

CARLIN • SIMPSON & ASSOCIATES

Consulting Engineers
Geotechnical & Environmental

MEMO

DATE: 18 July 2013
FROM: Robert B. Simpson, P.E.
Meredith R. Anke, P.E.
TO: _____
RE: Phase II Environmental Investigation **JOB NO:** 12-85B
22 South West Street
Mt. Vernon, New York

Carlin-Simpson & Associates has completed a Phase II Environmental Site Investigation (ESI) for the referenced site. The preliminary findings for the investigation are summarized below. The purpose of this study was to investigate the recognized environmental conditions (RECs) that were identified during a recent Phase I Environmental Site Assessment (ESA) at the subject site. The Phase I ESA report, which was dated 26 April 2013, identified six (6) recognized environmental conditions (RECs), which are as follows:

- The site has been used as a service station since 1946, when the existing site building was constructed. The past practices related to the storage, use, and disposal of hazardous materials are unknown. It is possible that the subject site has been detrimentally impacted as a result of this use.
- There is known soil and groundwater contamination on the subject site from old underground storage tanks that were removed from the property in 2005. Post-excavation soil samples at the time indicated that soil contamination remained on the site after excavation and groundwater sampling results from 2011 indicate that the contaminant concentrations in groundwater still exceeded the NYSDEC Water Quality Standards at that time. As a result, there is also an open NYSDEC spills case for the subject site (Spill No. 05-01989). Δ
- There are four (4) existing underground storage tanks (USTs) located in the northern portion of the site along with underground piping and three (3) fuel pumps. The tanks have been epoxy lined and are pressure tested annually but based on the age of the tanks, piping, and pumps, there is a possibility that one or more of these components have detrimentally impacted the site.
- There is an existing hydraulic lift present in the west bay in the northern portion of the site building. The underground lift has likely been present since the building was constructed in 1946. There is a potential that the underground hydraulic lift contains PCBs since PCBs were formerly used in hydraulic fluid and were not banned until the 1970s.
- There is a former grease pit located in the east bay in the northern portion of the service station building. The grease pit was part of the original structure. The former grease pit is a recognized environmental condition since the method of closure and the condition of the grease pit at the time of closure were not documented. It is possible that the soil below the slab has been impacted as a result of this grease pit.

- The site soils consist of a surface layer of either concrete or asphalt followed by existing fill that extends to depths ranging from 1'6" to 15'6" below the existing ground surface. The existing fill generally consists of loose to medium dense Sand or Silty Sand with varying amounts of Gravel. Varying amounts of debris such as wood, ash, cinders, asphalt, brick, coal, glass, and concrete were encountered in portions of the fill. In addition, a layer of ash and cinder fill was encountered in a few boring locations. Below the existing fill is loose to medium dense virgin soil that primarily consists of Sand with traces of Silt and Gravel. Gravelly Sand and cobbles were encountered within the Sand stratum in portions of the site.

Laboratory Analytical Results for Soil

- The laboratory analytical results for soil are summarized on the attached Table 1.
- PCBs were not detected in any of the soil samples collected below the floor slab inside the building. Therefore, there does not appear to be any PCB impact to the site as a result of the existing hydraulic lift.
- The analytical results for soil indicate that there is contamination in the soil at the groundwater table in portions of the site. The smear zone of soil contamination appears to be located right at the groundwater interface. The soil at this depth has been impacted as a result of groundwater contamination and will not require excavation.
- The ash and cinder fill that was encountered in portions of the site contains SVOCs and metals at concentrations exceeding the Unrestricted Use Soil Cleanup Objectives (SCOs). A few of the metals (lead and mercury) also exceed the Commercial Use SCOs. Historic fill material does not typically require remediation. Should this material be excavated during construction, disposal of the material may be required if the material cannot be managed on the site.
- The analytical results for soil also indicate that there is soil contamination (VOCs and SVOCs) in boring B-8, near the southeast edge of the previously excavated tank area. We expect that the contamination in the area extends below the existing diesel UST and nearby pump island as well. Soil remediation will be required for this area of the site.

Groundwater Investigation

- During this investigation, one (1) new 2-inch groundwater monitoring well was installed at the site. Two (2) 4-inch groundwater monitoring wells were previously installed at the site by others. A site plan showing the monitoring well locations is attached.
- Groundwater samples were obtained from each of the monitoring wells and each sample was submitted for laboratory analytical testing for full TCL/TAL analysis, which includes VOCs, SVOCs, PCBs, pesticides, and metals. Prior to sampling, the static groundwater elevation at each well location was measured and the well casing was scanned for VOC and SVOC vapors using a photoionization detector (PID). The recorded measurements are presented in the table below.

Monitoring Well Observations

| Well No. | PID Reading (ppm) | Ground Surface Elevation | Top of Casing Elevation | Depth to Water (feet) | Water Elevation |
|----------|-------------------|--------------------------|-------------------------|-----------------------|-----------------|
| MW-1 | 239 | +99.90 | +99.47 | 19.00 | +80.47 |
| MW-2 | 0.0 | +99.77 | +98.82 | 18.38 | +80.44 |
| MW-3 | 304 | +99.61 | +99.25 | 18.79 | +80.46 |

Laboratory Analytical Results for Groundwater

- The laboratory analytical results for groundwater are summarized on the attached Table 2.
- PCBs and pesticides were not detected in any of the groundwater samples.
- MW-1 and MW-2 contain elevated concentrations of gasoline-related VOCs (ethylbenzene, isopropylbenzene, toluene, and xylenes). These compounds all exceed the NYSDEC Class GA Groundwater Criteria.
- Each of the three (3) groundwater samples also contains metals at concentrations exceeding the NYSDEC Class GA Groundwater Criteria. One metal of concern (lead) was detected in sample MW-1. This well was closest to the former leaking tank. Lead at this location is consistent with an old spill of leaded gasoline. The remaining metals that were detected (iron, magnesium, manganese, and sodium) are not related to gasoline and are likely naturally occurring at this site.
- Based on the analytical results, well MW-2 appears to be cross-gradient of the contamination plume since elevated VOC concentrations were not detected in this well. The contamination plume appears to be migrating to the southwest from the former leaking tank area.

