City of Brandon Eastview Landfill Site Annual Report

2016

City of Brandon Operational Services Division Sanitation Section

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Introduction

This annual report covers the period from January 1, 2016 to December 31, 2016, and has been prepared in accordance with our Environmental act license number 3149. The license was issued August 25, 2015 in accordance with *The Environment Act* (C.C.S.M.c.E125) under the direction of Manitoba Conservation. The Eastview Landfill Site operates as a Class 1 Waste Disposal Ground (WDG) under the Manitoba Environment Act.

The current facility layout and operations include:

- Former and active disposal areas;
- Full depot for residential and commercial waste, including contaminated soil, all directed to the tipping face;
- Leachate collection that is pumped to a wastewater treatment facility;
- Scale house and operator
- Snow removal dump site (City use only)
- Clean fill disposal;
- Concrete disposal area;
- Landfill gas collection system (waiting to be commissioned by Department of Labor);
- Material Recovery Facility (MRF);
- Separation of metals, propane tanks, tires, yard waste and tree brush from waste stream which is stored in designated areas of the site;
- Freon depleting device depot;
- Eco-Centre for used oil, filters and containers;
- Tree and wood chipping
- Composting
- E-Waste Depot
- Household hazardous waste depot

Below is a copy of the landfill section map.

The purpose of this report is to meet the operational reporting requirements by providing the following information at a minimum:

- Updates to the operating manual;
- Closure/Post closure plans and financial evaluation;
- Planned improvements
- Records of waste, recyclable materials, and compost quantities;
- A review of environmental monitoring data;
- Details on environmental protection programs;
- Operational information

Updates to the Operating Manual

The operations manual was submitted in 2008 to meet the requirements of the operating permit. The manual was completed internally by Sanitation administration and was to address at a minimum the following:

- Cell developing and sequencing;
- Waste receiving, placement and covering;
- Nuisance control;
- Surface water management;
- Landfill gas management;
- Leachate management;
- Monitoring and reporting: and

- Inspections and maintenance

The operating manual also provides criteria for the acceptance, handling and disposal of special wastes such as hydrocarbon impacted soils, mold and asbestos. The manual provides information for dealing with hot loads within City Refuse trucks, commercial haulers, and commercial and residential self-haulers.

Closure and Post Closure Plans

In 2014 the City of Brandon updated its closure and post closure plans which was awarded to and completed by Golder Associates after an RFP process. Information was provided, for review, to Golder Associates using historical data supplied by landfill staff. A landfill site visit was conducted by the consultant responsible for the plan to conduct a site assessment and through this consultation it was determined that the only operational change was the increased focus on the diversion of organic materials.

A criterion was established by the City of Brandon so that the assessment is based on the following:

- Current waste generation estimate received at the Eastview Landfill Site based on current population trends;
- An estimate of the remaining useable life of the landfill site based on waste generation and available airspace;
- Estimated closure costs;
- An estimation of ongoing maintenance costs following site closure (post closure); and
- Preparation and submission of a report providing costing models and site development drawings.

According to Golder the estimated useful life of the existing landfill site is 27 years or an estimated closure date of 2041. This was based on a number of factors including:

- The amount of air space currently available;
- Current population trends;
- Current diversion efforts;
- Current waste generation trends;
- Technology currently used for compaction of waste generated (currently 800 kg/m^3); and
- Daily cover

Golder provided in its report provided detailed information on the requirements and procedures required during the closure of the current site along with post closure requirements. The following requirements are required during the closure of the Eastview Landfill Site:

1. Prior to the application of the final cover regrading to the final contours should take place in order to promote drainage away from the site and to discourage infiltration and local ponding of surface water.
2. The following final cover design has been proposed:
    a. Topsoil of 0.15 m over subsoil
    b. Subsoil of 0.35 m over protection layer
    c. A barrier layer that is constructed by compacting clay soils to a thickness of no less than 0.60 m measured perpendicular to the compacted waste surface and achieving maximum permeability of 1×10^{-7}.
    d. Contoured such that no water pools over the landfill cells.
    e. Grade to achieve a minimum slope of 2% and not to exceed 30%
3. A policy be implemented to monitor top of waste elevations to assist in planning the placement of the final cover within a year of reaching the final elevations.
    a. The policy will minimize the amount of leachate that will be generated and handled.
    b. It will also allow for the initial settlement of the landfill to take place prior to placement of the final cap.
4. General allowance including decommissioning of site facilities such as upgrading the storm water control work and modification of the landfill gas collection system.
5. Submittal of a formal detailed Closure and Post Closure Plan which may include the following allowances:
    a. Testing
    b. Quality assurance/control
    c. Legal fees

