

# **Dust Management Plan** Stoney Creek Regional Facility



65 Sunray Street, Whitby Ontario L1N 8Y3 Canada 11102771 | September 15, 2021



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# 1. PURPOSE

This document describes the Dust Management Plan for the Terrapure Environmental (Terrapure) Stoney Creek Regional Facility (SCRF) prepared in accordance with Condition No. 10 of the Ministry of Environment, Conservation and Parks (MECP) Notice of Approval to Proceed with the Undertaking. The MECP approved the SCRF EA on August 29, 2019, which was subsequently approved by Ontario Cabinet on September 19, 2019

According to Section 14 of the Ontario Environmental Protection Act, dust is deemed a nuisance issue associated with soiling and reduced visibility.

In an effort to minimize the potential for off-site dust events for the existing and future operations of the Stoney Creek Landfill site (Site), Terrapure has developed this Best Management Practices Plan that outlines measures that will be taken throughout the life of the landfill. Dusts from solid waste landfills can sometimes be difficult to manage, due to various fugitive sources on site. The most effective method of minimizing the potential for dust emissions is to develop this plan, identifying the main sources at the site, outlining the intended target and listing the control methods, implementation times, and record keeping procedures. The following sections outline the procedure that Terrapure will implement to control the potential for dust emissions from the Site.

## 2. **RESPONSIBILITIES**

Terrapure, through the Branch Manager of the Stoney Creek Landfill, is responsible for ensuring the completeness and effective implementation of the Dust Management Plan. To accomplish this, employees will be trained in this plan and their responsibilities designated. Responsibilities will include the deployment, maintenance, monitoring and inspection of equipment and the performance of effective actions to control and minimize dust emissions.

The Operations Supervisor is responsible for:

- Maintaining this plan
- Providing training to staff
- Providing guidance on dust control measures
- Ensuring inspections are being undertaken
- Ensuring that proper records are maintained

### 3. PLAN

#### 3.1 DUST EMISSION SOURCES

Potential dust sources are grouped into four general categories, discussed in the following sections.

A number of factors are critical to influencing the amount of dust that is generated from the Site. Factors affecting dust emissions include:

- Silt loading, silt content on roadways this refers to the amount of loose material on top of paved and unpaved surfaces
- Traffic volume and speed
- Material characteristics
- Climatic conditions (heat, wind and precipitation)
- Control measures in place (wind screen, stabilization, wet suppression)



• Frequency of mechanical disturbance

The facility will operate in multiple phases, where the Site layout will change over the time based on the progress in the Landfill operations starting from the Southeast working towards the Northwest. The facility is currently operating in the first phase (existing phase) and there are currently four planned operating phases, and a final post-closure phase. It is to be noted that the above discussed sources may generate dust around the Site due to facility's operations and these sources, depending on the active phase of the facility, may be found at different locations on the facility.

**Figure 1** shows the Site layout based on the current existing phase of the facility, and **Figure 2** shows the potential receptors located in the vicinity of the facility.

#### **3.1.1 Daily Operations**

- Travelled surfaces (dust generated by vehicles travelling on paved and unpaved roadways located both on- and off-Site). The dust emissions from vehicles travelling on paved and unpaved surfaces are caused by the re-suspension of loose, particulate material on the road surfaces;
- Material handling (dust generated during bulldozing, excavation activities, stockpile movement and off-loading of dusty materials. Materials known to generate dusts are:
  - Soils and clays
  - Metal oxides
  - Incinerator ash
  - Dry and dusty industrial wastes

#### 3.1.2 Exposed Areas

• Dust generated by wind erosion of stockpiles, exposed landfill surfaces and unvegetated areas.

#### 3.1.3 Rock Crushing

- In the event that rock crushing is to be performed on site by third party contractors, they will be required to provide their own Dust Management Plans to be reviewed and approved by Terrapure prior to operating at the Site. Terrapure will be aware of all on-Site dust management requirements occurring from rock crushing and will work cooperatively with contractors to ensure overall effective dust management on-site.
- It is to be noted that third party rock crushing requires separate approval to operate.
- Soil entrained in the rock, as well as stone fines generated by the crushing process, contribute to the generation of dust.

