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By Alameda County Environmental Health at 11:24 am, Feb 06, 2015

December 17, 2014

Mr. Mark Detterman
Alameda County LOP
1131 Harbor Bay Pkwy.
Alameda, California 94502

Re: Soil and Water Investigation Work Plan (Report #4349)
Four Seasons Cleaners, 13778 Doolittle Avenue, San Leandro, California

Dear Mr. Detterman:

At the request of Mr. Ernie Lee, WellTest, Inc. (WTI) has prepared this work plan for additional site assessment work at the referenced site. The objective of the proposed work is to further define the extent of subsurface contamination recently identified in a *Limited Phase II Soil, Water, and Soil Vapor Investigation* completed by PIERS Environmental Services, Inc. (PIERS) at the site. The results of the PIERS investigation indicated that the soil, soil-gas, and groundwater at the site have been impacted by tetrachloroethylene (PCE) and its breakdown products trichloroethene (TCE) and cis-1, 2-dichloroethene (cis-1,2DCE). The likely source of the identified impacts is the on-site dry cleaner which, reportedly, historically used and stored these solvents. WTI presents supplemental tasks to further delineate the extent of solvent contamination in the soil and groundwater at the site. The extent of contaminated soil-gas will be addressed in future investigations once this current investigation is completed and WTI has a better understanding of the scope and extent of the subsurface soil and water contamination at the site.

Site Description

The site is located in a mixed commercial and residential area of San Leandro, California. The site parcel is approximately five acres and is improved with a multi-tenant strip mall and separate restaurant building. The dry cleaning unit is located within the strip mall and is associated with 13778 Doolittle Drive. The site lies at an elevation of approximately 15 feet above sea level and is relatively flat. The property is bounded by Doolittle Drive to the west, Fairway Drive to the north, Catalina Drive to the east and a commercial property to the south (Figures 1 and 2).

Proposed Work

WTI proposes to collect soil and grab-groundwater samples from a series of up to eight (8) temporary borings in the areas where PCE was previously detected and in the assumed downgradient (i.e. westerly) direction in an attempt to further define the extent of contamination. The following tasks will be completed to accomplish the objectives of this work plan:

Task 1 Project Setup and Management: Work performed under Task 1 includes all client and agency contact tasks to obtain Work Plan approval, access agreements (if any), including marking the site, arranging for utility locating services and scheduling all field activities. Additionally, WTI will obtain the required drilling permit from the Alameda County Public Works Agency (ACPWA).

- Task 2 Temporary Direct Push Borings:** WTI will advance up to eight (8) borings (DP- 1 through DP-8) at the proposed locations shown on Figure 3. Soil borings will be drilled by a C57 licensed driller under the direction of a licensed State of California Professional Geologist. The Geoprobe™ will direct-push (hammer) a 2-inch diameter steel Macro-Core barrel until groundwater is first encountered (estimated 10 to 12 ft bgs). The core barrels will be lined with clear plastic disposable tubing to facilitate continuous soil coring and soil logging for description. Soils will be logged using the United Soil Classification System (USCS). A minimum of one (1) soil sample from each boring will be retained for laboratory analysis.
- Task 3 Construction and Sampling of Temporary Wells:** Once groundwater is encountered in each of the borings, and a sufficient amount is present for sampling, the Macro-Core will be removed from the boring, and a temporary flush threaded, ¾-inch schedule 40 polyvinyl chloride (PVC) casing will be placed within the boring. The bottom cap will be flush threaded, and based on previously observed conditions, the screened casing will be 0.010-inch slots. Groundwater samples will then be collected from the temporary casing using a check-valve system attached to poly-tubing. See Attachment A for a more detailed description of the field methods.
- Task 4 Backfilling of Borings:** Once all soil and grab groundwater samples are collected from the borings, each boring will be backfilled from the bottom of the boring to ground surface with neat cement grout, per the requirements outlined in the ACPWA permits. The neat cement grout will be composed of a mix consistency of one 94 pound bag of Portland cement to five gallons of water. An inspector from the ACPWA will be on-site to witness the grouting process.
- Task 5 Laboratory Analyses – Soil and Groundwater Samples:** Grab-groundwater samples collected from each of the temporary borings and a minimum of one soil sample from each boring will be analyzed at a California State-certified laboratory for the presence of volatile organic compounds by EPA Analytical Test Method SW8260b.
- Task 6 Technical Report:** WTI will prepare a report documenting the additional site assessment work. The report will include the following: 1) A description of the soil and groundwater sampling methods; 2) A description of boring and sampling point installation methods; 3) Boring logs; 4) Data tables; 5) A map showing exploratory boring locations; 6) Laboratory reports and chain-of-custody records; 7) A discussion of the results of the study, and if objectives of this work plan were satisfied; and 8) WTI's conclusions and recommendations. The report will be signed by a State of California Professional Geologist. It is anticipated that the report will be submitted to the Alameda County LOP on or before early February 2015.