The following requirements are required during the post-closure phase for the Eastview Landfill Site:

1. That a post closure plan should operate for a period of no less than 25 years to ensure proper care of the site, associated infrastructure and environmental control systems.
2. Protect and maintain integrity of final cover system.
3. Providing repairs to final cover system as necessary to correct settlement, subsidence, erosion, leachate break-out
4. Protecting, maintain, and monitoring groundwater, leachate and landfill gas

A schedule of costs was included as part of the plan to allow management to prepare for the pending closure of the landfill in a fiscally responsible manner. It is estimated that the average annual number of tonnes to be landfilled between 2015 and 2041 will be 49,500 tonnes. Working with Treasury, Sanitation administration needs to look at including these costs into its Capital Reserve planning.

The projected closure and post closure plans based on 2014 dollars in expected to be between $5.3 million and $6.5 million. This will require annual contribution to a capital recovery fund of between $4.07 and $4.96 on a per tonne basis. These costs are in addition to the costs already being covered through the landfill tipping fees.

2016 Closure and Post Closure Fees

In 2015 Sanitation presented to council and requested that a $4.00 per tonne closure levy be put in place to cover the costs of closure. Council agreed to the request and the $4.00 per tonne levy was implemented on January 1st 2016 on every tonne of material that enters the tipping face.

Planned Improvements and Major Projects in 2016

2016 Project Update: Landfill Master Plan

In 2016, the City of Brandon awarded the development of a Master Plan for the Eastview Landfill to KGS Group. KGS Group developed a draft Master Plan, which should be finalized in 2017, for the site that will act as guide for the operation and expansion of the activities at the Eastview landfill site.

2016 Project Update: Design and Construction of New Landfill Cell #15

In 2016, the City of Brandon awarded the design of a new landfill cell (cell #15) to KGS Group. The design was completed in April 2016 and construction of the new cell was completed in October 2016. A small amount of solid waste was placed in the new cell in the fall of 2016 prior to the onset of colder weather and it is expected that placement of solid waste in cell #15 will recommence in the late spring of 2017 once weather conditions are favourable to the placement of solid waste on the new liner.

2016 Project Update: New Walkway Bins

In 2016, fifty-five (55) new walkway bins were purchased for the purpose of refuse collection in Brandon's downtown and along walking paths throughout the city. These new walkway bins were required to replace damaged bins and to add additional bins to the existing walkway bin network.

2016 Project Update: Curbside Organics Collection Program

We started our curbside compost collection program in 2011 with 500 residents in a trial program. The program was deemed a success and we opened the program to the rest of the public on a voluntary sign up basis. Participation in the program increased from 500 participants in the first year to 3000 in 2013. By the end of 2015, over 5000 participants

were part of the curbside collection program and this number increased to 6336 by the end of 2016.

During the collection period of April to November 2016, over 2600 tonnes of organic material was diverted from the landfill. This works out to an average household diversion of approximately 299 kilograms.

Solid Waste Quantities

As part of the City of Brandon's Solid Waste Management System, the City owns and operates the Eastview Landfill Site located at NW 17-10-18, in the City of Brandon. This landfill is considered a Class 1 site, due to population (>5,000), services not only residents of the City, but also a number of municipalities within close proximity to the site along with commercial and industrial businesses. Starting in 2011 the Eastview Landfill Site started receiving solid waste from the RM of Cornwallis rather than it going to its own landfill. These types of partnerships could ultimately lead to the Eastview Landfill Site being considered more of a regional landfill rather than one mainly just for residents and businesses within the City of Brandon.

To segregate larger commercial vehicle traffic from residential traffic, waste from commercial haulers and City refuse collection was landfilled in cell 13 while cell 14 was used for waste hauled to site directly by residential customers and small businesses.

Active Cell

All waste generated within the City of Brandon is either hauled directly by City refuse trucks, commercial haulers or self-hauled by small businesses and residents. In 2016 the total amount of waste disposed of in the active cell was **41,056.96** tonnes which is down **4,779.36** tonnes from 2015.

