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West Carleton Environmental Centre Landfill

Ottawa, Ontario

Final Report

Best Management Practice Plan (Dust)
Version 1

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SUBMITTED TO

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ATTACHMENTS

1. PURPOSE

A Best Management Practice Plan (BMPP) for dust is a detailed document that outlines the stationary combustion sources and the fugitive dust sources at a given site and describes the measures that shall be used to control emissions from these sources. The BMPP is used to manage dust emissions from stationary combustion equipment and idling trucks and fugitive dust emissions from on-site roadways and wind erosion. According to the MOE, the BMPP for dust must include the following:

- Details regarding the particle size fraction and composition of the dust;
- A description of the emission sources from the facility;
- A summary of control measures that are or will be put in place as part of the BMPP;
- An implementation schedule for the control measures;
- An implementation plan for the control measures;
- Details regarding the inspection and maintenance schedule; and
- A description of the planned monitoring and record keeping activities.

In an effort to minimize the potential for off-site dust events for the existing and future operations of the West Carleton Environmental Centre (WCEC) landfill site, Waste Management of Canada Corporation (WM) has developed this BMPP in accordance with the MOE's recommended approach.

This BMPP is to be amended if there is an alternative solution or modification to the practices and controls provided herein. The following sections outline the procedure that WM will implement to control the potential for particulate matter (dust) emissions from the site.

2. RESPONSIBILITY

WM is responsible for ensuring the requirements of this BMPP. To accomplish this, employees will be trained in this BMPP and employee responsibilities will be designated. Training and responsibilities include the deployment, maintenance, monitoring and inspections of equipment and operations.

The Site Manager is responsible for:

- Providing formal training to appropriate staff to ensure that this BMPP is followed;
- Providing guidance on dust control measures by having a working knowledge and understanding of the practices and control measures as outlined in this BMPP;
- maintaining this BMPP; and
- maintaining a Dust Control and Complaints log.

3. GENERAL INFORMATION

3.1 Size Fraction and Composition of Fugitive Dust

Typically, the fugitive dust associated with activities at a landfill has the following characteristics:

- Primarily composed of calcite (calcium carbonate) and/or silica (silicon dioxide), with some organic matter, associated with exposed areas at the working face;
- Fraction of dust smaller than 10 micrometres (PM10), 19-55%[1]; and
- Fraction of dust smaller than 2.5 micrometres (PM2.5), 3-14%[1].

4. EMISSION SOURCES

Potential dust sources are grouped into five general categories, and reflect various aspects of the operations at the WCEC landfill.

4.1 Stationary Combustion Equipment

Particulate matter (dust) is emitted as a combustion by-product from the landfill gas-fired engine-generators, the landfill gas flares, the leachate treatment facility, emergency diesel-fired generator and the crusher diesel-fired generator.

4.2 On-Site Roadways

Particulate Matter (dust) is generated by vehicles travelling on paved and unpaved haul routes located on-site and off-site (i.e. the landfill entrance access). The dust emissions from vehicles travelling on paved and unpaved surfaces include emissions from tailpipes, brake wear, and tire wear as well as re-suspension / re-entrainment of loose material on the road surfaces. These emissions are influenced by:

- The silt loading on roadways, which is a measure of the amount of loose material on top of paved and unpaved surfaces;
- The moisture content of surface material in unpaved roadways;
- The traffic volume; and
- The speed of the vehicles travelling along the haul route.

4.3 Idling Vehicles

Particulate matter (dust) is emitted as a combustion by-product generated from the trucks entering the WCEC landfill site and idling while on-site.

4.4 Wind Erosion

Particulate matter (dust) is generated by wind erosion of exposed areas such as working face, interim cover, stockpiles, unvegetated areas, alternative daily cover (ADC), etc. These emissions are influenced by:

- The characteristics of the material, including the particle size and moisture content;
- The ability of the material to form a hard crust, whether naturally or through the use of binder material (e.g., chemical dust suppressants);
- The frequency of mechanical disturbances of the material;
- Weather conditions, such as wind speed, humidity and precipitation; and
- The effectiveness of control measures such as wind screens, wet suppression or chemical dust suppressants / stabilizers.

4.5 Material Processing

Particulate matter (dust) is generated during material handling at various locations around the site, as well as bulldozing and crushing of aggregate material at the impact crusher near the WTFP. These emissions are influenced by:

- The characteristics of the material, including the particle size and moisture content; and
- Weather conditions, such as wind speed, humidity and precipitation.

The material handling and processing sources are not significant contributors to the worst-case off-site dust impact, contributing less than 1%.

5. TRAINING

The site manager is responsible for identifying a list of personnel who are trained in dust suppression and control. These individuals will have the responsibility to evaluate dust conditions and implement control measures on an on-going basis.