Timeline

The following is an estimated timeline to complete the tasks outlined within this work plan:

Task 1 – Will be completed within two (2) weeks of regulatory approval of this work plan.

Tasks 2, 3, and 4 – Will take place pending completion of Task 1 and scheduling availability of a drill rig (estimated 2 weeks following completion of Task 1).

Task 5 – Will be completed within two (2) weeks of completion of Tasks 2 and 3.

Task 6 – Will be prepared within two weeks of receipt of the analytical data (Task 4).

Certification,

This report has been reviewed and approved by the responsible party. A copy of the transmittal letter is provided as Attachment B. If you have any questions, please contact WTI at (408) 287-2175.

Sincerely:
WellTest, Inc



William R. Dugan, P.G.
Professional Geologist (CA# 6253)



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- Table 2 Historical Soil Analytical Data
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- Figure 1 Site Vicinity Map
- Figure 2 Aerial Photograph of Site Area
- Figure 3 Aerial Photograph Showing Proposed Boring Locations

- Attachment A Field Methods and Procedures
- Attachment B Client Authorization Letter

Distribution List

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List of Acronyms

| | |
|----------|---|
| Bgs | below ground surface |
| BTEX | Benzene, Toluene, Ethylbenzene, Xylenes |
| btoc | Below top of casing |
| 1,2-DCA | 1,2-Dichloroethane |
| DHS | State of California Department of Health Services |
| DO | Dissolved oxygen |
| DTW | Depth to water |
| DWR | Department of Water Resources |
| DIPE | Di-isopropyl ether |
| ELAP | Environmental Laboratory Accreditation Program |
| EC | Electrical conductivity |
| EDB | 1,2-dibromoethane |
| ETBE | Ethyl tert butyl ether |
| Eth | Ethanol |
| ft | foot or feet |
| ft/ft | feet per feet |
| FTU | Field Turbidity Unit |
| GW | Groundwater |
| MCL | Maximum Contaminant Level |
| Meth | Methanol |
| MSL | Mean Sea Level |
| MTBE | Methyl-t-butyl-ether |
| mg/L | milligram per liter |
| mV | millivolts |
| MW | Monitoring Well |
| NGVD | National Geodetic Vertical Datum of 1929 |
| NA | Not Analyzed |
| NM | Not Measured |
| ORP | Oxidation reduction potential |
| P.G. | Professional Geologist |
| ppmv | parts per million by volume |
| QA/QC | Quality Assurance/Quality Control |
| SCCDEH | Santa Clara County Department of Environmental Health |
| SCVWD | Santa Clara Valley Water District |
| TAME | Tert amyl methyl ether |
| TBA | Tert butyl alcohol |
| TDS | Total dissolved solids |
| TOC | Top of casing |
| TPHg | Gasoline range (C6-C12) Volatile hydrocarbons as gasoline |
| ug/L | micrograms per liter |
| uS | micro Siemens |
| UST | Underground storage tank |
| VOC | Volatile Organic Compound |
| WELLTEST | WellTest, Inc. |
| °F - °C | degrees Fahrenheit - degrees Celsius |