Table 1: Eastview Landfill Material Quantities from 2011 to 2015

Materials	2012 Quantity (Tonnes)	2013 Quantity (Tonnes)	2014 Quantity (Tonnes)	2015 Quantity (Tonnes)	2016 Quantity (Tonnes)
Asbestos	388.40	322.58	412.30	139.56	294.34
Commercial Mixed Refuse	28,588.98	29,393.66	29,478.96	31,198.46	25,654.80
Residential Mixed Refuse	2,812.57	3,262.50	3,361.50	3,404.13	3,357.81
City Residential	10,433.17	10,296.96	9,976.70	10,233.13	11,024.75
City Internal	467.06	438.29	378.24	434.33	315.51
Wastewater Treatment Facility Sludge	268.32	353.93	477.80	426.71	409.75
Total	42,958.50	44,067.92	44,085.50	45,836.32	41,056.96

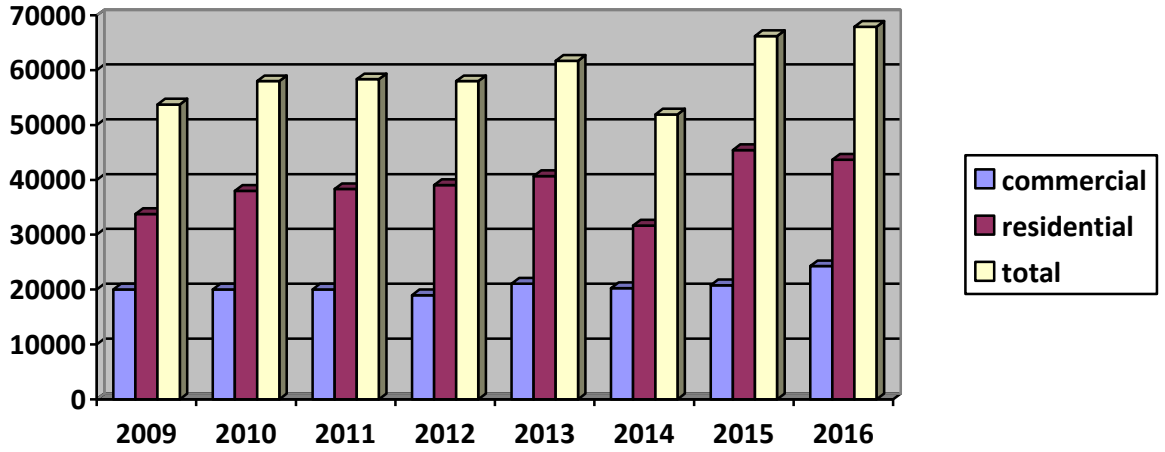
Asbestos is placed along the East side of the cell 11-12 where it is covered and surveyed. In order for anyone to bring asbestos to the landfill site for disposal they first need to purchase a daily permit. A separate permit is required for each day that asbestos is being delivered on site. Contractors or anyone responsible for the disposal of asbestos must insure that safe handling of the material occurs when transporting and disposing.

Residential refuse is the waste hauled to the landfill site by homeowners and/or occupiers of residential property. This includes all material that is not considered recyclable, compostable or requires special handling. City residential is the waste hauled by City of Brandon refuse trucks and delivered to the active cell.

City internal waste is the refuse that is hauled to the landfill site and dropped off in the cell by other City departments.

Since 2007 the landfill has seen a noticeable increase in the number of visitors entering the landfill site. The following graph illustrates the dramatic increase in site visits and in particular residential users. The reason for this shift we can attribute to a couple of factors. The first being the removal of the residential tipping fees near the end of 2007 and the second the change in collection system that made it necessary for residents to dispose of large bulkier items different from the previous system as approximately 2/3 of customers were used to the larger shared containers.

Chart 1. Visitors to Eastview Landfill Site



Recycling and Organics Material Weights

During 2016, the Sanitation Department of City of Brandon continued in its efforts to divert as much material from the active cell as possible. This effort is made in order to extend the useful life of the landfill and spread the costs of developing new cells over longer periods of time.

In 2014 the City assumed responsibility for the processing of residential and commercial recyclables within the MRF. After peaking at 8,200 total tonnes processed in 2012, the recycling facility saw a decrease in volumes during 2014-2015 (7,300 tonnes and 7,557 tonnes respectively) however this declining trend was reversed in 2016 with 8,111 tonnes, the largest annual quantity processed since the 2012 peak.

