

Memorandum

To: Louis Casolo, City Engineer, City of Stamford

From: Sarah J. Trombetta, LEP, and Carl Stopper, PE, TRC

Date: 1/8/2010

Re: Scofieldtown Park Investigation Status Report

The following is a status report on the tasks that TRC is completing for the Scofieldtown investigation:

Task 1 – GPR Survey

This task has been completed and described in the December 10th 2009 status report. The general conclusion to the report was that the subcontractor “found no clustering of metallic anomalies characteristic of buried drums, parabolic features common to underground storage tanks or any unusual anomalies not characteristic of the surrounding geological conditions.”

Task 2 – Soil Sampling

The soil sampling associated with the three overburden borings installed within the former landfill has been completed. The results of the laboratory analysis of the soil samples (SB-1, SB-2 and SB-3) were presented in the December 10th status report. The results indicated that two of the borings (SB-1 and SB-3) contained varying concentrations of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), extractable petroleum hydrocarbons (ETPH), and metals with some exceedances of the Connecticut Remediation Standards Criteria for soils. Concentrations of PCBs were detected in the sample from SB-1 and a concentration (below regulatory criteria) of “4,4-DDD” (a pesticide) was detected in the sample from SB-3. No other pesticides were detected in the soil samples.

Task 3 – Surface Water Sampling

The surface water sampling has been completed and the results were presented in the December 10th status report. The results of this sampling show that concentrations of benzene, chlorobenzene and barium were reported for sample SW-2, concentrations of barium and zinc were reported for sample SW-1 and barium only was reported in sample SW-3. No other analytes were reported above laboratory method detection limits.

Task 4 – Monitoring Well Installation

TRC completed the installation of the proposed monitoring well network on December 16, 2009. Thirteen wells were installed at nine locations within the study area. Eight wells were installed in the landfill and park and five wells were installed in the

surrounding area. A map showing the locations of the installed monitoring wells is attached.

Task 5- Monitoring Well Sampling

Sampling of all of the monitoring wells has been completed. The results of the sampling of the two recently installed wells have been tabulated and a revised table with all of the results is attached to this report (Please note that some analyses for the newer wells are still pending). The results from all the wells are described below:

Samples from the well located within the northwest of the former landfill area (MW-1 (OB)) contained VOCs and ETPH generally related to petroleum hydrocarbons. The sample from well MW-1 (OB) also contained concentrations of arsenic and barium over regulatory criteria. The samples from the other wells within the former landfill contained lower concentrations of VOCs and one SVOC with the exception of the sample from well MW-2(R) which contained vinyl chloride over remediation criteria.

The samples from the wells (MW-4(OB) and MW-4(R)) at the Scofield Magnet School contained no analytes at concentrations over regulatory criteria. These results were similar to the well located off of Rock Rimmon Road (well MW-5(R)).

The sample from the well located in the Very Merry Road cul-de-sac (MW-7(R)) contained concentrations of 1,1,1,2 tetrachloroethane, chlordane and dieldrin over Connecticut ground water standards. The sample collected from well MW-8(R) located in the Alma Rock Road cul-de-sac also contained the same three compounds at similar concentrations over ground water standards.

There were no concentrations of PCBs or cyanide reported in any of the well samples. Concentrations of a variety of metals were also reported for the all of the well samples, with the concentrations of arsenic and barium in the sample from MW-1(OB) the only concentrations that exceeded the Remediation Standard ground water criteria. Gross alpha and gross beta analytical results for wells MW-1 (OB), MW-1(R), MW-2 (OB), MW-2 (R), MW-3 (OB), MW-3(R), and MW-4 (R) have received and are presented on the revised table. Two of the samples, MW-1 (OB) and its duplicate, contained percentages of solids too high rendering the samples unsuitable for analysis for both gross alpha and beta. Gross alpha radioactivity was measured in the samples from wells MW-1 (R), MW-2 (R) and MW-2 (OB) with the measurement in the sample from MW-1 (R) exceeding the USEPA's maximum contaminant level (MCL) for gross alpha activity. Gross beta activity was measured all of the analyzed samples with none of the measured activity exceeding the MCL for gross beta.

All well locations were surveyed by the City of Stamford to obtain ground surface and ground water table elevations. A table with the well locations, well elevations and ground water table elevations is attached to this report. A map showing ground water elevations and flow contours for both the overburden water table from water level measurements obtained on December 29, 2009 is attached to this report. The flow contours indicate that ground water flow within the landfill area is toward the north and east with discharge likely to the unnamed stream to the north and Poorhouse Brook to the east.

