

# CITY OF TORONTO

## Transportation Services Division



*SALT*

*MANAGEMENT*



*PLAN*

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# ***INTRODUCTION***

## **1.0 INTRODUCTION**

### **1.1 Overview**

Toronto has approximately 5100 kilometres of roads within the framework of a classification system, which provide for the safe, efficient and affordable means of surface transportation for all road users. We rely on this roadway network throughout the year for transport to the workplace, to recreation and leisure facilities, for the transport of goods and services, and for emergency and security services.

Snow and ice conditions on the road system have a dramatic impact on public safety, roadway capacity, travel time and economic costs. User safety, both pedestrian and driver, remains the most important priority within winter maintenance operations, practices and strategies contained in the Salt Management Plan.

Although there is ongoing research into the use of alternatives to road salt (sodium chloride) in winter maintenance, salt continues to be the most cost-effective de-icer across Canada. However, because of the adverse effects that salt has on the environment, the City of Toronto's Salt Management Plan strives to minimize the amount of salt entering the environment by including best salt handling practices and new technologies to ensure its most effective use over the road system.

The review strategy in the Salt Management Plan requires that new technologies be investigated and that trials be conducted on promising developments and discussed in annual assessments.

On December 1, 2001 Environment Canada published the results of a five-year assessment on the effects of road salts on the environment. The assessment concluded that road salts were, in fact, having an adverse effect on freshwater ecosystems, soil, vegetation, and wildlife. In response to the report, Environment Canada assembled the multi-

stakeholder working group that would go on to develop the “*Code of Practice for the Environmental Management of Road Salts*” released in April 2004.

The main objective of the Code of Practice is to ensure environmental protection while maintaining roadway safety. Under the Code, all public entities that use 500 tonnes of road salts per year or more and/or have any environmentally vulnerable areas must prepare a salt management plan within a year of the official release of the Code. The Transportation Association of Canada has also prepared and released a “*Syntheses of Best Practices*” in the fall of 2003 which is intended to be used in conjunction with the Environment Canada’s Code of Practice.

In a proactive response to both the growing environmental concerns regarding road salt, and the assessment undertaken by Environment Canada, the City of Toronto’s Transportation Services began the preparation of a Salt Management Plan in 2001. The Plan was completed in April 2002 and was distributed to managers and operations staff for review and implementation. As an ongoing consequence of the Salt Management Plan, Transportation Services has initiated better handling and washing practices at all City facilities while at the same time continuing to ensure road safety by better managing the City’s use of salt. The initial City of Toronto Salt Management Plan submission was filed with Environment Canada in June, 2005.

The City of Toronto’s Salt Management Plan continues to be updated.

## **1.2 Purpose of Document**

The Salt Management Plan is intended to set out a policy and procedural framework for ensuring that the City of Toronto continuously improves the management of road salt used in winter maintenance operations.

Any modifications to the City’s winter maintenance activities must be carried out in a way that provides roadway safety and user mobility consistent with the weather conditions experienced during the snow and ice control season.

The Salt Management Plan is dynamic – allowing the City to phase in new approaches and technologies in a way that is responsive to fiscal demands and needs, and that works to ensure that roadway safety is not compromised.

## **1.3 Legislative Authority**

The City of Toronto is mandated under Ontario Regulation 612/06, Minimum Maintenance Standards for Highways in the City of Toronto, to maintain public roads in a good state of repair. The City’s winter operations, standards and guidelines were most recently prescribed in a report to the Public Works & Infrastructure Committee, dated October 28, 2013, titled “Confirmation of Levels of Service for Roadway and Roadside Winter Maintenance Services (see Appendix A).

## **1.4 Format of Document**

*Chapter 2.0* of this Plan presents the Policy Direction approved by the City of Toronto Council.

*Chapter 3.0* of this Plan presents the Winter Maintenance Policies that are relevant to salt management.



*Chapter 4.0* of this Plan presents the summaries of Operational Practices and Strategies for Snow and Ice Control as they relate to the effective management of road salt. This chapter is presented as a series of sub-sections that can be modified as new policies, procedures and practices are introduced and refined.

*Chapter 5.0* of this Plan presents the approach to monitoring the implementation of the Plan and to maintaining and updating the Plan.

## **1.5 Responsibilities**

*General Manager, Transportation Services* – Responsible for ensuring that the Salt Management Plan is developed, maintained, and implemented throughout the City of Toronto.

*District Directors*, – Responsible for ensuring that the Salt Management Plan is developed, maintained, and implemented within each District of the City of Toronto.

*District Road Operations Managers* – Responsible for ensuring that the Salt Management Plan is developed, maintained, and implemented in all District Operational Yards of the City of Toronto.

*District Senior Engineers, Superintendents and Supervisors* – Responsible for ensuring that winter maintenance activities are carried out in a way that complies with the Salt Management Plan.

*Winter Maintenance Personnel* – Responsible for ensuring that they carry out their winter maintenance duties in accordance with the policies and procedures set out in the Salt Management Plan as directed by their Supervisors.

***SALT  
MANAGEMENT  
POLICY***

## **2.0 SALT MANAGEMENT POLICY**

### **2.1 Vision, Mission, Mandate**

#### **Vision**

The City of Toronto's Transportation Services Division will be recognized as a leader in using de-icers in an environmentally sensitive manner while providing for safe road and sidewalk conditions during the winter season.

#### **Mission**

The City of Toronto's Transportation Services Division will optimize the use of de-icers on Toronto's roads and sidewalks while striving to minimize salt impacts to the environment.

#### **Mandate**

The City of Toronto's Transportation Services Division is to provide safe winter conditions for vehicular and pedestrian movements as required by level of service policies and funding guidelines established by Toronto City Council.

## **2.2 Policy Statement**

The City of Toronto will provide effective winter maintenance to ensure the safety of users of our road network in keeping with applicable Provincial Legislation and accepted standards, while striving to minimize the adverse effects that road salt can have on our environment. To meet this commitment the City of Toronto will:

- Meet and adhere to the guidelines contained within the Salt Management Plan;
- Strive to review and upgrade, as necessary, the standards contained in the Salt Management Plan on an annual basis to take into account new technologies and developments;
- Work with Environment Canada, other transportation agencies and environmental groups to upgrade best winter practices; and
- Commit to ongoing staff training and education.

## **2.3 Application**

This policy is adopted by the City of Toronto's Transportation Services Division and applies to all employees involved in Winter Maintenance Operations.