Additional Information

We contacted Mr. Wayne Schneider, who is the case manager at Westchester County Department of Health (DOH) for this site to determine if there are any outstanding issues we needed to know about. Mr. Repetti had previously informed DOH that the property was being sold. Mr. Schneider provided some pertinent information, which is summarized below.

- If the property is transferred before the tanks are removed, the tank registration will have to be transferred to the new owner before they can be removed. This involves paperwork and fees to DOH. A work permit would then be required for the contractor to remove the tanks. However, if the tanks can be removed while Mr. Repetti is still the registered owner, the hassle of transferring ownership can be avoided. The work permit is still required but that is typically submitted by the contractor.
- WCDOH is already aware that there is groundwater contamination on the site. So far, the levels have not been high enough to warrant the DEC to ask for an active remediation system. Mr. Schneider concurs that once the tanks and contaminated soil are removed, the groundwater contamination levels should decrease naturally. Groundwater monitoring will be required to confirm that concentrations are decreasing.

- Some staining and absorbent material was observed on the pavement near the dumpsters on the south side of the site building. Based on the amount of staining in this area, it is possible that the soils below the pavement have been impacted. Therefore, this stained area is a recognized environmental condition that should be further investigated.

Soil Investigation

- During this investigation, hollow stem auger (HSA) drilling methods were used to perform 18 test borings in the various areas of environmental concern that were identified during the Phase I ESA. A site plan showing the boring locations is attached.
- Soil samples were obtained from each boring location and each sample was visually inspected for evidence of contamination and screened using a photoionization detector (PID), which is capable of detecting volatile organic compounds (VOCs) and/or semi-volatile organic compounds (SVOCs). Based on the areas of concern and the field screening results, we collected a total of 25 soil samples from the site for laboratory analytical testing. The collected samples and the specified laboratory analysis are summarized in the following table.

Summary of Soil Sample Locations

| Sample No. | Sample Depth | PID Readings | Laboratory Analysis |
|------------|--------------|--------------|---------------------------|
| B-1A | 0'6"-2'0" | 0.0 ppm | SVOCs, PCBs, Metals |
| B-1B | 19'0"-20'0" | 102 ppm | PCBs |
| B-2A | 21'0"-22'0" | 658 ppm | VOCs, SVOCs, PCBs |
| B-4A | 7'0"-8'6" | 0.0 ppm | SVOCs, PCBs, Metals |
| B-4B | 21'0"-22'0" | 867 ppm | VOCs, SVOCs, PCBs, Metals |
| B-5,S-2 | 4'0"-5'0" | 0.0 ppm | SVOCs, Metals |
| B-5,S-11 | 25'0"-26'6" | 4.1 ppm | VOCs, SVOCs |
| B-6,S-4 | 8'0"-9'0" | 2.0 ppm | VOCs, SVOCs |
| B-7,S-8 | 17'0"-19'0" | 0.0 ppm | VOCs, SVOCs |
| B-7,S-9 | 20'0"-21'0" | 1,313 ppm | VOCs, SVOCs |
| B-8,S-3 | 6'0"-7'0" | 543 ppm | VOCs, SVOCs |
| B-8,S-8 | 18'0"-19'0" | 40.3 ppm | VOCs, SVOCs |
| B-9,S-1 | 1'0"-2'0" | 0.1 ppm | VOCs, SVOCs, Metals |
| B-9,S-8 | 19'0"-21'0" | 0.0 ppm | VOCs, SVOCs |
| B-10,S-9 | 21'0"-22'0" | 1,721 ppm | VOCs, SVOCs, PCBs, Metals |
| B-11,S-1 | 1'0"-2'0" | 11.5 ppm | VOCs, SVOCs |
| B-12,S-9 | 21'0"-22'0" | 286 ppm | VOCs, SVOCs |
| B-13,S-2 | 3'0"-4'0" | 0.0 ppm | SVOCs, Metals |
| B-13,S-10 | 22'0"-23'0" | 1,805 ppm | VOCs, SVOCs |
| B-14,S-4 | 8'0"-9'0" | 24.8 ppm | VOCs, SVOCs |
| B-14,S-8 | 17'0"-19'0" | 0.0 ppm | VOCs, SVOCs |
| B-15,S-11 | 26'0"-27'0" | 12.8 ppm | VOCs, SVOCs |
| B-16,S-7 | 16'0"-17'0" | 14.8 ppm | VOCs, SVOCs |
| B-17,S-1 | 20'6"-21'6" | 235 ppm | VOCs, SVOCs |
| B-18,S-5 | 20'6"-21'6" | 2,061 ppm | VOCs, SVOCs |


PID – Photoionization Detector
ppm – parts per million

Table 1 – Laboratory Results Detected for Soil
22 South West Street, Mt. Vernon, New York

