



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

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MAR 14 2007

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 - **Final Permit**

Dear Mr. Collingwood:

On September 14, 2006, the Solid Waste section of the Massachusetts Department of Environmental Protection (MassDEP) issued to the City of Pittsfield (the City) a Provisional Comprehensive Site Assessment (CSA) permit for the assessment of the City's King Street Dump (the landfill) off King Street in Pittsfield. The Provisional CSA permit represented MassDEP's technical review of a report and permit application entitled "Final Comprehensive Site Assessment, King Street Dump, Pittsfield, Massachusetts", (the report). The report was prepared on behalf of the City by SEA Consultants, Inc. (SEA) of Rocky Hill, CT.

This Final CSA permit approval (the permit) modifies the September 14, 2006 provisional permit, in accordance with the regulations outlined at 310 CMR 19.037(4)(a). This permit contains: a summary of comments and information received regarding the provisional permit; a summary of any modifications made to the provisional permit by the MassDEP; the same background summary information contained within the provisional permit (for information purposes); and the MassDEP's final, modified, conditions and requirements of the permit.

The Provisional CSA permit (the provisional permit) was issued as a provisional permit in accordance with the permit

review regulations outlined at 310 CMR 19.037 of the MassDEP's Solid Waste regulations, in order to accept comments on it. In correspondence dated October 2, 2006 to the City, MassDEP extended the comment period on the provisional permit until November 5, 2006.

Summary of Comments and Information Received on Provisional Permit

MassDEP has received the following written comments subsequent to the issuance of the provisional permit:

- Written comments (via e-mail) from Ms. Jane Winn of Berkshire Environmental Action Team (BEAT), dated October 23, 2006; and
- A request from the City's consultant, SEA, dated November 28, 2006 to extend the deadlines contained within the provisional permit.

MassDEP also received verbal comments/information from the United States Environmental Protection Agency (USEPA) and from the Housatonic River Initiative (HRI).

The October 23, 2006 comments from BEAT are summarized as follows:

1. Additional soil samples should be obtained at depth (up to 12 feet deep) to more fully define the vertical and horizontal extent of PCB contamination at the landfill. If PCBs are found below the water table, removal of such PCB-contaminated soil should be considered as these PCBs could migrate to the river.

MassDEP response: Many of the 72 test-pits completed at the landfill were extended to depths of over 10 feet, and no evidence of intact, buried drums or free product (oil) was found in these test pits. As noted below, four rounds of groundwater sampling showed non-detectable (ND) levels of PCBs in all of the groundwater monitoring wells on-site, and no free product has been observed in any of the monitoring wells. Three soil borings along the western edge of the landfill were sampled to a depth of 12 feet and were ND for PCBs. MassDEP acknowledges that the highest level of PCBs found in the General Electric (GE) sampling area (800 milligrams/kilogram, or mg/kg) was found at a depth of 2 to 4 feet, and that deeper soil sampling for PCBs was not performed in that area.

2. Additional testing for PCBs should be performed at the end of the "paper road" into the landfill, which is shown on the USGS topographic map for the area, as

there have been reports of possible dumping of GE wastes there.

MassDEP response: The "paper road", shown as a trail on the USGS map, appears to begin roughly across from Campbell Street, traverse across the northern perimeter of the landfill (where the City sewer line now runs) and end approximately at the confluence of Onota Brook and the Housatonic River, northeast of the landfill perimeter. Although no soil samples have been taken in the immediate vicinity of the confluence of Onota Brook and the river, surface water and sediment transects SED-2 and SED-11, located immediately downriver of that area showed no apparent impact from the landfill, with ND levels of PCBs. The nearest groundwater monitoring well, GW-9, showed no apparent impact from the landfill and ND levels of PCBs. MassDEP contacted HRI to attempt to gain more specific information on the location of such alleged dumping of wastes, however no specific information was able to be provided.

3. Groundwater samples should continue to be sampled for PCBs, as PCBs may migrate in groundwater.

MassDEP response: As noted above, four rounds of groundwater monitoring showed that PCBs were ND in all of the monitoring wells on-site. PCBs were also ND in all surface water samples. MassDEP does not believe that additional PCB analyses for groundwater are warranted for the landfill.