TABLES

TABLE 1
SUMMARY OF HISTORICAL SOIL VAPOR ANALYTICAL DATA
13778 DOOLITTLE AVE.
SAN LEANDRO, CALIFORNIA

| Sample ID | Sample Depth (ft) | Sample Date | PCE | TCE | cis-12DCE | VC | Other VOCs | He | O ₂ |
|------------------------|-------------------|-------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|----------------|
| | | | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | MOL % |
| S1 Air | 0.5 | 08/10/14 | 63,000 | 890 | ND<320 | ND<210 | All ND | --- | --- |
| S2 Air | 0.5 | 08/10/14 | 240,000 | 16,000 | ND<960 | ND<620 | All ND | --- | --- |
| S3 Air | 0.5 | 08/10/14 | 4,500,000 | 92,000 | ND<20,000 | ND<13,000 | All ND | --- | --- |
| CHHSL Comm/Ind. | | | 1,600 | 4,400 | 120,000 | 95 | varies | NA | NA |
| ESLs Comm/Ind. | | | 2,100 | 3,000 | NA | 160 | varies | NA | NA |

Notes:

--- = Parameter not analyzed NA = parameter not established Other VOCs = all other constituents of test method TO-15
 <0.5 / ND = Not present at or above reporting detection limit
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter = ppmv
 ESLs = Environmental Screening Levels, May 2013
 CHHSL Comm/Ind. = California Human Health Screening Level, January 2005
 TCE = Trichloroethene
 PCE = Tetrachloroethane
 cis-12DCE = cis-1,2-Dichloroethene
 VC = Vinyl Chloride

**TABLE 2
SUMMARY OF HISTORICAL SOIL ANALYTICAL DATA
13778 DOOLITTLE AVE
SAN LEANDRO, CALIFORNIA**

| Sample ID | Sample Depth (ft.) | Sample Date | TPHd (mg/Kg) | PCE (mg/Kg) | TCE (mg/Kg) | cis-12DCE (mg/Kg) | VC (mg/Kg) | Other VOCs (mg/Kg) |
|-----------------------------|--------------------|-------------|-----------------|----------------|----------------|----------------------|---------------|-----------------------|
| S1 d 0.5' | 0.5 | 08/10/14 | 3.2 | 0.056 | ND | ND | ND | All ND |
| S2 d 0.5' | 0.5 | 08/10/14 | 2.6 | 0.045 | ND | ND | ND | All ND |
| S3 d 0.5' | 0.5 | 08/10/14 | 2.1 | 0.1 | ND | ND | ND | All ND |
| S3 d 2' | 2.0 | 08/10/14 | ND<1.0 | 20 | ND | ND | ND | All ND |
| S3 d 5' | 5.0 | 08/10/14 | ND<1.0 | 2.4 | ND | ND | ND | All ND |
| Residential ESL | | | 100 | 0.55 | 0.46 | 0.190 | 0.032 | varies |
| Comm./Industrial ESL | | | 500 | 0.70 | 0.46 | 0.190 | 0.032 | varies |

Notes:

--- = Parameter not analyzed
 <0.5 / ND = Not present at or above reporting detection limit
 mg/Kg = micrograms per kilogram = parts per million = ppm
 ESLs = Environmental Screening Levels shallow soil (potential source of drinking water): Summary Table A, May 2013
 TPHd = Total Petroleum Hydrocarbons as diesel
 PCE = Tetrachloroethene
 TCE = Trichloroethene
 cis-12DCE = cis-1,2,Dichloroethene
 VC = Vinyl Chloride

TABLE 3
SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL DATA
13778 DOOLITTLE AVE
SAN LEANDRO, CALIFORNIA

| Sample ID | Sample Date | TPHd | PCE | TCE | cis-12DCE | VC | Other VOCs |
|-------------|-------------|------------|------------|------------|------------|------------|---------------|
| | | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) |
| S-3 | 08/10/14 | ND<50 | 750 | 51 | 7.6 | ND<7.1 | All ND |
| ESLs | | 100 | 5.0 | 5.0 | 6.0 | 0.5 | varies |

Notes:

--- = Parameter not analyzed

<0.5 / ND = Not present at or above reporting detection limit

µg/L = micrograms per liter = parts per billion = ppb

ESLs = Environmental Screening Levels Groundwater (potential source of drinking water): Summary Table A, May 2013

PCE = Tetrachloroethene

TCE = Trichloroethene

cis-12DCE = cis-1,2,Dichloroethene

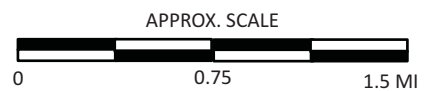
VC = Vinyl Chloride

TPHd = Total Petroleum Hydrocarbons as diesel

FIGURES



SOURCE: USGS 1:24,000 SCALE SERIES, SAN LEANDRO QUAD



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**13778 DOOLITTLE AVE.
SAN LEANDRO, CALIFORNIA**

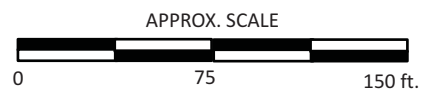
SITE VICINITY MAP

FIGURE

1



SOURCE: Google Earth, 2014.