| Sample Number | | | B-1A | B-1B | B-2A | B-4A | B-4B |
|---|-----------------------------------|---------------------------------|------------|-------------|-------------|------------|-------------|
| Sample Date | | | 6/10/13 | 6/10/13 | 6/11/13 | 6/11/13 | 6/11/13 |
| Sample Type | | | Soil | Soil | Soil | Soil | Soil |
| Sample Depth | | | 0'6"-2'0" | 19'0"-20'0" | 21'0"-22'0" | 7'0"-8'6" | 21'0"-22'0" |
| Parameter | NYSDEC Unrestricted Use SCO | NYSDEC Commercial Use SCO | Result (Q) | Result (Q) | Result (Q) | Result (Q) | Result (Q) |
| TCL Volatile Organic Compounds (TCL VOCs by EPA Method 8260B, mg/kg) | | | | | | | |
| Ethylbenzene | 1 | 390 | - | - | 9.5 | - | 0.12 (J) |
| Isopropylbenzene | - | - | - | - | 2.1 | - | 3.3 |
| Total Xylenes | 0.26 | 500 | - | - | 81 | - | 6.47 |
| Methylcyclohexane | - | - | - | - | 3.2 | - | 14 |
| Tetrachloroethene | 1.3 | 150 | - | - | ND | - | 0.19 (J) |
| Toluene | 0.7 | 500 | - | - | 0.047 (J) | - | ND |
| Total VOC TICs | - | - | - | - | 220.9 | - | 728 |
| TCL Semi-Volatile Organic Compounds (TCL SVOCs by EPA Method 8270C, mg/kg) | | | | | | | |
| 1,2,4-Trichlorobenzene | - | - | 0.018 (J) | - | ND | ND | ND |
| 1,2-Dichlorobenzene | 1.1 | 500 | 0.14 (J) | - | ND | ND | ND |
| 2-Methylnaphthalene | - | - | 0.13 (J) | - | 0.55 | 0.099 (J) | 0.37 (J) |
| Acenaphthylene | 100 | 500 | ND | - | ND | 0.11 (J) | ND |
| Anthracene | 100 | 500 | ND | - | ND | 0.091 (J) | ND |
| Benzo[a]anthracene | 1 | 5.8 | 0.15 | - | 0.083 | 0.34 | 0.11 |
| Benzo[a]pyrene | 1 | 1 | 0.15 | - | 0.074 | 0.33 | 0.080 |
| Benzo[b]fluoranthene | 1 | 5.8 | 0.21 | - | 0.087 | 0.45 | 0.12 |
| Benzo[g,h,i]perylene | 100 | 500 | 0.11 (J) | - | 0.075 (J) | 0.22 (J) | 0.087 (J) |
| Benzo[k]fluoranthene | 0.8 | 58 | 0.072 | - | 0.043 | 0.15 | 0.033 (J) |
| Chrysene | 1 | 58 | 0.19 (J) | - | 0.13 (J) | 0.52 | 0.16 (J) |
| Dibenz[a,h]anthracene | 0.33 | 0.58 | 0.032 (J) | - | 0.014 (J) | 0.089 | 0.021 (J) |
| Fluoranthene | 100 | 500 | 0.23 (J) | - | 0.088 (J) | 0.28 (J) | 0.12 (J) |
| Indeno[1,2,3-cd]pyrene | 0.5 | 5.8 | 0.083 | - | 0.050 | 0.17 | 0.068 |
| Naphthalene | 12 | 500 | 0.053 (J) | - | 0.15 (J) | 0.089 (J) | ND |
| Phenanthrene | 100 | 500 | 0.17 (J) | - | 0.099 (J) | 0.23 (J) | 0.13 (J) |
| Phenol | 0.33 | 500 | ND | - | 0.077 (J) | ND | ND |
| Pyrene | 100 | 500 | 0.28 (J) | - | 0.16 (J) | 0.35 (J) | 0.20 (J) |
| Total SVOC TICs | - | - | 0.227 | - | 0.763 | 0.145 | 0.838 |
| TCL Polychlorinated Biphenyls (TCL PCBs by EPA Method 8082, mg/kg) | | | | | | | |
| Total PCBs | 0.1 | 1.0 | ND | ND | ND | ND | ND |
| TAL Metals + Mercury (EPA Methods 6010B, 7471A, mg/kg) | | | | | | | |
| Aluminum | - | - | 8,300 | - | - | 12,100 | 1,930 |
| Arsenic | 13 | 16 | 4.6 | - | - | 3.6 | ND |
| Barium | 350 | 400 | 91.8 | - | - | 87.2 | 22.7 (J) |
| Beryllium | 7.2 | 590 | 0.32 (J) | - | - | 0.28 (J) | ND |
| Cadmium | 2.5 | 9.3 | 0.48 (J) | - | - | 0.17 (J) | ND |
| Calcium | - | - | 8,280 | - | - | 3,150 | 4,350 |
| Chromium | 30 | 1,500 | 18.1 | - | - | 21.5 | 4.8 |
| Cobalt | - | - | 12.1 | - | - | 9.1 (J) | 2.1 (J) |
| Copper | 50 | 270 | 26.7 | - | - | 39.6 | 6.8 |
| Iron | - | - | 15,200 | - | - | 21,800 | 4,340 |
| Lead | 83 | 1,000 | 118 | - | - | 206 | 27.5 |
| Magnesium | - | - | 4,970 | - | - | 4,780 | 3,370 |
| Manganese | 1,800 | 10,000 | 264 | - | - | 318 | 42.8 |
| Nickel | 30 | 310 | 15.7 | - | - | 19.2 | 5.7 (J) |
| Potassium | - | - | 1,170 | - | - | 2,650 | 537 (J) |
| Sodium | - | - | 529 (J) | - | - | 252 (J) | ND |
| Vanadium | - | - | 20.6 | - | - | 28.3 | 5.2 (J) |
| Zinc | 109 | 10,000 | 85.3 | - | - | 93.1 | 13.3 |
| Mercury | 0.18 | 2.8 | 0.079 | - | - | 0.31 | ND |

ND – Not detected

SCO – NYSDEC Soil Cleanup Objectives

 – Shaded value indicates exceedance of Unrestricted Use SCO

 – Shaded value indicates exceedance of Commercial Use SCO

Q – Data qualifier

J – Estimated value below reporting limit

Table 1 – Laboratory Results Detected for Soil
22 South West Street, Mt. Vernon, New York