4. The Corrective Actions Alternative Analysis (CAAA) for the landfill should evaluate the alternative of full excavation and removal of the landfill, and restoration of the wetland to pre-fill conditions.

MassDEP response: Although MassDEP does not believe that full excavation and removal of the landfill is technically or economically feasible, MassDEP will require the alternative to be evaluated in the CAAA.

5. The CAAA should evaluate the alternative of excavation and removal of a portion of the landfill along the river, with creation of a wetland buffer there at pre-fill conditions (also to relieve flooding at Wahconah Park across the river).

MassDEP response: MassDEP will require the proposed alternative to be evaluated in the CAAA. MassDEP notes that any excavation of the ash/soil matrix of the landfill, particularly near the river, poses a significant risk of increasing the levels of metals in sediments in the river, through runoff, despite the use of erosion controls.

6. The CAAA should evaluate the alternative of constructing a raised boardwalk along any restored wetland areas.

MassDEP response: MassDEP does not have the authority to require the proposed alternative to be evaluated in the CAAA, as construction of a boardwalk is not a remedial measure. If proposed by the City, it would require a post-closure use permit, as it would be a post-closure use.

7. The CAAA should evaluate the alternative of treatment of the contamination at the landfill.

MassDEP response: The alternatives required in the CAAA (capping, soil/sediment removal, riverbank armoring) and the alternatives to be added to the CAAA, from comments 4 & 5 above (excavation and removal), constitute treatment of contamination from the landfill, as they would reduce the generation of leachate and also reduce or eliminate the risk of surface runoff and erosion carrying contaminants off the landfill into the river. The most feasible method of treating contaminants from landfills is, in almost every case, some form of capping alternative. MassDEP does not believe that there are other, feasible forms of treatment of contamination at this landfill beyond those outlined above. Mass DEP notes that the Risk Assessment will also determine what level of remediation is required at this landfill.

8. The CAAA should take into account the impact to neighboring property values for restoration alternatives.

MassDEP response: MassDEP does not have the authority to require the CAAA to take into account neighboring property values.

The USEPA agreed with the provisional permit requirements for additional sediment sampling in the river in the area of SED-7 and the drum removal area, and commented that removal of any PCB-impacted sediments from those areas should be performed (the provisional permit had already required that such removal be evaluated as an alternative in the CAAA).

Although the City's request for a time extension was received after the stated comment period, MassDEP acknowledges that the timeframes for additional sampling must be extended due to the winter season (sediment sampling cannot reasonably be conducted in winter months).

Summary of Modifications Made by the MassDEP to the Permit

Based on the comments and information received subsequent to the issuance of the provisional permit, the MassDEP has made the following modifications to the permit:

1. Condition 1 of the permit has been modified to include requirements for the collection of two deep soil samples (minimum of 10 feet deep) from the previous locations of the SB-9 and SB-23 soil samples, with analysis for PCBs.
2. Condition 1 of the permit has also been modified to include requirements for the collection of three surficial soil samples from the area near the confluence of Onota Brook and the river, i.e. the "paper road" area, with analysis for PCBs.
3. Condition 4 of the permit has been modified to include the evaluation of the following alternatives in the CAAA: complete removal of the landfill; and partial removal of a portion of the landfill adjacent to the river and construction of a wetland buffer there.
4. The deadlines contained within the permit have been extended to allow a reasonable timeframe for the additional sampling which is being required.

Background Information

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 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 2 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 2 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 8082, Total RCRA 8 metals, and extractable petroleum hydrocarbons (EPH). The results of surface water sampling were compared to the applicable USEPA Recommended Water Quality Criteria surface water criteria (the WQCs), Freshwater Criterion Continuous Concentration, or FCC, and showed the following:

- All surface water samples showed ND levels of PCBs, VOCs, SVOCs, and EPH;
- RCRA 8 metals were ND in all surface water samples except for 1 detection of 50 ug/l lead at location SW-7, above the WQC limit of 2.5 ug/l, and several