#### **3.1.4 Liner Construction**

- Liner construction is performed by third party contractors, who will provide their own Dust Management Plans to be reviewed and approved by Terrapure. Terrapure will be aware of all on-site dust management requirements occurring from liner construction and will work cooperatively with contractors to ensure overall effective dust management on-site.
- The handling of soil, clay, and aggregate materials and the movement of large vehicles are major potential sources for dust generation.

# 4. DO

#### 4.1 DAILY INSPECTION AND MAINTENANCE PROGRAM

The Operations Supervisor, or individuals that have been identified by the Operations Supervisor, will be responsible for monitoring the Site dust conditions. Responsibilities will include implementing a regular inspection, maintenance and calibration program (e.g., visual inspections of storage piles, maintenance of water sprays, etc.). The following items will be inspected daily unless otherwise stated:

- Meteorological Conditions: Wind speed and direction have a significant influence on the dispersion of the dust. The SCRF is located near the Hamilton A Ontario weather station (station ID 4932) and it is expected that meteorological and climatic conditions monitored at this station are relevant for the SCRF. Furthermore, there is a weather monitoring station located on-Site that can provide site-specific weather data. Wind speed, direction, rainfall, humidity and temperature at both Stations will be tracked and evaluated to determine if any site activities should be minimized. The predominant wind direction in this area is from the southwest based on the 2014-2018 meteorological data. Based on the Government of Canada's Beaufort wind scale Table, a wind speed of 20 km/hour or more raises dust that could result in fugitive dust emissions. The Site will track the wind speeds to identify when they are expected to be greater than 20 km/hour and will evaluate and modify Site operations as required to reduce dust emissions.
- Internal Paved Roads: Dust deposits on paved surfaces (or hard unsurfaced material) can be re-dispersed by wind or by vehicle movements. Dust pick-up by wind is usually only significant at higher wind speeds and depends on the particle size and other factors. Dust pick-up by vehicles can occur under many conditions. Terrapure will inspect the roads for conditions that may cause fugitive dust emissions from the roads. Wet sweeping and road washing will be undertaken if conditions arise where there is the potential for dust emissions from either traffic or wind. Terrapure will also manage dust emissions by completing the following:
  - o Control movement and handling of fine materials to prevent spillages onto paved surfaces
  - Regular cleaning of paved surfaces, using a mobile sweeper in conjunction with vacuuming, or a water truck
  - o Reducing unnecessary traffic where practical
  - o Limiting vehicle weight where practical
  - Windbreak measures
- External Paved Roads: Evaluate cleanliness of roads and the potential for generating dust plumes and drag out onto the public roadways. Wet sweeping and road washing will be undertaken if conditions arise where there is the potential for dust emissions from either traffic or wind. Road washing will be performed with city water.
- Internal Unpaved Roads: Evaluate dust plumes from moving vehicles. The visible plumes behind vehicles should not be greater than ¼ the vehicle length on unpaved roadways. Watering of roadways should be completed when this occurs and should continue until the condition abates. The time, location, and amount of watering should be noted on the inspection log. The high traffic areas of unpaved roads should be covered with large aggregates or lower silt materials (such as gravel) to reduce track-out. The use of gravel can be moderately effective, but repeated additions will usually be required.
- Wheel Wash Facility: Ensure that the wheel wash equipment is operational and that trucks are using it correctly. Record down times of equipment and implement proper maintenance of water sprays.
- Vehicle Speed Limits and Travel Route: Observe the adherence to internal speed limits of 15 km/hr and 25 km/hr (where posted). Traffic should be monitored where feasible and restricted to



defined roads. The travel routes for haul trucks should be established and demarcated in order to minimize vehicular disturbances of erodible surfaces. Travel distances will be minimized through effective site layout and design.

