



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WESTERN REGIONAL OFFICE

436 Dwight Street • Springfield, Massachusetts 01103 • (413) 784-1100

MITT ROMNEY
Governor

KERRY HEALEY
Lieutenant Governor

ROBERT W. GOLLEDGE, Jr.
Secretary

ARLEEN O'DONNELL
Commissioner

SEP 14 2006

City of Pittsfield
Department of Public Utilities
City Hall, 70 Allen St.
Pittsfield, MA 01201
Attention: Bruce Collingwood, Commissioner

RE: Pittsfield-DSWM-Landfill
King Street
Former King Street Landfill
06-236-003
CSA Review - **Provisional**

Dear Mr. Collingwood:

The Massachusetts Department of Environmental Protection (the MassDEP) has completed technical review of a report and permit application from the City of Pittsfield (the City) entitled "Final Comprehensive Site Assessment, King Street Dump, Pittsfield, Massachusetts". The report was prepared on behalf of the City by SEA Consultants, Inc. (SEA) of Rocky Hill, CT.

The report contains the final results of Comprehensive Site Assessment (CSA) activities performed according to the MassDEP Solid Waste Regulations at 310 CMR 19.000, for the former King Street Dump ("the landfill"), located off King Street in Pittsfield. The Final CSA report ("the report") was prepared in accordance with MassDEP's February 6, 2001 review of the Final CSA Scope-of-Work (SOW) and MassDEP's June 25, 2002 review of the Interim CSA Report for the landfill, and is primarily a data report, as site history was described in the earlier assessment reports for the landfill.

Previous environmental assessment reports for the landfill have included the Initial Site Assessment (ISA), dated November 2000, the Revised CSA SOW dated January 2001, and

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057. TDD Service - 1-800-298-2207.

the Interim CSA report, dated March 2002. In 2002, the City installed a 6-foot chain link fence on the landfill perimeter to limit access.

The ISA report stated the following: there are no known public or private water supply wells or Potentially Productive Aquifers in the vicinity of the landfill; the entire landfill is within the mapped, 100-year floodplain; and the closest NHESP estimated habitat of Rare and Endangered species is approximately 13 miles southwest of the landfill.

Assessment work completed as part of the previous ISA and Interim CSA reports for the landfill has included the following:

- The completion of 53 initial test pits in and around the landfill;
- Completion of a surface geophysical study in September, 2001 to look for any geophysical anomalies which might be associated with buried drums;
- Analysis of approximately 190 surficial or near-surface soil samples within the landfill;
- The completion of 3 soil borings along the edge of the landfill property bordering King Street, with sampling to a depth of 12 feet;
- Sampling and analysis of groundwater from the initial 7 groundwater monitoring wells;
- Sampling and analysis of surface water during one monitoring round in 2001 from 5 locations in the river and from one location along Onota Brook north of the landfill;
- The collection of 20 sediment samples from 7 transects within the river in 2001; and
- On June 7, 2002, MassDEP's Bureau of Waste Site Cleanup (BWSC) issued an Immediate Response Action Plan (IRAP) approval for the characterization, removal and proper disposal of 37, old, partially full drums of oil and hazardous material (OHM) found on the surface of the landfill near groundwater monitoring well GW-4 during assessment activities. The characterization of these drums showed that 5 of the drums contained river sediment, the remainder contained varying amounts of tar-like substances containing volatile organic compounds (VOCs), semi-volatile organic compounds (semi-VOCs) and metals (primarily lead); polychlorinated biphenyls (PCBs) were non-detectable (ND).

CSA ASSESSMENT SUMMARY

Environmental assessment work completed as part of the Final CSA for the landfill included the following:

- Updating of the site basemap;
- Completion of 19 additional test-pits within the perimeter of the landfill, based on the results of a geophysical study, to determine whether buried drums may exist at the site, and to also determine the extent of refuse and the depth/permeability of the existing soil cover material;
- Completion of soil sampling in the area of drum removal work;
- The installation of 9 additional groundwater monitoring wells in April and May of 2003;
- The sampling of the 7 previous and 9 new groundwater monitoring wells (16 total) for four rounds;
- Sampling and analysis of surface water during four monitoring rounds from 5 locations in the Housatonic River ("the river");
- Sampling and analysis of sediment during two monitoring rounds from 5 transects in the river;
- Completion of landfill gas (LFG) monitoring during four rounds at the 6 LFG monitoring probes along the western perimeter of the site;
- Preparation of groundwater contour maps; and
- Completion of a Qualitative Risk Assessment for the site.