## **2.4 Conditions**

The following principles will guide the ongoing process to upgrade the Salt Management Plan:

- The Plan is activity-based and follows an Environment Management System framework consistent with the principles of continual improvement. It includes the following elements:
  - Periodic Review and Analysis of Industry Practices;
  - Implementation and Documentation of the Plan;
  - Education and Training of Staff;
  - Monitoring and Analysis;
  - Management Review;
  - Environmental Review; and
  - Practices and Policy Revision.
  
- The Plan will be reviewed and refined on an on-going basis.

## **2.5 Implementation**

The goal of the Policy Statement is to promote the continuous development of practices and procedures to improve winter maintenance activities while striving to reduce the effects of salt on the environment.

***WINTER  
MAINTENANCE  
POLICIES***

### **3.0 WINTER MAINTENANCE POLICIES**

#### **3.1 Introduction**

The major activities related to winter maintenance are:

- Salt and sand storage;
- Salt/sand spreading;
- Snow plowing (roads, sidewalks, laneways);
- Snow removal and disposal from City streets;
- Snow clearing at bus stops; and
- Windrow programme for residential driveways.

#### **3.2 Winter Operations – Road De-Icing and Plowing**

The City’s level of service policy for roadway de-icing, roadway plowing and driveway windrow opening is provided in Appendices 1 & 2 of the October 28, 2013, report to the Public Works and Infrastructure Committee and subsequently adopted by Toronto City Council. That reports is attached to this document as Appendix A.

Within this framework, District Road Operations Managers are allowed some latitude regarding frequency and timing of applications. Application rates have now been harmonized across the City, which were established through past practices within our urban environment.

Direct liquid application was introduced during the winter season of 2003-2004. Our current program includes different scenarios for direct liquid application. The standard application rate is 100 litres per lane km. Liquid salt brine may be applied to, hills and bridges during shoulder seasons in advance of a forecast frost event, hills and bridges during the winter season or to designated plow routes in advance of a forecast snow event where it is anticipated that road plows will be activated. Road Operations staff pay close attention to RWIS data and to the regular weather forecasts as provided by the weather forecast provider. With this technique, liquid chemicals are applied prior to a storm and they are allowed to work on roads before snow accumulates on the road and plowing is required. It is not our practice to apply liquid in the absence of a forecast event. Guidelines were laid out so that anti-icing was not to occur more than twelve hours prior to the forecast event as determined by RWIS data or weather forecasts. This was intended both to allow the weather forecast to be as accurate as possible and to ensure that applications would remain on the road. It should be noted that the City does not have at this point, the capability to liquid anti-ice the entire road network or any road classification in its entirety. The focus for anti-icing at this stage is solely on bridge decks and “priority locations” around the City.

Our present guideline is to apply a solid or solid/pre-wetted de-icer once snow starts to accumulate or “stick” on expressways, arterial roads, and collector roads. This proactive strategy reduces the amount of material that would be lost if solid de-icer was applied onto dry pavement prior to a storm. This also ensures timely applications on major expressways and arterials (i.e. within the first hour of any significant snow or ice accumulation). Timely application of chemicals is critical to preventing snow from sticking to roads. Without the timely application of chemicals, snow could easily bond to roads and in turn become difficult to plow, potentially causing road hazards. As snow accumulates, it is plowed to maintain safe driving conditions. The City still uses traditional methods on local roads that allow for an initial application of de-icer (salt) followed by plowing when storms end or accumulate to a prescribed threshold (8



cm). The development of the capability to apply pre-wet salt to local roads is currently a work in progress and several districts are making significant advances.

Currently the City of Toronto application rates for the application of dry salt on expressways, arterials, and collector roads are; 70kg/lane-km, 140 kg/lane-km and 180 kg/lane-km. Pre-wetting was first introduced to the Winter Maintenance Depots in 2003-2004 when 1/3 of the arterial road salt trucks were equipped with pre-wetting. A further 1/3 of arterial road salt trucks were outfitted with pre-wetting equipment for the winter of 2004-2005 and the final 1/3 were equipped for the winter of 2005-2006. A full 100% of the salt trucks in Winter Maintenance Depots 1 - 14 are now equipped with pre-wetting. The introduction of pre-wetting on salt trucks saw a phased-in reduction of the straight granular application rates of up to 15%. A 10% reduction in dry application rates on all trucks equipped with pre-wetting was achieved in 2004/2005 and reductions of 15% were achieved in limited trials in Toronto – East York District. Whenever pre-wet salt is applied there is now a standard 10% reduction in the dry application rate. The current rate of pre-wetting on conventional side discharge spreaders is 6% by volume.

### **3.3 Pilot Projects**

Since the introduction of the SMP the city has continued to explore new and emerging technologies through a series of pilot projects. Liquid pilot projects first began in 2001 with the retrofitting of three trucks for pre-wetting and direct liquid applications. There are now approximately 200 trucks equipped with liquid capability that can be traced back to this initial pilot project. Subsequent pilot projects have focused on pre-wetting and direct liquid application while using alternative liquids with several objectives; to find a liquid pre-wetting agent that would lower the eutectic temperature of salt/salt brine, to reduce salt usage, and to better manage the application of salt. In addition to the work with liquids, pilot projects have dealt with the introduction of GPS/AVL, innovative plow blades,

spreader control technologies, combination salter/plow units and snow removal operations.

### **3.4 Snow Removal and Disposal**

As a result of snow plowing operations, snow accumulates at the side of roads as windrows. The City initiates snow removal operations when these windrows reach volumes that create a nuisance or hazard to pedestrians and motorists, to maintain capacity for subsequent snowfalls, or after a designated Type 4 storm.

Experience over the years has shown that the City must have the capability and capacity to remove and dispose of 150,000 loads of snow in a two-week period. There is currently a capacity shortfall of approximately 50,000 loads. Snow removal operations involve the use of in-house mobile and stationary melters, snow blowers, front-end loaders and trucks in conjunction with various contracted equipment.

Over the years the City has used 30 different land disposal locations, two portable stationary melters, five mobile melters and one sewer snow disposal site to dispose of snow. Many of the snow disposal sites had environmental and operational constraints. Concerns over the potential environmental impacts of these sites led to a Snow Disposal Study in the year 2002. As part of this process, the disposal sites were evaluated on the basis of environmental and technical criteria. As a result of this study, the City has closed several sites and has improved the environmental protection measures at those sites that will continue to operate. There are currently only five snow disposal sites in the City of Toronto.