Table 2: Recycling Comparison between 2012 to 2016

Materials	2012 Quantity (Tonnes)	2013 Quantity (Tonnes	2014 Quantity (Tonnes)	2015 Quantity (Tonnes)	2016 Quantity (Tonnes)
Residential	4,020.62	3,910.12	3,828.67	3,854.00	3,940.00
Commercial	4,194.95	3,733.39	3,505.84	3,703.00	4,171.00
Total	8,215.56	7,643.51	7,334.51	7,557.00	8,111.00

Compost Facility

Since the early 1990's the City of Brandon has been operating a yard and tree trimming collection facility. In the mid to late 1990's, the facility was upgraded to include a retention pond for the collection of any surface water runoff that originates from the compost piles.

In 2016, 7,239.13 tonnes of compostable material was collected on site and diverted from the active cell which is down from the quantity collected in 2015.

Table 3: Organic Quantities between 2012 and 2016

Materials	2012 Quantity (Tonnes	2013 Quantity (Tonnes)	2014 Quantity (Tonnes)	2015 Quantity (Tonnes)	2016 Quantity (Tonnes)
Residential	**3,085.77**	**3,456.88**	**3,983.27**	**3,458.42**	**2,114.91**
Commercial	**6,576.39**	**5,773.05**	**6,315.99**	**4,630.46**	**3,225.20**
City	**970.48**	**673.60**	**1,042.68**	**1,796.37**	**1,899.32**
Total	**10,632.66**	**9,903.53**	**11,341.94**	**9,885.25**	**7,239.43**

Yard waste and trees that are chipped are placed in windrows where they are processed into a reusable material using a compost turner pulled behind a loader. Once the compost process is finished it is placed in a large pile, mixed with black dirt, screened and then used by the Parks Board along City boulevards and other public areas.

In 2016, processed organic material was tested by A & L laboratories and the results indicated that was Class "A" compost. After the results were received from A & L the City of Brandon Sanitation Section began to give the finished product away during special events such as Earth Day, Compost Day and other environmental events. In addition, in 2016, 87 tonnes of material available at the landfill entrance was picked up by residents free of charge.

In 2015, the City supplied Assiniboine Community College 267 tonnes of free compost that is currently being used in a 3-year study at Aagaard Farms on the benefits of compost versus fertilizer.

The City's Parks department used 550 cubic yards (499 tonnes) of compost material in their operations throughout the city, some of which was delivered to community gardens. Compost was also made available for purchase as Soil Amendment in the 2016 City of Brandon Fee Schedule at a cost of $21.90 per tonne. Three-thousand, five hundred and sixty-one (3,561) tonnes of compost material was also used at the City's golf course for remediation work done on the embankment.

Looking at the residential category the trend since 2010 has shown that as more residents are using the green carts there is less organics coming into the depots located throughout the City or residents are hauling the material to the landfill themselves. As with the blue cart recycling system making a program more convenient for residents makes it easier to participate.

By the end of 2016 there were 6,336 participating households registered and participating in the green cart program. Based on this participation the average household participating in the green cart program diverted approximately 299 kilograms. In comparison, there are approximately 14,500 households that use the depots, haul to the landfill or participate in the green cart. This group diverted approximately 43 tonnes of organic material from the landfill.

If the City of Brandon had full participation or 15,500 households participating in the green cart program, there would be approximately 4,000 tonnes diverted from the tipping face which amounts to approximately $300,000 in landfill air space savings.

Table 4: Comparison of Collection Systems of Organic Materials

SYSTEM	2012 QUANTITY (TONNES)	%	2013 QUANTITY (TONNES)	%	2014 QUANTITY (TONNES)	%	2015 QUANTITY (TONNES)	%	2016 QUANTITY (TONNES)	%
DEPOTS	673.41	52	538.03	31	619.66	29	561.89	25	390.83	15
SELF-HAUL	471.12	36	392.41	22	294.94	14	297.98	13	334.39	13
CITY	157.66	12	815.61	47	1,208.86	57	1,411.02	62	1,899.32	72
TOTALS	1,302.19	100	1,746.05	100	2,123.46	100	2,270.89	100	2,624.54	100

Landfill Gas Volume

In 2016, we collected and flared off approximately 92,123,944 (cfm) of landfill gas. This amounted to approximately 18,838 tonnes of CO_2 being diverted from the landfill site during the year, which is an increase of 909 tonnes from 2015, which is equivalent to taking approximately 4,200 vehicles off the road.