Included in the Final CSA Data Report were updated site plans, a groundwater contour map, laboratory data sheets, data summary tables, boring/well logs, test-pit logs, geologic cross-sections, a Qualitative Risk Assessment, and a Scope-of-Work (SOW) for completion of a Corrective Actions Alternatives Analysis (CAAA).

Outlined below is a summary of the environmental assessment work performed at the landfill to date, including both Final CSA and previous ISA/CSA work.

CSA Results - Test Pits

A total of 72 test pits have been completed in and around the landfill on the City property. The purpose of the test-pitting program was to: delineate the refuse boundary; gain information on the depth and nature of waste materials and cover materials at the landfill; and to ascertain whether

buried drums were present at the site. Of the 72 test pits, 19 were completed at geophysical anomalies identified from the geophysical study, as directed by MassDEP. The results of test-pitting showed the following:

- None of the 72 test pits, including the 19 targeted test pits, found evidence of any intact, buried drums at the site, although a few old, empty, crushed drums were found;
- The buried solid wastes at the site are almost exclusively a matrix of ash, metal and glass, typical of solid waste burn dumps of the era (1970s and earlier);
- The solid waste ash matrix of the landfill extends from the edge of the river in the eastern portion of the site, at or north of the river along the southern perimeter of the landfill, to the property edge along the east side of King Street in the west, and to within approximately 150 feet of the northern property line;
- The entire acreage of the landfill is approximately 25 acres;
- The average thickness of the ash matrix across the landfill is approximately 10 to 12 feet, with 70 to 80% of this waste below the groundwater table;
- The thickness of soil cover material over the ash matrix varies across the site from 0 to approximately 4 feet; and
- Black, organic peat was present below the ash matrix in much of the landfill.

CSA Results - Soil Sampling

Soil sampling at the landfill has included the following:

- The General Electric Company (GE) performed the initial soil sampling in 1999 in a 500 foot by 500 foot grid area in the center of the landfill, by collecting and analyzing soil samples for polychlorinated biphenyls (PCBs) at the 0 to 2-foot and 2 to 4-foot depth ranges at each of 37 sampling locations within this area. PCBs were detected in 66 of these 74 samples, however only 11 of those 66 detectable samples contained PCBs over the MassDEP's BWSC Reportable Concentration S-1 (RCS-1) soil standard of 1 milligram/kilogram (mg/kg or ppm). The highest level of PCBs in the 0 to 2-foot samples was 33 mg/kg in sample SB-23, and the highest level in the 2 to 4-foot samples was 800 mg/kg in sample SB-9;
- In November 2001, on behalf of the City, SEA obtained 116 surficial soil samples (0 to 6 inches in depth) on a 100' x 100' grid across the entire site, and the samples were analyzed for polyaromatic hydrocarbons

(PAHs), RCRA 8 metals, and PCBs;