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**13778 DOOLITTLE AVE.
SAN LEANDRO, CALIFORNIA**

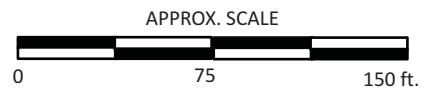
**AERIAL PHOTOGRAPH
OF SITE AREA**

FIGURE

2



SOURCE: Google Earth, 2014.




WellTest, Inc.
 Contractor License No. 843074

13778 DOOLITTLE AVE.
 SAN LEANDRO, CALIFORNIA

AERIAL PHOTOGRAPH
 SHOWING PROPOSED BORING LOCATIONS

FIGURE

3

ATTACHMENT A

Field Methods and Procedures

Direct-Push Drilling, Sampling and Borehole Sealing Procedures

ATTACHMENT A
Direct-Push Drilling, Sampling and Borehole Sealing Procedures
13778 Doolittle Drive, San Leandro, California

Sampling – Soil

A Geoprobe 5400 rig (or equivalent) will be used to direct-push (hammer) the proposed temporary borings. A summary of the tooling (or equivalent tooling) and sampling methods can be obtained at the following website: http://www.geoprobe.com/products/tools/soil_sampling/dt22desc.htm

Sampling – Groundwater (Small Diameter Wells)

PVC casing will be installed within the outer drive rods, or within open boreholes installed with a Macro-Core system. Groundwater samples were collected from within the 3/4-inch diameter temporary well using the following protocol:

- Before purging, the water level within the well will be allowed to stabilize, and then water levels will be measured with an electronic interface tape.
- To prevent potential cross-contamination between wells, all measuring, purging, and sampling equipment will be washed in an Alconox® detergent solution, rinsed with tap water, and then will be rinsed with distilled water.
- A Micro Flow System foot-valve system attached to single-use 3/8-inch O.D. polyethylene tubing will be used to purge each cased-boring. The foot-valve can deliver a sample from as deep as 75 feet and flow rates with this system are usually less than 1/2 gallon per minute.
- Temperature, conductivity, and pH will be measured and recorded while purging each cased-boring. The temporary well will be purged until approximately three well volumes of water have been removed or when these parameters have stabilized. The samples will be labeled and placed in a refrigerated chest. Chain-of-custody documents and a travel blank will accompany the samples to the laboratory.
- Samples will be collected with either a clean disposable bailer or with the foot-valve system.
- Samples will be transported to the laboratory where analyzed within the specified holding time.
- Groundwater produced during purging and sampling will be placed in a 55-gallon drum and will remain the responsibility of the client to properly dispose.

Water samples will be placed into laboratory-supplied, properly-preserved containers. The amount of sample collected will be pre-approved by the contract laboratory and will be appropriate for the analysis being requested. All samples will be labeled and placed in a refrigerated cooler and accompanied by the chain-of-custody document. Samples transported to the laboratory will be analyzed within the specified analytical test holding time.

ATTACHMENT B

Client Authorization Letter

December 17, 2014

Mr. Mark Detterman
Alameda County LOP
1131 Harbor Bay Pkwy.
Alameda, California 94502

Re: Soil and Water Investigation Work Plan (Report #4349)
Four Seasons Cleaners, 13778 Doolittle Avenue, San Leandro, California

Dear Mr. Detterman:

Attached for your review is a technical report (Soil and Water Investigation Work Plan) for the above-referenced case. The report was prepared by WellTest, Inc. at my request.

I declare under the penalty of perjury that information and/or recommendations contained in the attached report are true and correct, to the best of my knowledge.

If you should have any questions or comments, please do not hesitate to contact me, or the WellTest project manager, Bill Dugan at (408) 287-2175.

Sincerely,



Mr. Ernie Lee
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