- Stockpiles and Exposed Areas: Emissions from storage piles of granular material can result from dust pick-up at certain wind speeds. Based on the predominant wind direction, dust pick-up at wind speeds higher than 20 km/hour will travel towards the northeast. Emissions can also occur as material is dropped from a conveyor, loader, or other equipment where there is an associated drop height onto the storage pile. Terrapure will conduct visual inspections and observe the condition of the stockpiles and exposed areas to ensure excessive wind erosion and transport is not taking place. If wind erosion or transport from these sources is noted, additional cover treatment will be applied and noted on the inspection log. This may include the application of materials not susceptible to generating dust. Other dust control options available for storage piles that can be considered include enclosures, wind screens, barriers, shelters, revised layout, covers, water application, or other dust suppressants.
- **Rock Crushing:** Observe the dust generated from the manufacture of stone and the condition of any stone stockpiles. Dust generation can be controlled to some extent with the use of water. Operations should be curtailed in the presence of winds that generate plumes of dust greater than 100 meters.
- Liner Construction: The use of clay as a liner material can lead to the generation of significant amounts of dust as the clay desiccates. The external contractor is required to provide and follow a Terrapure approved Dust Management Plan. Terrapure will monitor the construction area for excessive dust generation and the contractor will be advised immediately of any concerns.

Monitoring priorities are assigned based on relative contribution of dust emissions. Terrapure will prioritize the use of resources based on the relative contributions of fugitive dust sources.

Terrapure will consider silt loading, silt content and moisture content analysis, composition and particle size distribution to assess the effectiveness and the minimum necessary control measures for each of the identified sources. Samples of road dust will be collected and analysed for the silt loading, particle size distribution and metallic composition quarterly in each season since the composition and loading of silt can vary significantly throughout the year. Therefore the assessment will be based on a series of tests, not a single value. The recommended protocols for sampling and analysis of road dust are found in USEPA AP-42, Compilation of Air Pollution Emission Factors, Appendix C.1 Procedures for Sampling Surface/Bulk Dust Loading and USEPA AP-42, Compilation of Air Pollution Emission Factors, Appendix C.2 Procedures for Laboratory Analysis of Surface/Bulk Dust Loading Samples will be followed. The dust control plan will reflect these analyses and ongoing visual inspections of the site.

Any third party contractors will be required to adhere to the procedures outlined in the Dust Management Plan to Terrapure's satisfaction.

#### 4.2 SCHEDULE OF IMPLEMENTATION

The following table provides the proposed schedule for implementation of the plan:

#### Table 4.1 Schedule for Dust Control Measures

	Implementation Time Lines
Additional flushing and sweeping	Existing and ongoing (unless temperatures are below freezing), when deemed necessary.
Implementation of activities defined in Section 5	Revise existing inspection log once plan is submitted and on-going until Site closure.
PM <sub>10</sub> ambient monitoring	Existing and ongoing.
Wheel Wash Improvement Review	Annually, during preparation of annual report.



	Implementation Time Lines
Review of Berms and additional tree	Annually, during preparation of annual report.
plantings	
Review of Complaints	Existing and ongoing.

### 4.3 TRAINING

The Operations Supervisor will be responsible for identifying personnel who are trained or train new personnel as required in dust suppression and control. These individuals would have the responsibility to evaluate dust conditions and implement control actions on an on-going basis.

The training will include a program for site wide training for responsible facility personnel and contractors and will consist of the following:

- Proper and timely identification and assessment of dust emissions;
- Implementation of control actions such as additional road sweeping, road watering and waste covering techniques;
- Record keeping of daily evaluations and notable emissions, control actions taken and weather conditions;
- Training will include consideration of the different levels of responsibility on-site (i.e., management vs. staff levels).

The list of responsible individuals identified will be added to the Site Training Log, as well as the date when they were trained. An example Site Training Log is included in Appendix A.3. Training will be updated on an annual basis.

#### 4.4 ANALYTICAL MEASUREMENTS AND DATA REPORTING

The measurement of dust generation is performed using a Met One Beta Attenuated Monitor (BAM) continuous analyser for  $PM_{10}$  on a continuous basis. The current location of this unit is along the northeast property line between the landfill footprint and Upper Centennial Parkway. The monitoring method using the 1020 BAM unit complies with the methods specified by U.S.EPA (EQPM- 0798-122). The BAM continuous analyser is considered appropriate for  $PM_{10}$  monitoring by the Ministry of Environment, Conservation and Parks (MECP).