- PCBs were found above the RCS-1 soil standard of 1 mg/kg at approximately 5% of the SEA samples. These detectable levels of PCBs ranged from 2 to 104 mg/kg, with the highest level found near the previous GE sample #SB-23, in the center of the landfill;
- PAHs were found above the applicable RCS-1 soil standards at approximately 70% of the SEA samples, with the higher levels of 10 to 20 mg/kg total PAHs found in the area of the previous GE soil samples;
- RCRA 8 metals were found above the RCS-1 soil standards at approximately 20% of the SEA samples, with most exceedances being for lead, and some limited exceedances for copper and zinc. The lead exceedances of the RCS-1 standard of 300 mg/kg ranged from 380 to 2,700 mg/kg, mostly concentrated in the central and eastern portions of the landfill;
- Three soil borings were completed along the western boundary of the landfill, along the east side of King Street, with soil sampling to a depth of 12 feet at each boring. No PCBs were detected, and PAHs and metals were all below the applicable RCS-1 standards for these samples;
- A soil/sediment sample from the surface of the soil boring for groundwater monitoring well GW-7 (along the river shoreline in the southwest portion of the landfill) contained 5.6 mg/kg PCBs; and
- Four soil/sediment samples were obtained from the wetland immediately adjacent to the location of the IRAP drum removal and analyzed for RCRA 8 metals. Three of the four samples contained lead above the RCS-1 standard of 300 mg/kg, with the highest level at 7,630 mg/kg. One of the four samples contained barium above the RCS-1 standard of 1,000 mg/kg, with the highest level at 1,700 mg/kg.

CSA Results - Groundwater

Groundwater monitoring wells at the site include 7 shallow, water-table wells, 6 intermediate depth wells, and 3 deep wells, screened at the top of bedrock. Of the 16 monitoring wells, 11 are located along the downgradient, eastern and southern perimeters of the landfill, at the edge of the river. The remaining 5 upgradient wells are located along the northern perimeter of the landfill, towards the Pittsfield Cemetery property. The groundwater contour map for the site, based on groundwater elevations measured in August 2003, shows that groundwater flow is generally from north to south across the site, towards the Housatonic River.

Groundwater samples were obtained during quarterly rounds

from all 16 monitoring wells on-site and analyzed for the parameters outlined in 310 CMR 19.132(h)(1-3), including RCRA 8 metals, volatile organic compounds (VOCs) by EPA Method 8260, semivolatile organic compounds (SVOCs) by EPA Method 8270, PCBs by EPA Method 8082, and extractable petroleum hydrocarbons (EPH). Results of groundwater analyses were compared to the MassDEP's applicable Bureau of Waste Site Cleanup (BWSC) GW-3 groundwater standards, as there are no known private wells in the area (all nearby residences are serviced by the City of Pittsfield public water system). Results of groundwater analyses showed the following:

- Low levels of VOCs were detected in several monitoring wells (including the upgradient wells), considerably below the applicable GW-3 standards. The VOCs which were detected were chlorobenzene, chloroform, trichloroethene (TCE), cis-1,2-trichloroethene (cis,12-TCE), and P-isopropyltoluene. The highest levels of VOCs found were 6.9 micrograms/liter (ug/l) of chloroform and 2 ug/l of TCE;
- Low levels of SVOCs were detected in several downgradient monitoring wells considerably below the applicable GW-3 standards. The SVOCs which were detected were fluoranthene, phenanthrene, and pyrene. The highest levels of SVOCs found were 8.2 ug/l of phenanthrene, 6.7 ug/l of fluoranthene, and 6.1 ug/l of pyrene;
- PCBs were non-detectable (ND) in all monitoring wells;
- Low levels of EPH were detected in several downgradient monitoring wells considerably below the applicable GW-3 standards. The highest levels of EPH found were 342 ug/l of aliphatic hydrocarbons in well GW-7S;
- Total (not dissolved) RCRA 8 metals were elevated in all wells during initial sampling rounds. As approved by MassDEP, subsequent rounds were sampled either by low-flow sampling methodology, or for dissolved metals. These subsequent rounds have shown no exceedances of the GW-3 standards for RCRA 8 metals; and
- Indicator parameters (alkalinity, etc.), including iron and manganese, were elevated in downgradient wells, versus the upgradient wells.

CSA Results - Surface Water

Surface water samples were collected from the 10 locations in the river, including 2 upstream locations (SW-1 & SW-2) and 8 adjacent or downriver locations (SW-3, SW-4, SW-5, SW-7, SW-8, SW-9, SW-10, SW-11), and the 1 location in Onota Brook (SW-6, considered upstream), and analyzed for the parameters outlined in 310 CMR 19.132(h)(1-3), including VOCs by EPA Method 8260, semi-VOCs by EPA Method 8270, PCBs by EPA Method