The City of Toronto sees melting as opposed to snow disposal sites as the way of the future as regards Snow Removal. Where possible, the objective is to melt the snow either onsite or as close to the site as possible. To this end, the City purchased a 350 tons/hr melter in 2005 and two 150 tons/hr mobile melters in 2010.

### **3.5 Sidewalk Snow Clearing**

Mechanical sidewalk snow clearing is required along selected eligible sidewalks in the City as adopted by Council at its meeting of July 24 to 26, 2001 and as reported to the Works Committee on September 4, 2001. These levels of service were reconfirmed in October, 2008 and in October, 2013 through separate reports to the Public Works and Infrastructure Committee. Some 6000 km of sidewalk from the 7945 km total are to be mechanically cleared.

The standard of service adopted by Council provides for the clearing of sidewalks approximately twenty four times per winter season. The operation is generally deployed at a total accumulation of 2cm on high pedestrian volume sidewalks and at a total of 8cm on low pedestrian volume sidewalks. Some discretion is necessary in light of prevailing and forecast weather conditions. The entire operation is to be completed within approximately 13 hours of the end of a Type 1 (up to 5cm) snowfall, although in high pedestrian traffic areas this may vary due to the need to undertake the work at night for safety reasons. This operation provides a basic level of service, clearing a walking path of about 1.2 m in width, although not to bare pavement, as surface undulations must be accommodated for. District Managers are allowed latitude in cases of freezing rain. Salt/Sand mixtures appropriate to the conditions are used as required after plowing to provide grit and traction on sidewalks. This salt/sand mixture is placed at an application rate of 100kg/sidewalk km. Criteria established to assist with the determination were as follows:

- (i) Streets greater than 8 m in width;
- (ii) Sidewalks greater than 1.5 m in width;
- (iii) Sidewalk not immediately adjacent to the street;
- (iv) Parking not immediately adjacent to the sidewalk; and
- (v) No obstructions such as utility poles, planters, or retaining walls, immediately adjacent to, or within, the sidewalk that would create significant potential for damage or an operating

- safety concern for the equipment operator or members of the public;
- (vi) Consideration to be given to whether the mechanical clearing could be done in a contiguous area. Figure 3.5.1 shows the boundaries of the different levels of possible sidewalk snow clearing.

Within the Toronto & East York District, most sidewalks adjacent to local roads do not meet established guidelines and, as such, adjacent residents are required under existing by-laws to clear the snow from sidewalks. The attached schematic map highlights that the implementation of local sidewalk snow clearing in the central areas of the City would present significant challenges due to the preponderance of narrow streets and sidewalks, amount and location of on-street parking, location of above ground utilities and retaining walls, planters, landscaping, garbage collection from the sidewalk, street furniture and lack of boulevard, or front yard snow storage space. There are vast areas where a North York District-style sidewalk plowing operation is not feasible. As well, there are other areas where some streets and blocks are feasible, while others are not.

***MONITORING  
AND UPDATING  
THE SALT  
MANAGEMENT PLAN***

## **4.0 MONITORING**

### **4.1 Overview**

This chapter of the Plan includes table summaries of current practices to allow benchmarking to track future improvements and changes to the Plan.

An annual Management Review will take place as part of the implementation of the Plan. The Salt Management Plan will be updated as needed to include changes in Divisional Policy, as well as to summarize new strategies and techniques deployed. The monitoring will also allow Transportation Services to measure and report upon progress towards established goals and standards outlined in Chapter 4 – Operational Practices and Strategies.

The following areas will be included in the annual analysis and review:

- Management Practices
  - Level of service
- Equipment
  - Fleet Audit
  - Calibration Audit
- Materials
  - Salt Usage Summaries
  - Storage Facilities Audit – Salt and Salt/Sand Mixtures
- Storm Response Summary
  - Weather Forecast Equipment Summary
- Snow and Ice Control Training Summary
- Snow Removal and Disposal Summary
- Liquid Trials
- Winter Maintenance Subcommittee

- Technology Review
  - Equipment Summary
  - Methodology Review
  
- Communications Summary
- Environmentally Sensitive Areas
- Monitoring Programme - Chloride Level Monitoring

## **4.2 Management Practices – Application Rates**

Current application rates are summarized in Appendix A. This section will summarize any studies where application rates were varied and present any proposed changes to the Policy.

## **4.3 Equipment Audits**

### **4.3.1 Salter Fleet Audit**

This section summarizes the total number of salt spreader units across the City (Table 4.3.1) in terms of location, in-house vs. private ownership and what equipment, such as electronic spreaders, spinners, etc. are on the spreaders. Table 4.3.2 summarizes the extent of pre-wetting, anti-icing and calibration being done.