The list of individuals identified will be listed in the Dust log as well as the date when they were trained. The list will be updated every 5 years or upon employee turnover. Attachment A includes an example of the WM Dust Training Log.

6. INSPECTION AND MAINTENANCE PROCEDURES

The site manager or trained individuals will be responsible for the inspection and monitoring of on-site dust conditions. An inspection log will be completed and entered into the dust log. The following items will occur during inspections:

- Complete walkover surveys to evaluate the condition of exposed areas (i.e. working face, interim cover, stockpiles, unvegetated areas, etc.), construction areas and ancillary sources to ensure that excessive wind erosion or fugitive dust emissions do not occur. If wind erosion or fugitive dust emissions from these sources are noted, additional cover treatment and/or watering suppressants should be applied and noted in the log. An individual log can be filled out by the sweeper operator and transferred to the dust log on a monthly basis.
- Evaluate cleanliness of internal and external paved roads. During particularly adverse conditions, wet sweeping and flushing should be ordered. Under these conditions, wet sweeping is to be done on all internal paved roads and external main access routes. The external haul route sweeping will be limited to off-peak traffic hours for the safety of the operator. The operator performing the sweeping and the time and duration of sweeping should be noted in the log. An individual log can be filled out by the sweeper operator and transferred to the dust log on a monthly basis.
- Evaluate dust plumes from on-site vehicles. The visible plumes behind vehicles should not be greater than 1 vehicle length on unpaved and paved on-site roadways. Watering and/or sweeping of roadways should be ordered when this occurs and should continue until the condition abates. The amount of watering and the time of watering should be noted in the log. This can also be applied to the on-site construction haul routes, however, control should be implemented when the visible dust plume is greater than 3 times the vehicle length on the construction haul routes. An individual log can be filled out by the sweeper operator and transferred to the dust log on a monthly basis.
- Record and examine wind conditions from the on-site weather station. Any grading and levelling activities should be minimized when wind speeds are greater than 25 km/h.

To monitor site dust conditions, the following items will occur as part of the on-going monitoring activities:

- Conduct ambient air quality monitoring of total suspended particulate matter between the months of May and September at three (3) different locations along the northeast, northwest and west property boundaries.

Please refer to Ambient Air Quality Monitoring Program for full detail.

7. CONTROL METHODS FOR IDENTIFIED SOURCES

The following measures will be taken to help reduce the off-site dust impact.

7.1 Stationary Combustion Equipment

- Conduct proper maintenance of landfill gas flares and engines.

7.2 On-site Roadways

- Limit truck traffic on exposed surface areas (working face, interim cover, stockpiles, etc.) to minimize disturbances and emissions from re-entrainment of loose materials and dust from exposed surface areas.
- Pave primary internal haul routes. Paving road surfaces minimizes the available silt loading or amount of loose material and thus ensuring reduced re-suspension / re-entrainment of dust on paved road surfaces.
- Water and/or sweep all internal paved haul routes and external main access routes. These efforts keep surface roads clear of dirt track out and ensure minimal re-suspension / re-entrainment of the loose material and dust.
- Ensure that heavy trucks respect the on-site internal speed limits of 20 km/hr for paved roads, 15 km/hr for surface treated roads and 10 km/hr gravel roads. Corrective action should be taken with drivers that disregard this limit. Methods should possibly include suspension from site, monetary fines, and loss of place in queue.
- Construct berms or wind screens along the haul routes where problematic dust conditions persist.

7.3 Idling Vehicles

- Develop an internal procedure to ensure that on-site idling of vehicles is minimized. The internal procedure can include the following guidelines for when drivers are expected to shut their trucks off:
    - In line-ups at the scalehouse;
    - During lunches and breaks;
    - When making deliveries or pick-ups;
    - Generally, if the trucks do not need to be running, shut it off; and
    - Trucks should not idle for more than 5 minutes.

7.4 Wind Erosion

- Apply water suppressants to exposed, frequently disturbed or erodible surfaces (e.g., daily cover area, areas on the mound without vegetation and soil stockpiles) to minimize the amount of dust emissions. If water is used, the exposed areas should only be moistened. Over watering will increase the leachate production on-site.
- Progressively seed vegetation on exposed surface area to minimize wind erosion and reduce amount of fugitive dust emissions.

7.5 Material Handling and Processing

- Install water spray bars on the processing equipment (i.e. impact crusher) and ensure function during crushing operation to control fugitive particulate matter emissions.

Material handling and processing sources are therefore considered in the assessment of off-site impacts.