Table 5

	2013	2014	2015	2016
Annual CO2 equivalents	14,393	15,748	17,929	18,838
Landfill Gas Flow (scf)	86,689,471	89,654,006	91,325,592	92,123,944

Landfill and Collection Equipment

In 2016, the City of Brandon replaced their existing collection trucks with seven (7) new side-load trucks for solid waste collection in the city. The City also purchased a new compactor that is equipped with the VisionLink software application to monitor solid waste compaction and placement in the cells.

One of the two loaders used at the landfill site and for clearing snow in back lanes was replaced with a new loader in 2016 and one of the front load collection trucks to service the depots was replaced as well.

Waste Reduction and Diversion Initiatives

Residential Drop-off Area

At the Eastview Landfill Site there are a number of areas that are used for residential and commercial customers. Outside of the entrance gate, there are containers located for the drop-off of mixed recycling as well as yard waste.

Inside the landfill customers are able to drop off grass, trees, wood, metal, tires and glass in separate piles along the south side of the main landfill road. People delivering these items more often than not have loads mixed with other items that are non-recyclable. The scale operator is responsible for ensuring that each customer is notified of the need to separate each material into the proper pile and not to contaminate any pile with mixed refuse.

Customers entering the landfill with large amounts of recyclable materials are encouraged to deliver these items directly into the MRF.

Recycling Depots

The recycling depot system was first implemented in the City of Brandon in 1990. At that time there was only 3 locations for drop off and they were limited to only metals as that was the only product that could be sold locally. At that time materials were picked up on a weekly basis.

At its peak before the introduction of the new collection system nine (9) depots were located around the City of Brandon for residents to drop off their recyclable materials. The need to service these sites also grew from weekly to daily collection.

A major downfall of the depot network is the amount of illegal dumping that occurs at these sites. This has a negative impact on our recycling efforts as many loads become contaminated and valueless. We tend to see large volumes of items that are not recyclable end up at the depots. In 2016, the City of Brandon collected 492.18 tonnes of recyclable materials from its network of depots located throughout the City. The location of depots that accept recyclable materials are:

1. Sportsplex
2. 34th and Victoria
3. Capitol Theatre
4. Eastview landfill

As well as recyclables we also pick up compost at the depots, at these locations:

1. Sportsplex
2. 34th and Victoria
3. Westridge community center
4. 1st and Richmond
5. Rideau park
6. Eastview landfill

In 2016, the City purchased twenty (20) new depot bins that are compatible with the front load truck that services the depots.

E-Waste

In June of 2007, the City of Brandon in partnership with Green Manitoba started a pilot project to start an E-waste collection program for residential customers. This program would run from May to the end of September each year and became a year round program in 2010. City staff stack each item on pallets and secures them for travel. Once enough products are collected to fill a truck, it is delivered to the Exner E-waste facility in Elie Manitoba for processing. Approximately 147.23 tonnes of E-waste was diverted from the landfill in 2016, which is a decrease from the 178.52 tonnes collected in 2015.

In May of 2009 Green Manitoba announced, in a press release, that we would be moving from a pilot project to a year round program with 11 sites around the province, including Brandon.

Tires

Tire Stewardship Manitoba was launched in April of 2008 as a not-for-profit organization to help manage the problem of scrap tires. In 2016, 28.16 tonnes of scrap tires were removed from the Eastview Landfill Site which is down from the 522.06 tonnes removed in 2015. The reason for this decrease in the quantity of tires removed is

due to the fact that the backlog of stockpiled tires was removed at the end of the 2015 calendar year thus skewing the quantity logged for 2015.

Properly managed scrap tires reduce environmental risk and create jobs and economic opportunities in Manitoba. Manitoba's scrap tire products are sold locally and internationally. Scrap tires can be used to make flooring products for agricultural, recreational, and industrial use. They are used for artificial turf fields, rubberized asphalt, blast mats, geo-technical projects and energy recovery."

Metals

In 2016, 580.40 tonnes of metal was removed from the Eastview Landfill site by Gerrard Metals which is an increase from the 387.33 tonnes removed from the site in 2015. All metals diverted and collected at the landfill site are loaded and hauled by Gerrard Metals for processing and then delivered to the end market.