With landfill operations moving from the Southeast to the Northwest, the existing monitoring station is no longer in an ideal location since it will not be downwind of the planned active area of the landfill. The existing monitoring station will be relocated to the north buffer zone in between the active landfill and the residential subdivision to the north of the site. It is anticipated that the existing BAM unit will be relocated by the end of 2021.

As the landfill operation moves towards the Northwest, consideration will be given to additional monitoring of  $PM_{2.5}$  due to its potential health effect to neighbouring residential receptors. A documented plan to address the downwind area of the new landfill area, the residential receptors, and additional monitoring of  $PM_{2.5}$  will be developed.

Complete monitoring reports and PM<sub>10</sub> hourly monitoring data will be provided in accordance with the requirements set out in the Operations Manual for Air Quality Monitoring in Ontario (the Manual). The requirements for Data Validation and Data Reporting for Continuous Data will be followed as set out in the Manual. Monitoring data with associated reports will be submitted to the ministry on a quarterly basis. The reports will include information set out in Section 4 of the Manual including the following statistics for each measured pollutant parameter:

- Arithmetic Mean
- Monthly Arithmetic Mean
- Maximum for any averaging period for which the data is used for comparison to any limit applied to the emitter



• Maximum 24-hour, % valid hours, or other averaging period as appropriate.

Hourly averages will be provided for Wind Direction, Wind Speed and  $PM_{10}$ . Any exceedances of the 50 micrograms per cubic metre 24-hour interim Ambient Air Quality Criteria (AAQC) for  $PM_{10}$  will be reported to the Ministry of Environment, Conservation and Parks (MECP). A notification of exceedance will be prepared and submitted to the MECP as soon as practicable in accordance with Section 3 of the Operations Manual. Generally, the Ministry considers reporting of exceedances on a monthly basis acceptable.

The Notice of Exceedance will also include the particulate concentration, the weather data for the period and a description of any unusual activities that may have been responsible for the exceedances. A detailed listing of all monthly data from the BAM unit will be maintained by Terrapure and also forwarded to the MECP. All results will be presented in the Annual Report as well.

The results of external performance checks/calibrations on meteorological equipment will be documented and made available for inspection and/or submission to the MECP to ensure adherence to QA/QC and reporting practices. These will be submitted annually along with the Annual Report. Ministry staff will be notified of scheduled calibrations in case they wish to witness the check.

#### 4.5 **PREVENTIVE AND CORRECTIVE ACTION**

The following additional measures will be taken to help reduce the generation of dust and off-Site impacts:

- For areas frequently disturbed or erodible surfaces (e.g., active tipping areas, side slopes, area without vegetation and soil or granular stockpiles), water should be applied in order to reduce the amount of fugitive dust emissions.
- The wheel wash station has proven to be effective in assisting with dust control.
- Berms with vegetative coverings have been proven effective and improvements should be considered where problematic dust conditions persist.
- Additional measures (e.g., application of materials not susceptible to generating dust, planting of vegetation, or the placement of tarps) will be used to control dust in freezing conditions when the application of water is not practical.

A Complaint Report used to document any complaints or feedback received from local residents is provided in Appendix A.4, and an example response letter is provided in Appendix A.5.

## 5. CHECK

#### 5.1 RECORD KEEPING

Site staff summarize inspection and maintenance activities in a daily report, presented as Appendix A.1. In addition, a Dust Inspection Log is maintained on Site to document additional information noted in this plan. A template is provided in Appendix A.2.

From time to time, there may be complaints regarding dust from the local residents. These will be dealt with through the existing Site complaint procedures. The information recorded includes:

- Name of complainant
- Time/date of complaint
- Nature of complaint
- Operational details at the time of the complaint
- Weather conditions at the time of the complaint



- Details of any investigation
- Resolution

#### 5.2 **REVIEWS**

Information gathered form inspection logs, monitoring, and sampling will be reviewed monthly to verify and document ongoing implementation of the plan and to determine when to take additional action, if needed.

All complaints will be reviewed on a monthly basis and summarized in the Annual Monitoring Report to identify what, if any, corrective or preventive actions can be implemented. If a complaint arises that requires immediate action/resolution, Terrapure will inform/engage the Hamilton MECP District office to work together on getting the issue resolved as soon as possible. Complaints will be reported to the Ministry within 2 business days of receipt.