| Sample Number | | | B-6,S-2 | B-6,S-11 | B-6,S-4 | B-7,S-8 | B-7,S-9 |
|---|-----------------------------------|---------------------------------|------------|-------------|-------------|-------------|-------------|
| Sample Date | | | 6/18/13 | 6/18/13 | 6/18/13 | 6/18/13 | 6/18/13 |
| Sample Type | | | Soil | Soil | Soil | Soil | Soil |
| Sample Depth | | | 4'0"-5'0" | 25'0"-26'6" | 8'0"-8'0" | 17'0"-18'0" | 20'0"-21'0" |
| Parameter | NYSDEC Unrestricted Use SCO | NYSDEC Commercial Use SCO | Result (Q) | Result (Q) | Result (Q) | Result (Q) | Result (Q) |
| TCL Volatile Organic Compounds (TCL VOCs by EPA Method 8260B, mg/kg) | | | | | | | |
| Benzene | 0.08 | 44 | - | ND | 0.00032 (J) | ND | ND |
| Cyclohexane | - | - | - | ND | 0.0011 (J) | ND | ND |
| Ethylbenzene | 1 | 390 | - | ND | 0.0021 | ND | ND |
| Isopropylbenzene | - | - | - | ND | 0.00063 (J) | ND | 0.030 (J) |
| Total Xylenes | 0.26 | 500 | - | 0.00080 (J) | 0.0097 | ND | 11.8 |
| Methylcyclohexane | - | - | - | 0.00049 (J) | 0.0066 | ND | 0.26 |
| Tetrachloroethene | 1.3 | 180 | - | ND | 0.00019 (J) | ND | 0.028 (J) |
| Toluene | 0.7 | 500 | - | ND | 0.00065 (J) | ND | 0.018 (J) |
| Total VOC TICs | - | - | - | 0.0453 | 0.1841 | ND | 102.9 |
| TCL Semi-Volatile Organic Compounds (TCL SVOCs by EPA Method 8270C, mg/kg) | | | | | | | |
| 2-Methylnaphthalene | - | - | ND | ND | ND | ND | 0.68 |
| Acenaphthene | 20 | 500 | 0.13 (J) | ND | ND | ND | ND |
| Acenaphthylene | 100 | 500 | 0.068 (J) | ND | 0.11 (J) | ND | ND |
| Anthracene | 100 | 500 | 0.36 (J) | ND | 0.13 (J) | ND | 0.068 (J) |
| Benzo[a]anthracene | 1 | 5.8 | 0.93 | ND | 0.32 | ND | 0.075 |
| Benzo[a]pyrene | 1 | 1 | 0.84 | ND | 0.21 | ND | 0.071 |
| Benzo[b]fluoranthene | 1 | 5.8 | 1.2 | ND | 0.25 | ND | 0.071 |
| Benzo[g,h,i]perylene | 100 | 500 | 1.0 | ND | 0.12 (J) | ND | 0.082 (J) |
| Benzo[k]fluoranthene | 0.8 | 58 | 0.37 | ND | 0.095 | ND | 0.031 (J) |
| Chrysene | 1 | 58 | 1.0 | ND | 0.32 (J) | ND | 0.082 (J) |
| Dibenz[a,h]anthracene | 0.33 | 0.58 | ND | ND | 0.038 (J) | ND | ND |
| Fluoranthene | 100 | 500 | 1.8 | ND | 0.42 (J) | ND | 0.12 (J) |
| Fluorene | 30 | 500 | 0.11 (J) | ND | ND | ND | 0.082 (J) |
| Indeno[1,2,3-cd]pyrene | 0.5 | 5.8 | 0.81 | ND | 0.084 | ND | 0.035 (J) |
| Naphthalene | 12 | 500 | ND | ND | ND | ND | 0.27 (J) |
| Phenanthrene | 100 | 500 | 1.3 | ND | 0.87 (J) | ND | 0.23 (J) |
| Pyrene | 100 | 500 | 1.9 | ND | 0.52 (J) | ND | 0.18 (J) |
| Total SVOC TICs | - | - | 0.074 | ND | 0.4 | ND | 4.77 |
| TAL Metals + Mercury (EPA Methods 8010B, 7471A, mg/kg) | | | | | | | |
| Aluminum | - | - | 4,130 | - | - | - | - |
| Antimony | - | - | 1.4 (J) | - | - | - | - |
| Arsenic | 13 | 16 | 6.1 | - | - | - | - |
| Barium | 350 | 400 | 194 | - | - | - | - |
| Beryllium | 7.2 | 590 | 0.18 (J) | - | - | - | - |
| Cadmium | 2.5 | 9.3 | 1.9 | - | - | - | - |
| Calcium | - | - | 5,470 | - | - | - | - |
| Chromium | 30 | 1,500 | 19.0 | - | - | - | - |
| Cobalt | - | - | 4.2 (J) | - | - | - | - |
| Copper | 50 | 270 | 131 | - | - | - | - |
| Iron | - | - | 19,500 | - | - | - | - |
| Lead | 63 | 1,000 | 42.0 | - | - | - | - |
| Magnesium | - | - | 2,380 | - | - | - | - |
| Manganese | 1,800 | 10,000 | 184 | - | - | - | - |
| Nickel | 30 | 310 | 16.3 | - | - | - | - |
| Potassium | - | - | 759 (J) | - | - | - | - |
| Silver | 2 | 1,500 | 0.83 (J) | - | - | - | - |
| Sodium | - | - | 291 (J) | - | - | - | - |
| Vanadium | - | - | 14.9 | - | - | - | - |
| Zinc | 109 | 10,000 | 868 | - | - | - | - |
| Mercury | 0.18 | 2.8 | 5.8 | - | - | - | - |

ND – Not detected

SCO – NYSDEC Soil Cleanup Objectives

 – Shaded value indicates exceedance of Unrestricted Use SCO

 – Shaded value indicates exceedance of Commercial Use SCO

Q – Data qualifier

J – Estimated value below reporting limit

Table 1 - Laboratory Results Detected for Soil
22 South West Street, Mt. Vernon, New York