Freon removal

In 2016, 641 Freon devices were delivered to the Eastview landfill for proper disposal, which is an increase compared to the 567 devices delivered to site in 2015. The Freon devices are currently being stored in a segregated location at the Eastview landfill until the City of Brandon has issued and awarded a bid opportunity to a third-party to both remove and destroy the Freon from the device and then recycle the components of the device. It is anticipated that this bid opportunity will be issued and awarded in 2017.

Extending Landfill Life

The main purpose in providing alternatives to disposal is to ensure the health and safety of residents not only in Brandon but that may be impacted by potential impacts to ground water supply. Through these efforts we gain the added benefit of extending the life of our current landfill. In the hierarchy of waste there are 7 options for handling waste with the least favored being disposal and the preferred option being prevention.

Environmental Protection Programs – Monitoring and Reporting

Leachate Management

In 1994 the Sanitation Department developed its first lined waste cell in phase 7 of the cell development plan. This cell was lined using a clay max liner. In addition to the liner a Leachate collection system was included in the design of this cell. The purpose of this collection system was to insure that Leachate that is produced as a result of precipitation and snow melt is contained on site before it can have a negative impact on the surrounding environment.

Also there are 8 manholes around the perimeter of the landfill that collects leachate before it is able to migrate into the ground water offsite.

Leachate is defined as the product of water percolating through refuse and collected in a lined refuse cell with perforated pipes that collect the Leachate and transport it to a manhole.

In addition to phase 7 completed in 1994 phases 11, 12 & 13 all drain into a manhole at the North end of cell 7, where it is then pumped directly to the Leachate storage tanks located directly west of the old scale building. This occurs approximately seven (7) months of the year.

Phases 8, 9 & 10 have been closed and capped with 3 to 5 feet of clay. We are not seeing the volume of Leachate coming out of these cells that we did when they were active.

This has reduced the need to have the manholes pumped on a regular basis. Where we used to pump these manholes weekly and sometime daily during periods of high precipitation we are now only required to pump as needed.

Development of cell 13 was planned in conjunction with cell 11 so that Leachate produced from cell 13 runs into cell 11 and then drains to the manhole at the north end. Once Leachate is contained in the storage tanks the waste water treatment facility can control the flow of the Leachate to its site for treatment.

Surface/ Ground Water Monitoring Program

In 2015, the ground water monitoring contract was issued for tender and KGS group was awarded the contract to conduct a 3 year groundwater and surface water monitoring program at the Eastview Landfill Site. According to the contract, 30 groundwater wells (27 on site and 3 off site) and 3 surface water locations were sampled in June 2016. The monitoring well locations are shown on the landfill map provided in Appendix 1.

Sampling will be completed in compliance with Sampling Protocols established in the Manitoba Conservation Guideline NO94-01-E. A copy of the report shall be provided with this annual report.

Contaminated Soil Remediation Facility (S.R.F.)

Located at the landfill site north of the lime sludge pile is the soil remediation facility. At this location, contractors deliver soil contaminated with hydrocarbons from soil remediation projects or environmental accident sites. Soil is considered contaminated when it is found to be above the required CCME Guidelines.

The material is treated on site with the use of a rome plow attached to a track type dozer and once the level of hydrocarbons meets the guidelines stated in Guideline 96-05, Treatment Disposal of Petroleum Contaminated Soil, June 1996, revised April 2002, it becomes a beneficial product that can then be used as cover material in the cell. Eastview landfill received 1,619.08 tonnes of contaminated soil in 2016.

The site at the landfill has been developed to ensure that any surface water runoff is captured in the retention pond at the North end of the landfill.

A. Soil Receiving and Placement

The main objective of the S.R.F at the Eastview Landfill is to reduce hydrocarbon concentrations to acceptable levels such that the soils are suitable for appropriate re-use.

A permit is required for disposal of contaminated soils. Permits are sold and issued by the City of Brandon. Any loads of contaminated soil arriving at the landfill without a proper permit will not be accepted for remediation. The supervisor may also request lab analysis reports from the company doing the excavation.

1. Low Concentration Levels

Contaminated soil which contains levels below Manitoba Level III criteria for soil will be used directly as landfill cover material upon approval by the Site Supervisor and the local regional office of Manitoba Environment.

2. Permits

Upon arrival of a load of contaminated soil with proper permits, the Scale Operator shall record the permit number and attach it to any weigh tickets relating to the permit for documentation and invoicing.