Information collected from inspections, monitoring, sampling, and record-keeping will be reviewed annually to verify and document ongoing implementation of the plan and to determine when to take additional actions, if needed. All information will also be summarized in the Annual Monitoring Report.

## 6. ACT

#### 6.1 CONTINUOUS IMPROVEMENT

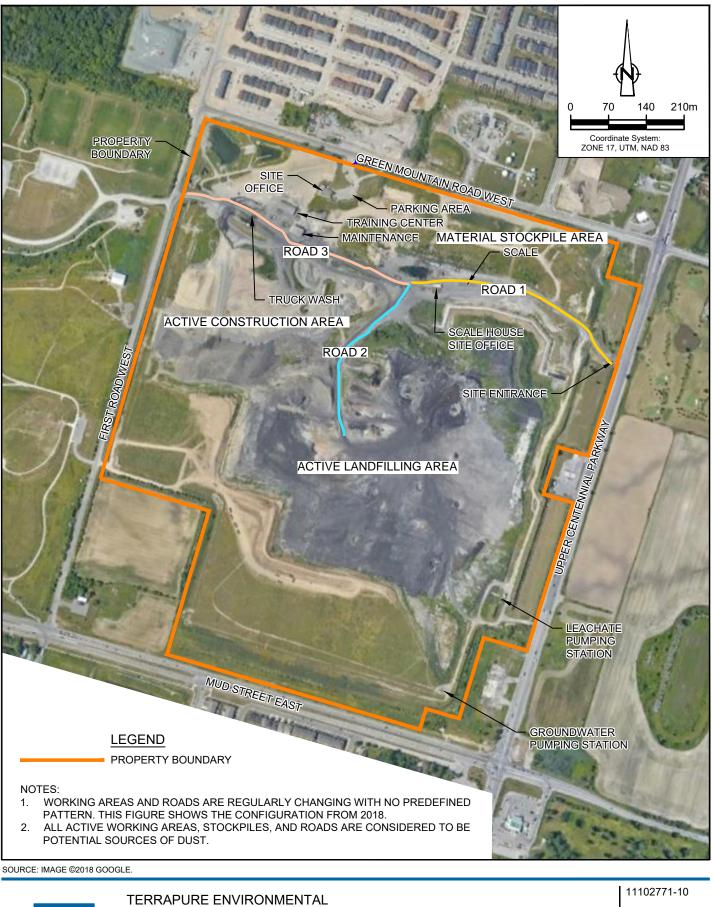
This Dust Management Plan is a site-specific document that identifies fugitive sources of dust emissions from the Site and the Best Management Practices for controlling these sources. This plan will be reviewed and updated on an annual basis, or more frequently as required to reflect changing site conditions. It will build on current and known practices with a commitment to continuous improvement.

In addition, consideration will be given to process changes or material substitution that would result in reduction of fugitive dust. Where justified, the plan will be adjusted where improvements in other areas may have made a control measure unnecessary.

## 7. VERSION CONTROL

Version	Date	Description of Changes
1.0	May 2019	Revision to bring document into alignment with MECP's <i>Management Approaches for Industrial Fugitive Dust Sources</i> (February 2017 Technical Memorandum).
1.1	June 2021	Updated to address MECP review comments.
1.2	September 2021	Updated to address MECP review comments.

#### **Table 7.1 Document Version Control**





65 GREEN MOUNTAIN RD. W, STONEY CREEK, ONTARIO DUST MANAGEMENT PLAN

Jul 30, 2020

CAD File: N:\CA\Waterloo\Legacy\CAD\drawings\11100000s\11102771\11102771-REPORTS\11102771-10(024)\11102771-10(024)GN\11102771-10(024)GN\4001.dwg

SITE MAP

### FIGURE 1





TERRAPURE ENVIRONMENTAL 65 GREEN MOUNTAIN RD. W, STONEY CREEK, ONTARIO DUST MANAGEMENT PLAN 11102771-10 May 10, 2019

### POTENTIAL RECEPTORS

**FIGURE 2** 

CAD File: P:\drawings\1110000s\11102771\11102771-REPORTS\11102771-10(024)\11102771-10(024)GN\11102771-10(024)GN