**Table 4.3.1  
SALTER FLEET AUDIT  
(2016)**

| YARD/DEPOT FACILITY                 |                       | SALTER FLEET REVIEW |       |           |                           |                  |                    |                   |
|-------------------------------------|-----------------------|---------------------|-------|-----------|---------------------------|------------------|--------------------|-------------------|
| LOCATION                            | OWNERSHIP<br>CITY - C | Salters             |       | Ownership | Electronic<br>Controllers | Dual<br>Spinners | Single<br>Spinners | Rear<br>Discharge |
|                                     |                       | In-use              | Spare |           |                           |                  |                    |                   |
| <b>TORONTO-EAST YORK AREA 1</b>     |                       |                     |       |           |                           |                  |                    |                   |
| Depot 1 – 777 Bayview Ave.          | C                     | 11                  | 1     | CONTRACT  | 12                        | 12               | 0                  | 0                 |
| Depot 6 – 7 Leslie St.              | C                     | 14                  | 1     | CONTRACT  | 15                        | 15               | 0                  | 0                 |
| 433 Eastern Avenue Yard             | C                     | 10                  | 2     | INHOUSE   | 12                        | 3                | 0                  | 9                 |
| <b>TORONTO AND EAST YORK AREA 2</b> |                       |                     |       |           |                           |                  |                    |                   |
| Depot 7 – 677 Wellington            | C                     | 13                  | 1     | CONTRACT  | 14                        | 14               | 0                  | 0                 |
| 1401 Castlefield Ave. Yard          | C                     | 4                   | 3     | INHOUSE   | 7                         | 3                | 3                  | 1                 |
| 1116 King St. Yard                  | C                     | 5                   | 0     | INHOUSE   | 5                         | 0                | 3                  | 2                 |
| <b>ETOBICOKE-YORK DISTRICT</b>      |                       |                     |       |           |                           |                  |                    |                   |
| Depot 5 - 40 Boncer Dr.             | C                     | 22                  | 1     | CONTRACT  | 22                        | 22               | 0                  | 0                 |
| Depot 9 - 49 Toryork Dr.            | C                     | 18                  | 1     | CONTRACT  | 19                        | 21               | 0                  | 0                 |
| Depot 10 - 150 Disco Rd             | C                     | 11                  | 1     | CONTRACT  | 12                        | 12               | 0                  | 0                 |
| Toryork Yard - 61 Toryork Dr.       | C                     | 0                   | 0     | INHOUSE   | 0                         | 0                | 0                  | 0                 |
| 320 Bering Avenue Yard              | C                     | 0                   | 0     | INHOUSE   | 0                         | 0                | 0                  | 0                 |
| <b>NORTH YORK DISTRICT</b>          |                       |                     |       |           |                           |                  |                    |                   |
| Depot 2 - 64 Murray Rd.             | C                     | 18                  | 1     | CONTRACT  | 19                        | 19               | 0                  | 0                 |
| 64 Murray Rd. Yard                  | C                     | 1                   | 0     | INHOUSE   | 1                         | 0                | 0                  | 1                 |
| Depot 3 - 195 Bermondsey Rd         | C                     | 16                  | 1     | CONTRACT  | 17                        | 17               | 0                  | 0                 |
| Depot 12 - 2750 Old Leslie St.      | C                     | 8                   | 1     | CONTRACT  | 9                         | 9                | 0                  | 0                 |
| Oriole Yard - 2751 Old Leslie St.   | C                     | 1                   | 0     | INHOUSE   | 1                         | 0                | 0                  | 1                 |
| Depot 11 - 86 Ingram Dr.            | C                     | 8                   | 1     | CONTRACT  | 9                         | 9                | 0                  | 0                 |
| <b>SCARBOROUGH DISTRICT</b>         |                       |                     |       |           |                           |                  |                    |                   |
| Depot 4 - 1 Nantucket Blvd.         | C                     | 18                  | 1     | CONTRACT  | 19                        | 19               | 0                  | 0                 |
| Depot 8 - 70 Nashdene Rd.           | C                     | 14                  | 1     | CONTRACT  | 16                        | 16               | 0                  | 0                 |
| Depot 13 – 1050 Ellesmere Rd        | C                     | 6                   | 1     | CONTRACT  | 7                         | 7                | 0                  | 0                 |
| Depot 14 - 891 Morningside Ave.     | C                     | 6                   | 1     | CONTRACT  | 7                         | 7                | 0                  | 0                 |
| Ellesmere Yard – 2000 Midland       | C                     | 2                   | 0     | INHOUSE   | 2                         | 2                | 0                  | 0                 |
| Morningside Yard – 891 Morningside  | C                     | 2                   | 0     | INHOUSE   | 2                         | 2                | 0                  | 0                 |
| <b>TOTAL(S)</b>                     | 22                    | 210                 | 19    |           | 229                       | 207              | 6                  | 14                |
| <b>SUMMARY</b>                      |                       | ALL – /229          |       |           | 229/229                   | 227/229          | 6/229              | 14/229            |
| <b>PERCENTAGE (%)</b>               | 100%                  | --                  |       |           | 100                       | 90               | 3                  | 6                 |



**Table 4.3.2  
SALTER FLEET AUDIT – PRE-WETTING,  
ANTI-ICING & CALIBRATION (2016)**

| YARD/DEPOT FACILITY                    |                       | SALTER OPERATIONS        |                                  |             |             |
|--|-----------------------|--------------------------|----------------------------------|-------------|-------------|
| LOCATION                               | OWNERSHIP<br>CITY – C | Pre-wetting<br>Equipment | Yard<br>Anti-Icing<br>Capability | Calibration | Methods     |
| <b>TORONTO- EAST YORK AREA 1</b>       |                       |                          |                                  |             |             |
| Depot 1 - 777 Bayview Ave.             | C                     | 11                       | 2                                | 12          | B/E         |
| Depot 6 - 7 Leslie St.                 | C                     | 14                       | 2                                | 15          | B/E         |
| 433 Eastern Avenue Yard                | C                     | 8                        | 2                                | 12          | B/E         |
| <b>TORONTO- EAST YORK AREA 2</b>       |                       |                          |                                  |             |             |
| Depot 7 – 677 Wellington               | C                     | 13                       | 1                                | 14          | B/E         |
| 1401 Castlefield Ave. Yard             | C                     | 0                        | 1                                | 1           | B/E         |
| 1116 King St. Yard                     | C                     | 0                        | 0                                | 0           | B/E         |
| <b>ETOBICOKE YORK DISTRICT</b>         |                       |                          |                                  |             |             |
| Depot 5 – 40 Boncer Dr.                | C                     | 22                       | 2                                | 23          | B/E         |
| Depot 9 - 49 Toryork Dr.               | C                     | 19                       | 2                                | 19          | B/E         |
| Depot 10 - 150 Disco Road              | C                     | 11                       | 0                                | 12          | B/E         |
| Toryork Yard - 61 Toryork Dr.          | C                     | 0                        | 0                                | 0           | n/a         |
| 320 Bering Avenue Yard                 | C                     | 0                        | 0                                | 0           | n/a         |
| <b>NORTH YORK DISTRICT</b>             |                       |                          |                                  |             |             |
| Depot 2 - 64 Murray Rd.                | C                     | 19                       | 2                                | 19          | B/E         |
| 64 Murray Rd. Yard                     | C                     | 1                        | 1                                | 1           | B/E         |
| Depot 3 - 195 Bermondsey Rd.           | C                     | 17                       | 2                                | 17          | B/E         |
| Depot 10 - 2750 Old Leslie St.         | C                     | 9                        | 0                                | 9           | B/E         |
| Oriole Yard - 2751 Old Leslie St.      | C                     | 1                        | 1                                | 1           |             |
| Depot 11 - 86 Ingram Dr.               | C                     | 9                        | 0                                | 9           | B/E         |
| <b>SCARBOROUGH DISTRICT</b>            |                       |                          |                                  |             |             |
| Depot 4 - 1 Nantucket Blvd.            | C                     | 19                       | 1                                | 19          | B/E         |
| Depot 8 - 70 Nashdene Rd.              | C                     | 16                       | 2                                | 16          | B/E         |
| Depot 13 – 1050 Ellesmere Rd           | C                     | 7                        | 0                                | 7           | B/E         |
| Depot 14 - 891 Morningside Ave.        | C                     | 7                        | 0                                | 7           | B/E         |
| Ellesmere Yard – 2000 Midland Ave      | C                     | 2                        | 0                                | 2           | B/E         |
| Morningside Yard – 891 Morningside Ave | C                     | 2                        | 0                                | 2           | B/E         |
| <b>TOTAL(S)</b>                        | 22                    | 205                      | 23                               | 229         | 19          |
| <b>SUMMARY</b>                         | C – 21/21             | 205/229                  | Y – 15/22                        | 229/229     | B/E – 19/19 |
| <b>PERCENTAGE (%)</b>                  | 100                   | 90                       | 68                               | 100         | 100         |