8. SCHEDULE OF IMPLEMENTATION

The following table provides the proposed schedule for implementation of the BMPP (dust):

Table 8.1: Schedule for Control Methods

Tasks	Implementation Time Lines
Implementation of Training as defined in Section 4.0	During construction of the first cell excavation and on-going until site completion
Implementation of Inspection and Maintenance Procedures as defined in Section 5.0	During construction of the first cell excavation and on-going until site completion
Implementation of Control Methods as defined in Section 6.0	During construction of the first cell excavation and on-going until site completion
Dust Ambient Monitoring Program	During receipt of first wastes and on-going until site completion

Attachment B includes an example of the WM Dust Inspection and Dispatch Log.

9. RECORD KEEPING

Throughout this BMPP there is reference to a Dust log that will be maintained on site. This log will include notation of the items listed previously as well as any other notes relevant to dust at the site. The log will be kept in a three-ringed binder that will contain portioned sections for training, inspection, watering activities, road sweeping log, remediation activities, general notes and complaint logs. The log will contain notations going back no less than 1 year or until included in annual monitoring report.

From time to time, there may be complaints regarding dust. There will be individual logs with standard forms for dust complaints (Attachment C). Complaint logs will include the following at a minimum:

- Name of complainant;
- Time of complaint;
- Time that the incident occurred;
- Nature of complaint;
- Operational details at the time of the complaint;
- Wind conditions at the time of the complaint; and
- Details of any investigation.

All complaints will be included in the dust log. On an annual basis, the logs will be reviewed and any unfavourable trends will be examined further to identify corrective actions and included in annual monitoring report.

10. EA COMMITMENTS AND EA CONDITIONS

The following table provides a summary of EA commitments and EA Conditions that have been addressed through this Best Management Practice Plan for Dust:

Table 10.1: Overview of EA Commitments and Minster of the Environment's EA Conditions

EA Commitments	EA Conditions	Covered in BMPP
• Development of a Dust BMP Plan that includes the following mitigation measures: a) Watering suppressants on interim cover areas, unpaved roads, construction surfaces and ancillary sources (e.g., WTPF and crushing activities); b) Limiting the traffic movements on exposed surfaces; c) Progressive vegetation seeding on surfaces; d) Watering and sweeping on all internal haul routes; e) Paving of primary on-site haul routes; and f) Speed control of on-site routes.	• Condition 2.2: The proponent shall fulfill all commitments made during the environmental assessment process. • Section 4.0: Compliance Monitoring • Section 4.1: The proponent shall prepare and submit to the Director for the public record, an environmental assessment compliance monitoring plan. • Section 4.3: The program shall include monitoring of the proponent's implementation of the undertaking in accordance with the environmental assessment and the conditions in this Notice with respect to mitigation measures, public consultation and additional studies and work to be carried out. The program shall also include monitoring of compliance with all commitments made in the environmental assessment and the subsequent review assessment with respect to mitigation measures, public consultation and additional studies of work to be carried out.	Section 7.2 Section 7.4 Section 7.5
• Development of a Dust BMP Plan that includes the following monitoring measures: a) Annual particulate monitoring; b) Routine walkover surveys; c) Record keeping of watering suppressants application; and d) Record keeping of waste and construction activity locations.		Refer to Ambient Air Quality Monitoring Plan.

11. REFERENCES

[1] U.S. EPA AP-42 Compilation of Air Pollutant Emission Factors (Air Pollution Document 42)

ATTACHMENT A

West Carleton Environmental Centre Best Management Practice Plan
Dust Control Training Log

Trained Employee Name	Date of Training	Supervisor Signature

ATTACHMENT B

West Carleton Environmental Centre Best Management Practice Plan
Dust Inspection and Dispatch Log

Inspected By: _____ **Inspection Date: _____**

Areas to inspect include: Travelled Surfaces, Material Handling Areas & Exposed Stockpiles

Area Inspected/Date and Time	Visual Observations/Identified Area/Corrective Actions Required	Corrective Action Completed/Date & Time	Additional Control Action Required	Notes
Example: *Site Entrance Roads to Scale House* *@ 10:00am*	*Dirt build-up on roads, visual plume of dust approaching watering criteria* *Initiate road flushing and sweeping* *Include all paved on-site roads*	*Started @ 11:00 am with sweeper* *Stopped @ 330pm* *Sweeper traveled 200 metre commencing at site entrance*	*No further action at this time*	*none*

ATTACHMENT C

West Carleton Environmental Centre Best Management Practice Plan
Dust Complaint Form

WM Personnel:	

Date of Call		Time of Call	
Complainant Name		Complainant Contact Number	
Complainant Address			

Date of Dust Incident		Time of Dust Incident	
Description of Event			

Operations at Time of Incident	
Winds at Time of Incident	
Investigation Results and Corrective Action	