#### **APPENDIX A.1 DAILY INSPECTION/MAINTENANCE REPORT**

# **STONEY CREEK REGIONAL FACILITY**

# Daily Inspection/Maintenance Report

ATE & TIME:	NAME:	TITLE:	SIGNATU	URE:
Groundwater Pumping S	Station (M4)	Fill Area		
Pump Operation OK Comments		Sewer Piping	OK Operator	ОК
		Asbestos Disp	Slope Cond	n OK
Leachate Pumping Station	DN	Site Cond'ns	<b>OK</b> Odour	Yes/No/Strong
Pump Operation O Comments	K	Comments	-	
Comments				
		Leachate Collection	SWM POND	GWM POND
Litter Control		START:	Valve Open/Closed	<u>FLOW:</u>
On & Off Site OK Comments		<u>STOP:</u>	Discharge YES/NO	<u>VEG:</u> OK
		- <u>TOTAL:</u>	Vegetation OK	TOTAL:
Wheel Wash Facility		FLOW:		WEEKEND: YES/NO
ON O	FF FROZEN		<u>Pond Level</u> Low/Medium/High	<u>Pond Level</u> Low/Medium/High
Roads & Site Dust Contr Water Truck	cols Cleanout Construction	General Observations	1	U
Loads	Barriers OK	Comments		
Sweeper OK Comments	Loader OK			
Conditions	ING SUNNY CLOUDY RAIN SNOW MUI		THER	



#### **APPENDIX A.2 DUST INSPECTION LOG**

Date & Time	Weather & Temperature	Source Type and Location	Inspection Results	Recommendations, Corrective Actions, or Added Mitigation Required	Situation Addressed by: Name, Signature and Time



### **APPENDIX A.3 SITE TRAINING LOG**

Date & Time	Trainee's Full Name	Trainer's Signature



#### **APPENDIX A.4 DUST COMPLAINT REPORT**

# TERRAPURE STONEY CREEK REGIONAL FACILITY Complaint Report

Complaint Number: #				
To be completed by Staff receiving Complaint				
Date:	Time			
Name:				
Address:				
Telephone:				
Nature of Occurrence				
<u>Taken By:</u>				
To be completed by Terrapure Management				
Date:	Time			
<b>Confirmation of Occurrence:</b>				
<b>Control Systems Operating:</b>				
Active Landfill Area:				
Weather Conditions:				
Temperature:				
Wind Speed:				
······································				
Wind Direction:				

# TERRAPURE STONEY CREEK REGIONAL FACILITY Complaint Report

Name:	Title:		
Follow-up Action Take	en:		
Documentation of Occ	urrence to:		
Caller		Br.Mgr	
MECP		CLC/City	
Mgr.		Other	
Date of Occurrence:			



#### **APPENDIX A.5 COMPLAINT RESPONSE LETTER**

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#### **APPENDIX A.5 DUST COMPLAINT RESPONSE LETTER EXAMPLE**



August 28, 2019

Mr. Joe Smith 123 First Road W. Stoney Creek, ON A1B 2C3

Dr. Mr. Smith:

#### Re: Dust Complaint – July 31, 2019

This letter is to acknowledge receipt of your concern regarding dust, which you believe to be caused by the operations at the Stoney Creek Regional Facility.

Upon receipt of your concern, an investigation was immediately conducted by several staff members around the perimeter of the facility, your residence and the surrounding area. During these investigations no dust was detected.

Should you have any questions, please do not hesitate to contact me at (905) 123 - 4567.

Sincerely,

#### TERRAPURE ENVIRONMENTAL STONEY CREEK REGIONAL FACILITY (A181008)

\*\*\*SIGNATURE\*\*\*

NAME of regional operations manager Regional Operations Manager

cc: NAME, Operations Manager NAME, Senior Environmental Technician

> 65 Green Mountain Road W., Stoney Creek, ON L8J 1X5 Tel: (905) 561-0305 Fax: (905) 549-4515 www.terrapureenv.com