Task 6 – Reporting, Review and Meetings

TRC has evaluated the data it has received to date from the sampling conducted during this investigation and reviewed it in context with data obtained by the USEPA, CTDEP and CTDOH in prior sampling events. The following can be concluded from this review:

- Most of the surface soil samples collected from the landfill by the USEPA contain varying concentrations of SVOCS, metals and pesticides. VOCs and PCBs were also detected but in a fewer number of samples. The types of SVOCS found in the samples are likely related to the presence of fuel oil, tar, asphalt or coal. The metals detected in the samples are those that naturally occur in soil as well as metals more typically associated with industrial uses. The majority of the pesticides that were detected in the soils include 4,4-DDT and its breakdown products, 4,4-DDD and 4,4-DDE. These compounds occurred in 14 of 18 surface soil samples collected in 2008. Alpha, gamma and technical chlordane were also detected in 10 of 18 samples. With one exception, all pesticide concentrations within the soil samples collected by the USEPA in 2008 were below Remediation Standard Residential Direct Exposure Criteria (RDEC). The concentration of technical chlordane in a sample collected from within the park area exceeded RDEC and Industrial/Commercial Direct Exposure Criteria (I/CDEC).

The compounds detected in TRC's subsurface soil sample results were similar to those found in the surface soil samples. 4,4-DDD was detected in the soil sample collected from 2-4 feet below grade in boring SB-3 but not present in the deeper samples (25-27 and 30-32 feet below grade) in borings SB-1 and SB-2.

- Results similar to the surface soil sampling were identified in sediment samples collected by the USEPA also in 2008. The majority of the samples contained SVOCS, metals and pesticides, with VOCs and PCBs detected at fewer locations. Sixteen of eighteen samples contained one or more of 4,4-DDT, 4,4-DDE or 4,4-DDD, while six samples contained concentrations of chlordane and one sample contained a concentration of dieldrin. In all cases the concentrations of pesticides and PCBs in sediment were below the RDEC. Chlordane and dieldrin were not present in sediment samples collected in Poorhouse Brook. TRC did not collect any additional sediment samples.
- Surface water samples collected previously generally contained concentrations of VOCs and metals. These results are consistent with the results of the TRC surface water sampling.
- The contaminants found in the soil and sediment across the landfill and wetlands areas are consistent with the use of the site as a former municipal solid waste landfill and its current use as an asphalt covered leaf composting/recycling facility. The concentrations of contaminants do not indicate the presence of a significant hazardous material. The scattered presence of PCBs in several landfill soil samples is consistent with former common disposal in municipal landfills of household white goods containing PCB capacitors.
- The widespread presence of 4,4-DDT, its breakdown products and to a lesser extent, chlordane and dieldrin in the surface soil and sediment is consistent with what is known of pesticide use in the 1950's and 1960's prior to the timeframe in which these chemicals were banned (4,4-DDT was banned in 1972 and chlordane was banned in 1983). 4,4-DDT is documented to have been applied over widespread areas via aerial spraying in the late 1950's in the northeast to control

gypsy moth populations. The presence of 4,4-DDT, 4,4-DDD and 4,4-DDE in wetland sediment well north of the landfill suggests that there was former widespread application of this family of pesticides. Chlordane and dieldrin were used extensively as a pesticide to control termites and ants as well as use as a turf pesticide for grub control. Both compounds would have been applied to the ground surface, are known to adhere strongly to soil particles, breakdown very slowly, remain in soil for many years and not easily dissolve in water. The sampling conducted at the landfill supports those conditions as these compounds are present in surface soil and sediment and to a much lesser extent in the deeper soil. Despite their presence in the soil and sediment, these compounds are not present in the surface water and ground water at and near the landfill. This data, in conjunction with what is known about the ground water elevations and flow direction, precludes the former landfill as a source of these compounds in the residential areas to the east.

Further general recommendations with respect to the closure of the former landfill are as follows:

- The Solid Waste Permitting Unit of the CTDEP should be consulted regarding the level of effort needed to properly close the landfill considering that the current use of the site as a leaf composting/recycling facility and park will remain. Closure requirements will likely include:
 - Site grading to manage surface runoff, stabilize slopes and control erosion;
 - Low permeability cover soil or membrane to minimize infiltration through the landfill waste and prevent contact with landfill waste and contaminated soil;
 - Vegetative cover in non-traffic areas; and
 - Traffic durable cover in composting and maintenance areas.
- Long-term monitoring of the ground water migrating from the landfill will likely be needed as part of the post-closure requirements.
- Contaminated sediment in the park pond/wetland will require removal and/or capping with clean material.