3. Location

The S.R.F is clearly marked by signs and marker posts to prevent unauthorized access onto the treatment area and possible disturbance or compaction. When the driver is unfamiliar with location and placement procedures for the soil remediation facility, the Scale Operator shall radio the site supervisor or any available site personnel to escort the driver to the S.R.F area and place the load accordingly depending on the particular type of contaminate.

4. Load Placement

All loads placed in the treatment area should be spread in an even layer in a manner that avoids compaction and inter-mixing of different soil shipments. Occasionally (depending on placement area available) soil may be placed in windrows which should not exceed 1 m in height. The windrows will require periodic mixing in a similar fashion to a treatment layer.

B. Soil Remediation Procedures

1. Treatment Layer
The final thickness of the treatment layer normally should not exceed 300 mm or the effective mixing depth of on-site equipment (rome plow), whichever is less.

2. Debris
Boulders and other large debris should be removed from the treatment layer to avoid potential damage to the tilling/aeration equipment, and to provide for optimum soil tillage.

3. Aeration
Handling of material will be done by employees that have read and understands the proper handling techniques that have been put forward in the GOG's and SOP's . The material is to be aerated by our rome plow which will be pulled with a track type dozer. Depending on the stability of soil more than 1 pass may be required to turn and fully aerate the impacted soil.

4. Irrigation
The treatment layer shall be thoroughly aerated (mixed) on a regular basis. In most cases, a tillage frequency of 1 to 2 weeks should provide optimum soil aeration. Periodic irrigation of the treatment layer may be necessary to avoid desiccation or prevent excessive windblown dust. However, saturation of the soil should be avoided to prevent run off from occurring and potential migration of contaminates outside S.R.F facility.

5. Equipment Contamination
After material has been aerated, the rome plow is to be placed in an area that will not interfere with ongoing work but must remain in the soil remediation facility. The track type dozer must be cleaned off so no contaminates leave the area and have the chance of falling off and contaminating other areas.

C. Inspections and Maintenance

Regular inspections shall be made by the operator at the time of aeration. S/he will report to the site supervisor any:
-Erosion, slope increase or damage to the berms surrounding the S.R.F area.
-Excessive "ponding" of surface water.
-Improper placement of contaminated loads.
-Visible signs of migration or leaching of surface water and/or contaminates.
Once reported to the supervisor s/he shall take corrective actions to insure the proper maintenance of the S.R.F

D. Surface Water Management

The Eastview Landfills S.R.F is designed to contain internal storm runoff and seepage in order to prevent offsite losses. Surface water is controlled by the use of ditches, along with a properly graded land surface. Prior to any discharge or removal of impounded surface water from the PCS treatment facility, thorough laboratory testing of the water for petroleum hydrocarbon compounds will be conducted and the results reviewed by Manitoba Environment.

E. Monitoring and Reporting

All contaminated soil material entering the landfill will be weighed and logged at the scale by the scale attendant. The attendant will log where the material originated, the hauler that has brought the material into the site and the final placement of the load. The weigh scales software program can generate reports on any contaminated soil entering the landfill based on a variety of parameters.
E.g. Origin, Company, Hauler, type of material etc.
Information is also transferred to an Excel spreadsheet by the Scale Operator at the end of each shift.

Household Hazardous Waste (HHW)

Since 1999 the City of Brandon in partnership with the Rotary Club of Brandon has been operating twice yearly HHW collection depots at the public works complex on Richmond Avenue East. Residents are encouraged to drop off any unwanted Household Hazardous Waste so that it can be disposed of in an environmentally responsible manner.

Starting on May 1st, 2012 the first phase of the Product Care Manitoba program was implemented with the following locations being allowed to accept paint and/or fluorescent lights for disposal.

1. Windsor Plywood – Paint only

2. J & G Rona – paint only
3. Janzen's Paint & Decorating – paint only
4. General Paint – paint only
5. Brandon Home Hardware – paint only

The new HHW that was set up at the landfill in the fall of 2012 has seen a steady flow of visitors to the facility since it has opened. Landfill staff have been provided training from Product Care Manitoba and Miller Environmental during regular site visits to ensure the safe and proper handling of these potentially dangerous products takes place.

This program accepts the following:

1. Fluorescent lights
2. Flammable liquids/waste gasoline
3. Pesticides
4. Corrosives
5. Physically hazardous materials such as non-refillable gas cylinders

This program is operated by product care on behalf of product manufacturers and retailers in Manitoba in response to the provincial Household Hazardous Material and Prescribed Material Stewardship Regulation.