| Sample Number | | | | | | | |
|--|--|---------------------------|------------|-------------|-------------|------------|------------|
| Sample Date | | | | | | | |
| Sample Type | | | | | | | |
| Sample Depth | | | | | | | |
| Parameter | NYSDEC Unrestricted Use SCO | NYSDEC Commercial Use SCO | Result (Q) | Result (Q) | Result (Q) | Result (Q) | Result (Q) |
| | TCL Volatile Organic Compounds (TCL VOCs by EPA Method 8260B, mg/kg) | | | | | | |
| Acetone | 0.05 | 500 | ND | 0.010 (J,B) | ND | ND | ND |
| Benzene | 0.08 | 44 | 0.11 | ND | ND | ND | ND |
| Carbon Disulfide | - | - | ND | ND | 0.00081 (J) | ND | ND |
| Ethylbenzene | 1 | 390 | 0.82 | ND | ND | ND | 4.7 |
| Isopropylbenzene | - | - | 0.29 | ND | ND | ND | 6.3 |
| Total Xylenes | 0.28 | 500 | 11.81 | ND | ND | ND | 5.2 |
| Methyl acetate | - | - | 0.21 | ND | ND | ND | ND |
| Methylcyclohexane | - | - | 0.13 | ND | 0.00089 (J) | ND | 40 |
| Methylene Chloride | 0.05 | 500 | ND | ND | 0.00095 (J) | 0.0017 | ND |
| MTBE | 0.93 | 500 | 0.028 (J) | ND | ND | ND | ND |
| Tetrachloroethane | 1.3 | 150 | ND | ND | 0.0045 | ND | ND |
| Toluene | 0.7 | 500 | 0.44 | ND | ND | ND | ND |
| Total VOC TICs | - | - | 170.1 | 0.845 | ND | ND | 959.0 |
| TCL Semi-Volatile Organic Compounds (TCL SVOCs by EPA Method 8270C, mg/kg) | | | | | | | |
| 2-Methylnaphthalene | - | - | 2.8 | ND | 1.3 | ND | ND |
| Acenaphthene | 20 | 500 | 0.18 (J) | ND | ND | ND | ND |
| Acenaphthylene | 100 | 500 | 0.58 (J) | ND | ND | ND | ND |
| Anthracene | 100 | 500 | 0.89 | ND | ND | ND | ND |
| Benzo[a]anthracene | 1 | 5.8 | 1.8 | ND | 0.069 | ND | 0.027 (J) |
| Benzo[a]pyrene | 1 | 1 | 1.2 | 0.038 | 0.052 | ND | 0.013 (J) |
| Benzo[b]fluoranthene | 1 | 5.8 | 1.2 | 0.058 | 0.079 | ND | 0.022 (J) |
| Benzo[g,h,i]perylene | 100 | 500 | 1.3 | 0.045 (J) | 0.070 (J) | ND | ND |
| Benzo[k]fluoranthene | 0.8 | 58 | 0.40 | ND | ND | ND | 0.0083 (J) |
| Chrysene | 1 | 58 | 2.7 | ND | 0.13 (J) | ND | ND |
| Dibenz[a,h]anthracene | 0.33 | 0.58 | 0.32 | 0.012 (J) | 0.015 (J) | ND | ND |
| Dibenzofuran | 7 | 350 | ND | ND | 0.25 (J) | ND | ND |
| Fluoranthene | 100 | 600 | 1.4 | ND | 0.088 (J) | ND | ND |
| Fluorene | 30 | 500 | 0.77 | ND | ND | ND | ND |
| Indeno[1,2,3-cd]pyrene | 0.5 | 5.8 | 0.73 | 0.034 (J) | 0.025 (J) | ND | ND |
| Naphthalene | 12 | 500 | 0.88 | ND | 0.88 | ND | ND |
| Phenanthrene | 100 | 600 | 3.8 | ND | 0.41 | ND | ND |
| Pyrene | 100 | 500 | 3.0 | ND | 0.087 (J) | ND | 0.035 (J) |
| Total SVOC TICs | - | - | 11.4 | ND | 18.37 | ND | 0.4 |
| TCL Polychlorinated Biphenyls (TCL PCBs by EPA Method 8082, mg/kg) | | | | | | | |
| Total PCBs | 0.1 | 1.0 | - | - | - | - | ND |
| TAL Metals + Mercury (EPA Methods 8010B, 7471A, mg/kg) | | | | | | | |
| Aluminum | - | - | - | - | 4,530 | - | 2,840 |
| Arsenic | 13 | 16 | - | - | 4.5 | - | ND |
| Barium | 350 | 400 | - | - | 16.1 (J) | - | 28.4 (J) |
| Cadmium | 2.5 | 9.3 | - | - | 0.208 (J) | - | ND |
| Calcium | - | - | - | - | 1,350 | - | 1,030 (J) |
| Chromium | 30 | 1,500 | - | - | 5.3 | - | 8.8 |
| Cobalt | - | - | - | - | 8.0 (J) | - | 3.4 (J) |
| Copper | 50 | 270 | - | - | 38.9 | - | 6.2 |
| Iron | - | - | - | - | 12,800 | - | 8,470 |
| Lead | 63 | 1,000 | - | - | 23.0 | - | 6.7 |
| Magnesium | - | - | - | - | 2,910 | - | 1,800 |
| Manganese | 1,800 | 10,000 | - | - | 134 | - | 86.4 |
| Nickel | 30 | 310 | - | - | 11.5 | - | 8.8 (J) |
| Potassium | - | - | - | - | 280 (J) | - | 1,180 |
| Vanadium | - | - | - | - | 34.0 | - | 9.9 (J) |
| Zinc | 109 | 10,000 | - | - | 45.4 | - | 26.8 |
| Mercury | 0.18 | 2.8 | - | - | 0.93 | - | ND |

ND - Not detected

SCO - NYSDEC Soil Cleanup Objectives

Shaded value indicates exceedance of Unrestricted-Use SCO

Shaded value indicates exceedance of Commercial Use SCO

Q - Data qualifier

J - Estimated value below reporting limit

Table 1 - Laboratory Results Detected for Soil
22 South West Street, Mt. Vernon, New York