B – Calibration Box      E – Electronic      S – Scale

## 4.4 Material Usage Audit

### 4.4.1 De-icer and Abrasive Usage

This section currently documents salt usage for the City, the Districts and the Arterial Roads. The purpose of this section is to compile the necessary data to assess areas of over use and measure progress in salt management. Salt use is presented in tabular form (Tables 4.4.1.1 to 4.4.1.6) and in graphical form (Figures 4.4.1.1 to 4.4.1.4).

**Table 4.4.1.1 Toronto-East York District-Salt Usage**

| YEAR        | DEPOT 1<br>Arterials | DEPOT 6<br>Arterials | DEPOT 7<br>Arterials | TEY DISTRICT<br>TORONTO<br>AREA 1-Locals | TEY DISTRICT<br>TORONTO<br>AREA 2-Locals | TOTAL     |
|-------------|----------------------|----------------------|----------------------|--|--|-----------|
| 1999 - 2000 | 6,023.00             | 4,722.00             | 4,594.00             | 20,357.00                                | # 15,288.56                              | 50,984.56 |
| 2000 - 2001 | 10,352.00            | 8,932.00             | 6,816.00             | 15,905.00                                | # 17,277.4                               | 59,282.40 |
| 2001 - 2002 | 6045.55              | 3575.05              | 2,432.66             | 2,011.80                                 | 5,155.76                                 | 18,866.34 |
| 2002 - 2003 | 12,828.00            | 10,039.07            | 7,567.99             | 20826.94                                 | 20,449.99                                | 71,711.99 |
| 2003 - 2004 | 9,229.35             | 8,580.77             | 6,837.51             | 6,030.31                                 | 11,838.62                                | 42,516.56 |
| 2004 - 2005 | 8,712.31             | 9,276.96             | 6,782.00             | 4,152.22                                 | 10,459.00                                | 39,382.49 |
| 2005 - 2006 | 6,458.90             | 5,483.74             | 3,558                | 2,833.94                                 | 3924.08                                  | 22,258.66 |
| 2006 - 2007 | 6,597.55             | 8,604.00             | 4,873                | 5,767.07                                 | 6,445.32                                 | 32,286.94 |
| 2007 - 2008 | 10,553.23            | 12984.97             | 7,296.00             | 9,756.36                                 | 10,000.00                                | 50,590.56 |
| 2008 - 2009 | 7,766.00             | 9,277.00             | 6,300.00             | 7,834.00                                 | 7,800.00                                 | 38,977.00 |
| 2009 - 2010 | 3,979.43             | 4,960.50             | 2,640.00             | 4,198.50                                 | 4,381.00                                 | 20,159.43 |
| 2010 - 2011 | 8083.72              | 10,770.00            | 8259.00              | 11,439.15                                | 6654.87                                  | 45,206.74 |
| 2011 - 2012 | 3157.34              | 3450.12              | 2480                 | 3980.69                                  | 3598.32                                  | 16,666.47 |
| 2012 - 2013 | 6348.00              | 7489.00              | 5870.00              | 8203.00                                  | 5643.00                                  | 33553.00  |
| 2013 - 2014 | 10218.04             | 12980.11             | 10765.00             | 14751.37                                 | 12163.63                                 | 60878.15  |
| 2014 - 2015 | 7143.01              | 8520.22              | 7917.00              | 9293.29                                  | 8729.79                                  | 41603.31  |
| 2015 - 2016 | 4106.00              | 6035.00              | 8150.00              | 4091.00                                  |  | 22382.00  |

# Estimated seasonal figure

**Table 4.4.1.2 Etobicoke-York District-Salt Usage**

| YEAR        | DEPOT 5   | WEST DISTRICT<br>Locals | TOTAL     |
|-------------|-----------|-------------------------|-----------|
| 1999 – 2000 | 9,283.96  | 26,478.66               | 35,762.62 |
| 2000 – 2001 | 13,163.80 | 28,771.44               | 41,935.24 |
| 2001 – 2002 | 9,907.83  | 2,529.89                | 12,437.72 |
| 2002 – 2003 | 11,085.77 | 29,976.75               | 41,062.52 |

| YEAR  | DEPOT 5   |            | DEPOT 9   |            | ETOBICOKE-YORK<br>DISTRICT<br>INHOUSE<br>Locals | TOTAL     |
|---|-----------|------------|-----------|------------|---|-----------|
|   | Arterials | Collectors | Arterials | Collectors |   |           |
| 2003 - 2004   | 3,303.29  | 5,692.63   | 5,938.99  | 4,295.28   | 3,156.53  | 22,386.72 |
| New District Boundary Changes in 2004 – 2005 season |           |            |           |            |   |           |
| 2004 - 2005   | 2,463.11  | 6,054.03   | 4,559.20  | 12,340.68  | 6,035.80  | 31,452.82 |
| 2005 - 2006   | 2,417.26  | 4,373.42   | 5,038.50  | 6,569.62   | 2,437.73  | 20,836.53 |
| 2006 - 2007   | 3,579.78  | 4,745.28   | 5,275.39  | 6,992.96   | 4,900.81  | 25,494.22 |
| 2007 - 2008   | 5,634.60  | 9,621.28   | 8,538.10  | 14,741.58  | 10,464.61                                       | 49,000.82 |
| 2008 - 2009   | 6,896.18  | 7,860.15   | 9,495.47  | 7,340.48   | 6,614.90  | 38,207.18 |
| 2009 - 2010   | 3,078.35  | 4,014.63   | 5,661.44  | 4,726.58   | 2,168.97  | 19,649.92 |
| 2010 - 2011   | 6,578.87  | 4,607.78   | 6,742.29  | 6,406.09   | 7,247.80  | 31,582.83 |
| 2011 - 2012   | 2,303.98  | 1,613.68   | 2,045.91  | 2,769.85   | 592.67  | 9,326.09  |
| 2012 - 2013   | 5,144.86  | 3,429.91   | 7,154.42  | 5,556.93   | 5,382.34  | 26,668.46 |
| 2013 – 2014   | 11,013.06 | 7,342.04   | 12,427.07 | 8,284.72   | 7,358.50  | 46,425.39 |
| 2014 - 2015   | 6,319.66  | 6,212.74   | 6,481.23  | 3,910.37   | 3,912.40  | 26,835.40 |
| 2015 - 2016   | 5,046.46  | 3,468.37   | 4,857.37  | 2,529.09   | 2,878.75  | 18,790.04 |

