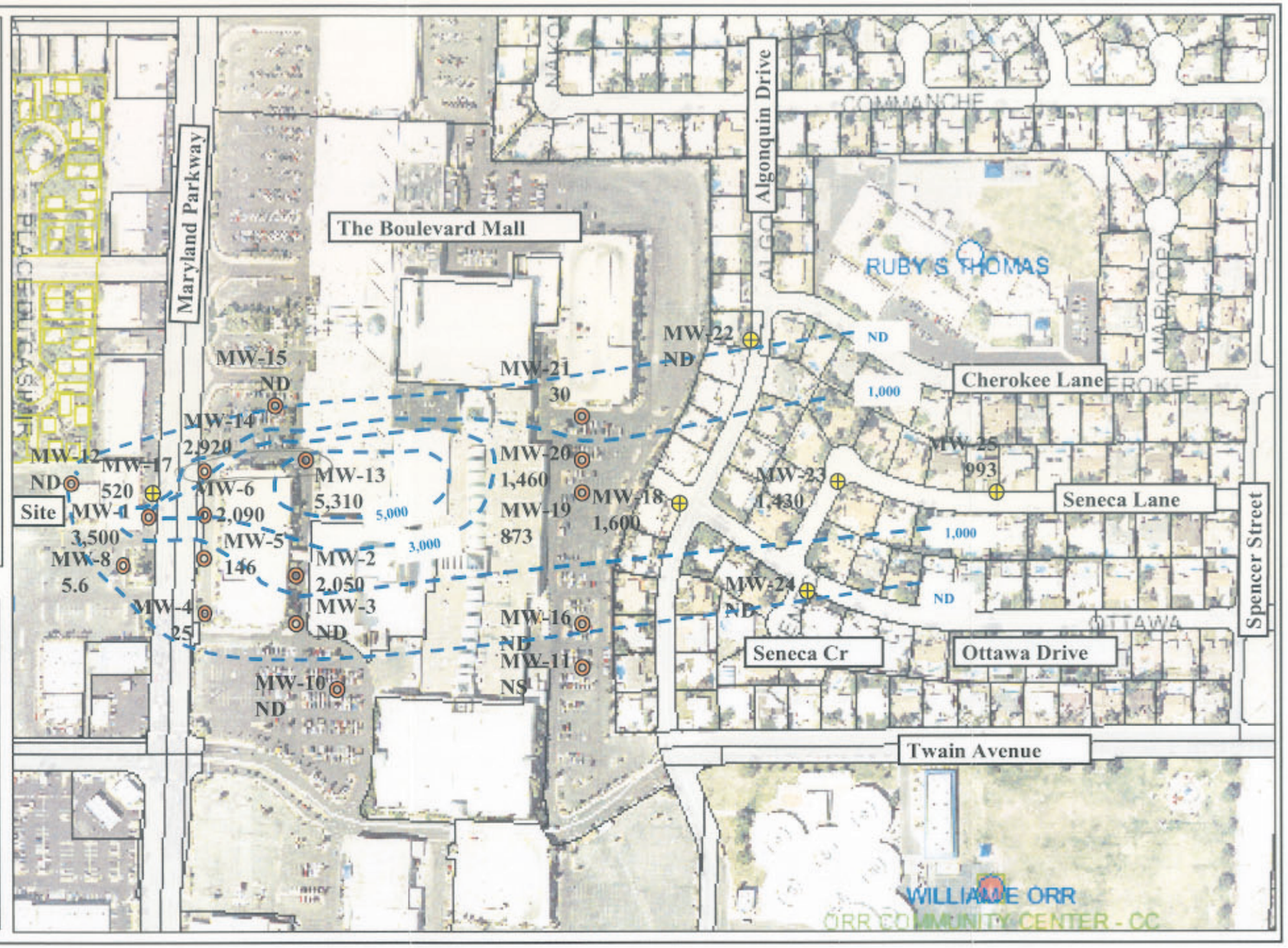
Well	Concentration	Well	Concentration
MW-1	3,500	MW-14	2,920
MW-2	2,050	MW-15	ND
MW-3	ND	MW-16	ND
MW-4	25	MW-17	520
MW-5	146	MW-18	1,600
MW-6	2,090	MW-19	873
MW-7	ND	MW-20	1,460
MW-8	5.6	MW-21	30
MW-10	ND	MW-22	ND
MW-11	NS	MW-23	1,430
MW-12	ND	MW-24	ND
MW-13	5,310	MW-25	993

Concentrations of PCE in Intermediate Monitoring Well (May 2005)

Well	Concentration
MW-9	353

Concentrations are in micrograms per liter (ug/L).
ND = none detected, NS = not sampled





Source: Clark County Assessors Web Site
Not to Particular Scale

URS

N

Legend:

- Approximate Location of Monitoring Well Installed by URS.
- Approximate Location of Monitoring Well Installed by Converse.
- 25 Concentration of PCE Detected in Groundwater Form Monitoring Well (in ug/L)
- Approximate Concentration Contour of PCE in Groundwater

ND is Non-detect, NS is Not Sampled

SHALLOW AND INTERMEDIATE WELL PCE CONCENTRATIONS

June 2005
Al Phillips The Cleaners
Subsurface Investigation
Maryland Square Shopping Center
3661 South Maryland Parkway
Las Vegas, Nevada

June 2005
Job No. 26698724
Maryland Square Fig 8 6-30-05.ppt

FIGURE 8