| Sample Number | B-11,S-1 | | B-12,S-9 | | B-13,S-2 | | B-13,S-10 | | B-14,S-4 | |
|---|-----------------------------|---------------------------|-------------|-------------|------------|------------|-------------|-------------|------------|------------|
| Sample Date | 6/19/13 | | 6/19/13 | | 6/19/13 | | 6/19/13 | | 6/19/13 | |
| Sample Type | Soil | | Soil | | Soil | | Soil | | Soil | |
| Sample Depth | 1'0"-2'0" | | 21'0"-22'0" | | 3'0"-4'0" | | 22'0"-23'0" | | 8'0"-8'0" | |
| Parameter | NYSDEC Unrestricted Use SCO | NYSDEC Commercial Use SCO | Result (Q) | Result (Q) | Result (Q) | Result (Q) | Result (Q) | Result (Q) | Result (Q) | Result (Q) |
| TCL Volatile Organic Compounds (TCL VOCs by EPA Method 8260B, mg/kg) | | | | | | | | | | |
| Acetone | 0.05 | 500 | 0.021 (B) | 0.013 | - | - | ND | ND | - | - |
| Benzene | 0.08 | 44 | 0.00029 (J) | ND | - | - | ND | ND | - | - |
| Carbon disulfide | - | - | ND | 0.0058 | - | - | ND | ND | - | - |
| Chloroform | 0.37 | 350 | ND | 0.00092 (J) | - | - | ND | ND | - | - |
| cis-1,2-Dichloroethane | 0.02 | 500 | ND | 0.00088 (J) | - | - | ND | ND | - | - |
| Ethylbenzene | 1 | 390 | ND | 0.043 | - | - | 4.8 | ND | - | - |
| Isopropylbenzene | - | - | ND | 0.0089 | - | - | 1.7 | 0.00019 (J) | - | - |
| Total Xylenes | 0.28 | 500 | 0.00033 (J) | 0.159 | - | - | 30.1 | 0.00037 (J) | - | - |
| Methylcyclohexane | - | - | ND | 0.032 | - | - | 9.7 | ND | - | - |
| Tetrachloroethene | 1.3 | 180 | 0.00078 (J) | ND | - | - | ND | 0.00054 (J) | - | - |
| Toluene | 0.7 | 600 | 0.00061 (J) | 0.0018 (B) | - | - | 0.22 (J) | ND | - | - |
| Total VOC TICs | - | - | ND | 1.093 | - | - | 282.0 | ND | - | - |
| TCL Semi-Volatile Organic Compounds (TCL SVOCs by EPA Method 8270C, mg/kg) | | | | | | | | | | |
| 2-Methylnaphthalene | - | - | 0.20 (J) | ND | 0.19 (J) | 0.13 (J) | 0.080 (J) | - | - | - |
| Acenaphthene | 20 | 500 | 0.070 (J) | ND | ND | ND | ND | - | - | - |
| Acenaphthylene | 100 | 500 | 0.38 (J) | ND | ND | ND | 0.19 (J) | - | - | - |
| Anthracene | 100 | 500 | 0.24 (J) | ND | ND | ND | 0.11 (J) | - | - | - |
| Benzo[a]anthracene | 1 | 5.8 | 1.1 | ND | ND | ND | 0.40 | - | - | - |
| Benzo[a]pyrene | 1 | 1 | 1.3 | ND | ND | 0.012 (J) | 0.51 | - | - | - |
| Benzo[b]fluoranthene | 1 | 5.8 | 1.8 | ND | ND | 0.017 (J) | 0.89 | - | - | - |
| Benzo[g,h,i]perylene | 100 | 500 | 1.1 | ND | ND | ND | 0.23 (J) | - | - | - |
| Benzo[k]fluoranthene | 0.8 | 58 | 0.52 | ND | ND | ND | 0.26 | - | - | - |
| Chrysene | 1 | 88 | 1.5 | ND | ND | ND | 0.53 | - | - | - |
| Dibenz[a,h]anthracene | 0.33 | 0.58 | 0.32 | ND | ND | ND | ND | - | - | - |
| Fluoranthene | 100 | 500 | 0.85 | ND | ND | ND | 0.41 | - | - | - |
| Fluorene | 30 | 500 | 0.088 (J) | ND | ND | ND | ND | - | - | - |
| Indeno[1,2,3-cd]pyrene | 0.5 | 5.8 | 0.77 | ND | ND | ND | 0.18 | - | - | - |
| Naphthalene | 12 | 500 | 0.17 (J) | ND | ND | ND | ND | - | - | - |
| Phenanthrene | 100 | 500 | 0.19 (J) | ND | 0.22 (J) | ND | 0.088 (J) | - | - | - |
| Phenol | 0.33 | 500 | 0.55 | ND | ND | 0.058 (J) | 0.18 (J) | - | - | - |
| Pyrene | 100 | 500 | 1.5 | ND | ND | ND | 0.42 | - | - | - |
| Total SVOC TICs | - | - | 9.68 | ND | 0.199 | 0.178 | 0.83 | - | - | - |
| TAL Metals + Mercury (EPA Methods 6010B, 7471A, mg/kg) | | | | | | | | | | |
| Aluminum | - | - | - | - | 2,080 | - | - | - | - | - |
| Antimony | - | - | - | - | 1.7 (J) | - | - | - | - | - |
| Arsenic | 13 | 16 | - | - | 25.8 | - | - | - | - | - |
| Barium | 350 | 400 | - | - | 18.7 (J) | - | - | - | - | - |
| Beryllium | 7.2 | 580 | - | - | 0.53 (J) | - | - | - | - | - |
| Cadmium | 2.5 | 9.3 | - | - | ND | - | - | - | - | - |
| Calcium | - | - | - | - | 616 (J) | - | - | - | - | - |
| Chromium | 30 | 1,500 | - | - | 6.6 | - | - | - | - | - |
| Cobalt | - | - | - | - | 6.2 (J) | - | - | - | - | - |
| Copper | 50 | 270 | - | - | 20.4 | - | - | - | - | - |
| Iron | - | - | - | - | 14,300 | - | - | - | - | - |
| Lead | 63 | 1,000 | - | - | 18.1 | - | - | - | - | - |
| Magnesium | - | - | - | - | ND | - | - | - | - | - |
| Manganese | 1,800 | 10,000 | - | - | 21.1 | - | - | - | - | - |
| Nickel | 30 | 310 | - | - | 14.2 | - | - | - | - | - |
| Potassium | - | - | - | - | 183 (J) | - | - | - | - | - |
| Selenium | 3.9 | 1,500 | - | - | 3.5 | - | - | - | - | - |
| Sodium | - | - | - | - | 338 (J) | - | - | - | - | - |
| Vanadium | - | - | - | - | 122 | - | - | - | - | - |
| Zinc | 108 | 10,000 | - | - | 51.4 | - | - | - | - | - |
| Mercury | 0.18 | 2.8 | - | - | 0.024 | - | - | - | - | - |