**Table 4.4.1.3 North York District-Salt Usage**

| YEAR        | DEPOT 2   | DEPOT 3   | NORTH DISTRICT | TOTAL     |
|-------------|-----------|-----------|----------------|-----------|
| 1999 – 2000 | 6,773.40  | 4,110.60  | 10,529.00      | 21,413.00 |
| 2000 – 2001 | 10,467.00 | 5,987.00  | 15,968.80      | 32,422.80 |
| 2001 – 2002 | 4,328.58  | 2,660.12  | 7,190.03       | 14,178.73 |
| 2002 – 2003 | 13,008.92 | 11,499.77 | 23,844.83      | 48,353.52 |

| YEARS       | DEPOT 2<br>Arterials | DEPOT 3<br>Arterials | NORTH DISTRICT  |                 | TOTAL     |
|-------------|----------------------|----------------------|-----------------|-----------------|-----------|
|             |                      |                      | INGRAM<br>DEPOT | ORIOLE<br>DEPOT |           |
|             |                      |                      | Locals          | Locals          |           |
| 2003 – 2004 | 5,960.92             | 3,664.18             | 4,440.23        | 5,309.46        | 19,374.79 |
| 2004 – 2005 | 10,269.00            | 10,449.57            | 8,969.61        | 10,874.29       | 40,562.47 |

|             |           |           |          |           |           |
|-------------|-----------|-----------|----------|-----------|-----------|
| 2005 – 2006 | 6,056.27  | 4,788.37  | 4,725    | 8,783.24  | 24,353.52 |
| 2006 - 2007 | 6,412.55  | 4,547.24  | 7,852.64 | 8,987.28  | 27,799.71 |
| 2007 - 2008 | 12,182.42 | 8,394.33  | 9283.57  | 14,182.33 | 44,042.65 |
| 2008 - 2009 | 14,707.19 | 14,024.50 | 6554.24  | 9,990.68  | 45,276.61 |
| 2009 - 2010 | 5,817.56  | 7,013.50  | 3,855.83 | 5,521.87  | 22,208.76 |
| 2010 - 2011 | 10,359.93 | 9686.51   | 3541.16  | 5623.19   | 29,210.79 |
| 2011 - 2012 | 6467.32   | 6643.21   | 3662.47  | 4044.30   | 20,817.30 |
| 2012 - 2013 | 12015.44  | 12128.63  | 2416.15  | 2990.87   | 29551.09  |
| 2013 – 2014 | 22296.44  | 18824.51  | 3607.40  | 4360.06   | 49088.14  |
| 2014 - 2015 | 14422.84  | 13153.00  | 4603.12  | 5223.18   | 37402.14  |
| 2015 - 2016 | 8098.54   | 9488.92   | 2201.19  | 3182.60   | 22971.25  |

**Table 4.4.1.4 Scarborough District-Salt Usage**

| YEAR        | DEPOT 4<br>Arterials | DEPOT 4A<br>Locals | ELLESMERE &<br>MORNINGSIDE YARDS<br>In-House<br>Locals | TOTAL     |
|-------------|----------------------|--------------------|--|-----------|
| 1999 - 2000 | 11,104.00            | 0.00               | 23,605.00  | 34,709.00 |
| 2000 - 2001 | 17,273.27            | 12,519.87          | 13,160.97  | 42,954.11 |
| 2001 - 2002 | 5,913.71             | 2,838.40           | 2,638.20   | 11,390.31 |
| 2002 - 2003 | 24,595.12            | 12,778.52          | 9,728.13   | 47,101.77 |

| YEAR        | DEPOT 4<br>Arterials | DEPOT 8<br>Arterials | ELLESMERE &<br>MORNINGSIDE YARDS<br>In-House<br>Locals | TOTAL     |
|-------------|----------------------|----------------------|--|-----------|
| 2003 – 2004 | 9,163.77             | 9,436.43             | 5,273.80   | 23,874.00 |
| 2004 – 2005 | 16,245.70            | 12,845.04            | 7,304.55   | 36,035.29 |
| 2005 – 2006 | 12,886.86            | 8,324.92             | 6,012.74   | 27,224.52 |
| 2006 - 2007 | 10,342.59            | 9,436.81             | 4,720.52   | 24,499.92 |
| 2007 - 2008 | 21,037.09            | 18,399.28            | 12,574.41  | 52,010.47 |
| 2008 - 2009 | 23,277.15            | 17,998.21            | 9,244.40   | 29,686.80 |
| 2009 - 2010 | 13,286.24            | 8,775.80             | 5,983.78   | 28,045.82 |
| 2010 - 2011 | 25,075.80            | 15,952.81            | 11,782.93  | 52,811.54 |
| 2011 - 2012 | 13,344.74            | 9,666.65             | 5,228.40   | 28,239.79 |
| 2012 - 2013 | 17,804.83            | 12,738.07            | 6,036.43   | 36,579.33 |
| 2013 – 2014 | 24548.77             | 21774.07             | 15881.32   | 62204.16  |
| 2014 - 2015 | 18582.37             | 13188.86             | 7973.52  | 39744.75  |
| 2015 - 2016 | 9239.62              | 9379.98              | 5376.71  | 23996.31  |