The cost of the Manitoba HHW program is fully funded by Environmental Handling Fees that manufacturers and retailers pass onto the consumer. The current fees for this program are as follows:

Flammables

750 ml or less	$0.05
751 ml – 1 litre	$0.10
1.01 litres – 2 litres	$0.20
2.01 litres – 4 litres	$0.40
4.01 litres – 10 litres	$1.00

Aerosols

1 – 75 ml	$0.01
76 ml – 200 ml	$0.05
201 ml and over	$0.10

Pesticides

Less than 10 ml or g	$0.01
0.01 – 0.89 l or kg	$0.60

0.9 – 1.79 l or kg	$1.20
1.8 – 10 l or kg	$2.40

Toxics

0.75 l or kg or less	$0.05
0.751 – 1 l or kg	$0.10
1.01 – 2 l or kg	$0.20
2.01 – 4 l or kg	$0.40
4.01 – 10 l or kg	$1.00

Aerosols

1 – 75 ml or g	$0.01
76 – 200 ml or g	$0.05
Over 201 ml or g	$0.10

Corrosives

0.750 L or kg or less	$0.05
0.751 – 1 L or kg	$0.10
1.01 – 2 L or kg	$0.20
2.01 – 4 L or kg	$0.40
4.01 – 10 L or kg	$1.00

Aerosols

1 -75 ml or g	$0.01
76 – 200 ml or g	$0.05
Over 201 ml or g	$010

Physically Hazardous

Per unit	$0.50

Eco Centre

In 2016 a total of 10,600 litres of used oil, 1,000 litres of glycol, 828 kgs of used oil filters and 1,176 kgs of used oil and antifreeze jugs were collected at the Eco-centre. All used oil, filters and

containers are collected on a regular basis by **Green For Life Environmental** where they are taken to be processed and recycled into a valuable new product.
We had our annual Eco-center inspection on October 30, 2016 and the inspector was impressed with our facility considering we have an average of 940 customers dropping off oil each year.

Operational Information

Contingency Plan Implementation

In February of 2008 the Sanitation department adopted its new Landfill Contingency/Emergency Response Plan in order to meet the requirements of its new operating permit. As required by the permit it was developed and shall be maintained in accordance with the Industrial Emergency Response Planning Guide (MIAC September, 1996)

In 2016, there were no major incidents that occurred at the Eastview Landfill.

Weigh Scale Operations

The scale is operated by staff that is trained on the weigh scale program (PC Scale) to help expedite the flow of traffic in and out of the landfill site. The PC Scale program was implemented in July of 2014. The scale operator is responsible to both monitor and control the material accepted into the landfill. If any loads are considered suspicious by the operator he/she shall communicate with landfill operators to more closely monitor unloading.

All loads are weighed on the inbound scale and weighed again on the out bound scale to get a net weight that customers are then billed according to City of Brandon Fee Schedule. The scale operator is also responsible for setting up new customers and updating existing customer information as required. The scale operator communicates with customers on the location that drop off will occur depending on the types and amounts of waste being delivered.

Based on information provided by the customer the scale operator shall segment loads by type of material to help determine the amounts of each type of waste that are entering the site on any given day. The scale operator shall also insure that all permits are taken out by haulers of special waste such as asbestos and contaminated soil to insure that safe disposal of this material takes place.
Training of new staff on weigh scale operations takes place with guidance from the scale operator to insure that all procedures and tasks are being completed in a consistent manner. Training will take place to insure proper opening procedures takes place, account setup, weighing procedures, reporting standards are being met, monitoring of loads and proper closing procedures takes place.

Nuisance Control

When activity is noticed at the landfill we first determine the type of nuisance. Once this occurs we have two (2) courses of action that we take. The landfill manager will be notified of the type

of nuisance, the location of the sighting and number. He will then notify either animal control or the contractor to take the proper course of action in managing the situation.

In 2016, sightings of nuisances were within reasonable levels when compared to prior year's activity. The facility continues to be monitored on a monthly basis by the Poulin's, the contractor responsible for this service. There were no areas of concern that were brought to our attention in 2016.

Odour and Noise Control

We do not have an issue with noise control in the landfill due to the location of our facility. We are located .5 miles from the nearest residential dwelling. We use daily cover and try to burry any refuse that will have a strong odor immediately with other refuse and use daily cover and had no complaints with respect to noise or odour in 2016.