ND - Not detected

SCO - NYSDEC Soil Cleanup Objectives

 - Shaded value indicates exceedance of Unrestricted Use SCO

 - Shaded value indicates exceedance of Commercial Use SCO

Q - Data qualifier

J - Estimated value below reporting limit

Table 1 - Laboratory Results Detected for Soil
22 South West Street, Mt. Vernon, New York

| Sample Number | | | B-14,S-8 | B-15,S-11 | B-16,S-7 | B-17,S-2 | B-18,S-5 |
|---|-----------------------------------|---------------------------------|-------------|-------------|--------------|-------------|-------------|
| Sample Date | | | 8/19/13 | 8/20/13 | 8/20/13 | 8/20/13 | 8/20/13 |
| Sample Type | | | Soil | Soil | Soil | Soil | Soil |
| Sample Depth | | | 17'0"-19'0" | 25'0"-27'0" | 16'0"-17'0" | 20'8"-21'8" | 20'6"-21'6" |
| Parameter | NYSDEC Unrestricted Use SCO | NYSDEC Commercial Use SCO | Result (Q) | Result (Q) | Result (Q) | Result (Q) | Result (Q) |
| TCL Volatile Organic Compounds (TCL VOCs by EPA Method 8260B, mg/kg) | | | | | | | |
| Acetone | 0.05 | 500 | ND | ND | 0.0048 (J) | ND | ND |
| Benzene | 0.08 | 44 | ND | ND | ND | ND | ND |
| Carbon disulfide | - | - | ND | ND | 0.00024 (J) | ND | ND |
| Chloroform | 0.37 | 350 | ND | 0.00081 (J) | ND | ND | ND |
| Cyclohexane | - | - | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 0.02 | 500 | ND | ND | ND | ND | ND |
| Ethylbenzene | 1 | 380 | ND | 0.028 | ND | 0.088 (J) | 220 |
| Isopropylbenzene | - | - | ND | 0.0058 | ND | 0.016 (J) | 36 |
| Total Xylenes | 0.26 | 500 | ND | 0.13 | ND | 0.40 | 1630 |
| Methyl acetate | - | - | ND | ND | ND | ND | ND |
| Methylcyclohexane | - | - | ND | 0.017 | ND | ND | 97 |
| Methylene Chloride | 0.05 | 500 | ND | ND | 0.0005 (J,B) | ND | ND |
| Tetrachloroethene | 1.3 | 150 | ND | 0.00039 (J) | ND | ND | ND |
| Toluene | 0.7 | 500 | 0.000 (J,B) | 0.00048 (J) | ND | ND | 140 |
| Total VOC TICs | - | - | ND | 1.05 | 0.898 | 129.8 | 5,500 |
| TCL Semi-Volatile Organic Compounds (TCL SVOCs by EPA Method 8270C, mg/kg) | | | | | | | |
| 2-Methylnaphthalene | - | - | ND | ND | ND | ND | 1.7 |
| Benzo(a)anthracene | 1 | 5.6 | ND | ND | ND | ND | 0.13 |
| Benzo(a)pyrene | 1 | 1 | ND | ND | 0.21 | ND | 0.068 |
| Benzo(b)fluoranthene | 1 | 5.6 | ND | ND | 0.18 | ND | 0.087 |
| Benzo(g,h,i)perylene | 100 | 500 | ND | ND | 0.15 (J) | ND | 0.083 (J) |
| Benzo(k)fluoranthene | 0.8 | 56 | ND | ND | ND | ND | 0.035 (J) |
| Chrysene | 1 | 56 | ND | ND | ND | ND | 0.14 (J) |
| Dibenz(a,h)anthracene | 0.33 | 0.56 | ND | ND | 0.039 | ND | ND |
| Fluoranthene | 100 | 500 | ND | ND | ND | ND | 0.17 (J) |
| Indeno(1,2,3-cd)pyrene | 0.5 | 5.6 | ND | ND | 0.11 | ND | 0.045 |
| Naphthalene | 12 | 500 | ND | ND | ND | ND | 0.68 |
| Phenanthrene | 100 | 500 | ND | ND | ND | ND | 0.23 (J) |
| Phenol | 0.33 | 500 | ND | ND | ND | ND | 0.057 (J) |
| Pyrene | 100 | 500 | ND | ND | ND | 0.042 (J) | 0.27 (J) |
| Total SVOC TICs | - | - | ND | 1.89 | ND | ND | 8.56 |

ND - Not detected

SCO - NYSDEC Soil Cleanup Objectives

 - Shaded value indicates exceedance of Unrestricted Use SCO

 - Shaded value indicates exceedance of Commercial Use SCO

Q - Data qualifier

J - Estimated value below reporting limit

Table 2 – Laboratory Results Detected for Groundwater
22 South West Street, Mt. Vernon, New York