**Table 4.4.1.5 Salt Usage – Arterial Roads**

| YEAR  | SALT SPREAD IN TONNES |           |           |           |           |           |          |           |           |            |
|---|-----------------------|-----------|-----------|-----------|-----------|-----------|----------|-----------|-----------|------------|
|   | DEPOT 1               | DEPOT 2   | DEPOT 3   | DEPOT 4   | DEPOT 5   | DEPOT 6   | DEPOT 7  | DEPOT 8   | DEPOT 9   | TOTAL      |
| 1986 – 1987   | 5,272.65              | 5,754.03  | 6,340.66  | 7,672.03  | 5,530.65  | 4,369.62  | 4,018.48 | N/A       | N/A       | 38,958.12  |
| 1987 – 1988   | 5,103.41              | 6,332.46  | 7,502.54  | 7,238.55  | 5,219.21  | 4,089.71  | 4,011.51 | N/A       | N/A       | 39,497.39  |
| 1988 – 1989   | 4,033.09              | 6,930.81  | 6,459.99  | 6,952.13  | 6,487.64  | 4,242.00  | 4,243.79 | N/A       | N/A       | 39,349.45  |
| 1989 – 1990   | 7,130.00              | 9,553.22  | 9,978.97  | 11,244.20 | 9,781.43  | 5,940.84  | 6,852.75 | N/A       | N/A       | 60,481.41  |
| 1990 – 1991   | 4,743.10              | 10,552.19 | 9,313.00  | 7,567.30  | 10,410.86 | 5,877.37  | 6,783.76 | N/A       | N/A       | 55,247.58  |
| 1991 – 1992   | 5,297.36              | 8,532.35  | 8,192.33  | 8,219.48  | 7,347.81  | 3,978.14  | 5,723.97 | N/A       | N/A       | 47,291.44  |
| 1992 – 1993   | 7,817.34              | 12,543.17 | 10,394.03 | 11,703.91 | 9,583.83  | 5,504.69  | 7,698.75 | N/A       | N/A       | 65,245.72  |
| 1993 – 1994   | 8,139.89              | 11,015.42 | 11,830.93 | 11,079.77 | 9,869.07  | 6,300.12  | 9,237.40 | N/A       | N/A       | 67,472.60  |
| 1994 – 1995   | 3,604.61              | 5,774.62  | 5,615.95  | 5,838.74  | 4,559.76  | 2,694.48  | 3,601.05 | N/A       | N/A       | 31,689.21  |
| 1995 – 1996   | 6,256.72              | 9,023.69  | 7,443.40  | 8,752.61  | 7,129.09  | 3,837.37  | 4,809.87 | N/A       | N/A       | 47,252.75  |
| 1996 – 1997   | 7,530.00              | 12,582.00 | 8,426.00  | 10,749.00 | 9,093.90  | 5,629.00  | 6,436.28 | N/A       | N/A       | 60,446.18  |
| 1997 – 1998   | 3,738.00              | 6,448.67  | 6,500.00  | 6,375.20  | 5,527.41  | 2,927.00  | 5,376.51 | N/A       | N/A       | 36,892.79  |
| 1998 – 1999   | 7,118.00              | 12,548.82 | 7,000.00  | 9,606.00  | 9,596.12  | 5,985.00  | 5,585.19 | N/A       | N/A       | 57,439.13  |
| 1999 – 2000   | 6,023.00              | 6,773.40  | 4,110.00  | 11,104.00 | 9,283.96  | 4,722.00  | 4,594.00 | N/A       | N/A       | 46,610.36  |
| 2000 – 2001   | 10,352.00             | 10,467.00 | 5,987.00  | 17,273.27 | 13,163.80 | 8,932.00  | 6,816.00 | N/A       | N/A       | 72,991.07  |
| 2001 – 2002   | 6045.55               | 4,328.58  | 2,660.12  | 5,913.71  | 9,907.83  | 2,962.71  | 2,432.66 | N/A       | N/A       | 34,251.16  |
| 2002 – 2003   | 12,828.00             | 13,008.92 | 11,499.77 | 24,595.12 | 11,085.77 | 10,039.07 | 7,567.99 | N/A       | N/A       | 90,624.64  |
| New District Boundary Changes and Contracts beginning in 2003-2004 season |                       |           |           |           |           |           |          |           |           |            |
| 2003 – 2004   | 9,229.35              | 5,960.92  | 3,664.18  | 9,163.77  | 3,303.29  | 8,580.77  | 6,837.51 | 9,436.43  | 5,938.99  | 62,115.21  |
| 2004 – 2005   | 8,712.31              | 10,269.00 | 19,449.57 | 16,245.70 | 2463.11   | 9,276.96  | 6,782.00 | 12,845.04 | 4559.20   | 90,602.89  |
| 2005 - 2006   | 6,458.90              | 6,056.27  | 4,788.37  | 12,886.86 | 2417.26   | 5,483.74  | 3,558.00 | 8324.92   | 5,038.50  | 55,012.82  |
| 2006 - 2007   | 6,597.55              | 6,412.55  | 4,547.24  | 10,342.59 | 3,579.78  | 8,604.00  | 4,873    | 9,436.81  | 5,275.39  | 59,668.91  |
| 2007 - 2008   | 10,553.23             | 12,182.42 | 8,394.33  | 21,037.09 | 5,634.60  | 12,984.97 | 7,296.00 | 18,399.28 | 8,538.10  | 105,020.02 |
| New Contracts beginning in 2008-2009 season.                              |                       |           |           |           |           |           |          |           |           |            |
| 2008 - 2009   | 7,766.00              | 14,707.19 | 14,024.50 | 23,277.15 | 14,756.33 | 9,277.00  | 6,300.00 | 17,998.21 | 16,835.97 | 124,932.35 |
| 2009 - 2010   | 3,979.43              | 5,817.56  | 7,013.50  | 13,286.24 | 7,092.98  | 4,960.50  | 2,640.00 | 8,775.80  | 10,387.97 | 64,493.98  |
| 2010 - 2011   | 8083.72               | 10,359.93 | 9686.51   | 25,075.80 | 6578.87   | 10,770.00 | 8259.00  | 15,952.81 | 6742.29   | 101,508.90 |
| 2011 - 2012   | 3157.34               | 6467.32   | 6643.21   | 13,344.74 | 3917.66   | 3450.12   | 2480     | 9,666.65  | 4815.76   | 53,942.80  |

|  |          |          |          |           |          |          |          |           |          |           |
|--|----------|----------|----------|-----------|----------|----------|----------|-----------|----------|-----------|
| 2012 - 2013                                  | 6348.00  | 12015.44 | 12128.63 | 17,804.83 | 5144.86  | 7489.00  | 5870.00  | 12,738.07 | 7154.42  | 86,693.25 |
| 2013 - 2014                                  | 10218.04 | 22296.44 | 18824.51 | 24548.77  | 11013.06 | 12980.11 | 10765.00 | 21774.07  | 12427.07 | 144847.07 |
| 2014 - 2015                                  | 7143.01  | 14422.84 | 13153.00 | 18582.37  | 6318.66  | 8520.22  | 7917.00  | 13188.86  | 6481.23  | 95727.19  |
| New Contracts beginning in 2015-2016 season. |          |          |          |           |          |          |          |           |          |           |
| 2015 - 2016                                  | 4106.00  | 8098.54  | 9488.92  | 9239.62   | 5056.46  | 6035.00  | 8150.00  | 9379.98   | 4857.37  | 64411.89  |