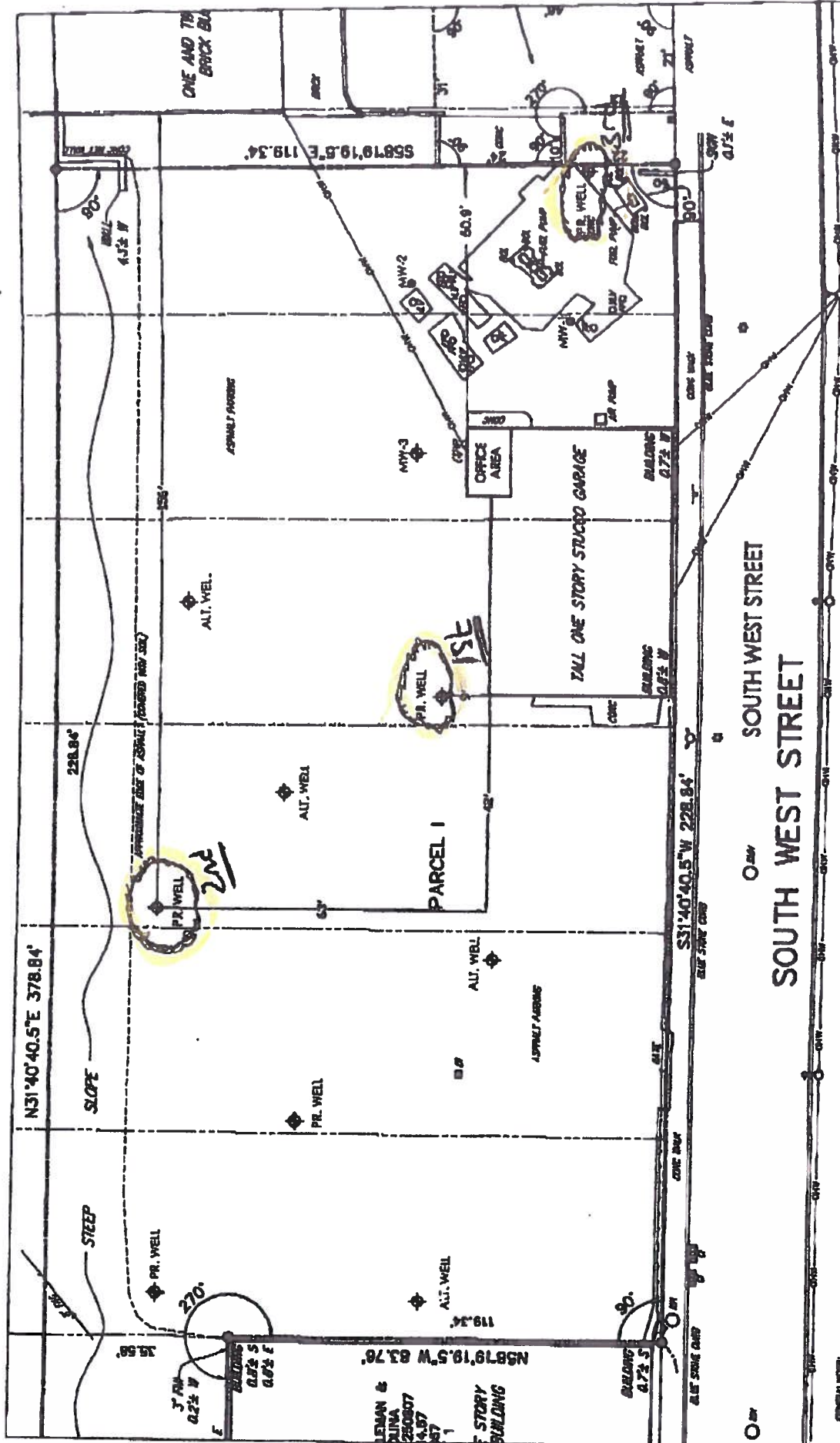
| Sample Number | | MW-1 | MW-2 | MW-3 |
|---|--------------------------------------|-------------|-------------|-------------|
| Sample Date | | 8/25/13 | 8/25/13 | 8/25/13 |
| Sample Type | | Groundwater | Groundwater | Groundwater |
| Parameter | NYSDEC Class GA Groundwater Criteria | Result (Q) | Result (Q) | Result (Q) |
| TCL Volatile Organic Compounds (TCL VOCs by EPA Method 8260B, ug/L) | | | | |
| 2-Butanone | - | 2.8 (J) | ND | 4.9 (J) |
| Benzene | 1 | 0.75 (J) | 0.22 (J) | ND |
| Chloroform | 7 | 1.8 | 1.8 | 3.7 |
| Cyclohexane | - | 15 | 7.2 | 27 |
| Ethylbenzene | 5 | 170 | 1.8 | 260 |
| Isopropylbenzene | 5 | 13 | 4.4 | 23 |
| Methylcyclohexane | - | 20 | 9.8 | 67 |
| Tetrachloroethene | 5 | 3.4 | 1.3 | ND |
| Toluene | 5 | 180 | ND | 5.2 |
| Trichloroethene | 5 | 0.25 | 0.37 | ND |
| Xylenes, Total | 5 | 760 | 2 (J) | 970 |
| Total VOC TICs | - | 474 | ND | 893 |
| TCL Semi-Volatile Organic Compounds (TCL SVOCs by EPA Method 8270C, ug/L) | | | | |
| 2,4-Dimethylphenol | 50 | ND | ND | 1.4 (J) |
| 2-Methylnaphthalene | - | 4.3 (J) | ND | 15 |
| Naphthalene | 10 | 19 | ND | 56 |
| Total SVOC TICs | - | 1,074 | 13.8 | 1,502 |
| TCL Pesticides (EPA Method 8081A, ug/L) | | | | |
| Total Pesticides | - | ND | ND | ND |
| TCL Polychlorinated Biphenyls (TCL PCBs by EPA Method 8082, ug/L) | | | | |
| Total PCBs | 0.08 | ND | ND | ND |
| TAL Metals + Mercury + Cyanide (EPA Methods 8010B, 7471A, and 9012A, ug/L) | | | | |
| Aluminum | - | 1,110 | 83.6 | 40.4 (J) |
| Barium | 1,000 | 247 | 349 | 229 |
| Calcium | - | 181,000 | 148,000 | 114,000 |
| Chromium | 50 | 5.3 | ND | ND |
| Copper | 200 | 18 | 3.8 (J) | 4.0 (J) |
| Iron | 300 | 3,150 | 2,150 | 748 |
| Lead | 25 | 50.9 | 2.7 | 1.2 |
| Magnesium | 35,000 | 58,300 | 38,800 | 41,200 |
| Manganese | 300 | 389 | 737 | 882 |
| Nickel | 100 | 4.3 (J) | ND | ND |
| Potassium | - | 8,480 | 7,820 | 5,780 |
| Sodium | 20,000 | 193,000 | 230,000 | 135,000 |
| Vanadium | - | 4.9 (J) | ND | ND |
| Zinc | 2,000 | 40.8 | ND | ND |

ND – Not detected

Q – Data qualifier

J – Estimated value below reporting limit

☐ – Shaded value indicates exceedance of NYSDEC Class GA Groundwater Criteria



GENERAL NOTES:

1. CHECK LOT OUT WAS OBTAINED FROM A DRAWING PREPARED BY JOHN HENNE CONSTRUCTION, THESE SHOWN AS PROPERTY, SAID TULLESSE DRUG 101.34.
2. BEARING LOCATIONS WERE LAD OUT IN THE FIELD BY CARL SIMPSON & ASSOCIATES (CSA).
3. EXISTING WELLS WERE PERFORMED BY CO-OPERATIVE WELLS INC. IN 1992 UNDER THEIR PLAN REFERENCE TO C-1.
4. LOCATIONS ARE APPROXIMATE.

LEGEND:

- ◆ EXISTING WELL LOCATION
- PROPOSED WELL LOCATION
- ADDITIONAL LOCATIONS FOR ALTERNATE PROPOSALS

OWNER: CARLIN-SIMPSON AND ASSOCIATES
 2100 N. 10TH STREET
 SUITE 100
 DENVER, CO 80202

DATE: 10/03/2013
BY: CARLIN-SIMPSON
SCALE: AS SHOWN

PROJECT: SOUTH WEST STREET
 WELLS RE-LOCATE