**Table 4.4.1.6 Total Salt Usage by Districts and City-Wide**

| YEAR  | SALT SPREAD IN TONNES |                |            |             |            |
|---|-----------------------|----------------|------------|-------------|------------|
|   | Toronto-East York     | Etobicoke-York | North York | Scarborough | TOTAL      |
| 1986 – 1987   | 47,723.14             | 17,343.65      | 35,364.69  | 23,949.43   | 124,380.91 |
| 1987 – 1988   | 33,925.63             | 20,495.21      | 37,351.00  | 27,849.55   | 119,621.39 |
| 1988 – 1989   | 43,641.88             | 28,166.64      | 36,770.80  | 19,807.13   | 128,386.45 |
| 1989 – 1990   | 65,973.59             | 27,794.43      | 43,132.19  | 28,412.20   | 165,312.41 |
| 1990 – 1991   | 48,267.23             | 37,278.86      | 45,365.19  | 23,132.30   | 154,043.58 |
| 1991 – 1992   | 29,755.47             | 22,040.81      | 37,324.68  | 23,407.48   | 112,528.44 |
| 1992 – 1993   | 41,611.78             | 27,526.83      | 47,437.20  | 31,896.91   | 148,472.72 |
| 1993 – 1994   | 43,048.41             | 31,568.07      | 45,546.35  | 29,483.77   | 149,646.60 |
| 1994 – 1995   | 24,035.14             | 24,377.76      | 27,190.57  | 19,526.74   | 95,130.21  |
| 1995 – 1996   | 38,039.96             | 24,485.09      | 37,867.09  | 27,584.61   | 127,976.75 |
| 1996 – 1997   | 49,500.65             | 32,185.90      | 41,008.00  | 34,890.00   | 157,584.55 |
| 1997 – 1998   | 35,260.29             | 17,545.41      | 27,948.67  | 21,184.20   | 101,938.57 |
| 1998 – 1999   | 45,763.55             | 37,242.12      | 36,548.82  | 20,856.00   | 140,410.49 |
| 1999 – 2000   | 50,984.56             | 35,762.62      | 21,413.00  | 34,709.00   | 142,869.18 |
| 2000 – 2001   | 59,282.40             | 41,935.24      | 32,422.80  | 42,954.11   | 176,594.55 |
| 2001 – 2002   | 18,886.34             | 12,437.72      | 14,178.73  | 11,390.31   | 56,893.10  |
| 2002 – 2003   | 71,711.99             | 41,062.52      | 48,353.52  | 47,101.77   | 208,229.80 |
| New District Boundary Changes and Contracts beginning in 2003-2004 season |                       |                |            |             |            |
| 2003 – 2004   | 42,516.56             | 22,386.72      | 19,374.79  | 23,874.00   | 108,152.07 |
| 2004 – 2005   | 39,382.49             | 31,452.82      | 40,562.47  | 36,035.29   | 147,433.07 |
| 2005 - 2006   | 22,258.86             | 20,836.53      | 24,353.42  | 27,224.52   | 94,673.33  |
| 2006 - 2007   | 32,286.94             | 25,494.22      | 27,799.71  | 24,499.92   | 89,112.17  |
| 2007 - 2008   | 50,590.96             | 49,000.82      | 44,042.65  | 52,010.47   | 195,644.90 |
| New Contracts beginning in 2008-2009 season.                              |                       |                |            |             |            |
| 2008 – 2009   | 38,977.00             | 33,189.38      | 45,276.61  | 29,686.80   | 147,129.79 |
| 2009 - 2010   | 11,579.93             | 19,649.92      | 22,208.76  | 28,045.82   | 81,484.43  |
| 2010 - 2011   | 45,206.74             | 31,582.83      | 29,210.19  | 52,811.54   | 158,811.30 |
| 2011 - 2012   | 16,666.47             | 9326.09        | 20,817.30  | 28,239.79   | 75049.65   |
| 2012 - 2013   | 33553.00              | 26668.46       | 29551.09   | 36,579.33   | 126,351.90 |
| 2013 – 2014   | 60878.15              | 46425.39       | 49088.41   | 62204.16    | 218596.1   |
| 2014 - 2015   | 41603.31              | 26835.40       | 37402.14   | 39744.75    | 145585.60  |
| New Contracts beginning in 2015-2016 season.                              |                       |                |            |             |            |
| 2015 - 2016   | 22,382.00             | 18790.04       | 22971.25   | 23996.31    | 88139.60   |

**Table 4.4.1.7 Salt Brine Used By District (Pre-wetting & DLA)**

| BRINE USAGE(litres) |   |   |                             |                        |                         |              |
|---------------------|---|---|-----------------------------|------------------------|-------------------------|--------------|
| SEASON              | Toronto-East<br>York District<br>Area 1 | Toronto-East<br>York District<br>Area 2 | Etobicoke-<br>York District | North York<br>District | Scarborough<br>District | TOTAL        |
| 2002 - 2003         | n/a                                     | 570.00                                  | n/a                         | n/a                    | 58 745.60               | 59 315.60    |
| 2003 - 2004         | 355.34                                  | 68 685.53                               | n/a                         | 242 948.22             | 200 164.71              | 512 153.80   |
| 2004 - 2005         | 638,000                                 | 243,000.00                              | 682,394.00                  | 440,152.60             | 227,743.10              | 2,231,339.00 |
| 2005 - 2006         | 312,157                                 | 250,224.20                              | 610,739.86                  | 276,361.50             | 388,676.17              | 1,838,158.60 |
| 2006 - 2007         | 424,073                                 | 216,902.50                              | 390,416.69                  | 451,884.90             | 419,507.09              | 1,902,784.00 |
| 2007 - 2008         | 658,873.00                              | 300,000.00                              | 797,622.31                  | 543,111.90             | 272,332.40              | 2,571,939.61 |
| 2008 – 2009         | 542,005.00                              | 204,000.00                              | 909,553.74                  | 480,000                | 160,877.80              | 2,296,435    |
| 2009 – 2010         | 311,439.00                              | 201,174.70                              | 712,554.13                  | 393,911.10             | 62,156.46               | 1,681,235.39 |
| 2010 - 2011         | 573,512.00                              | 231,867.50                              | 749,391.98                  | 389,274.95             | 260,989.24              | 2,205,036.67 |
| 2011 - 2012         | 578,921.50                              | 218,999                                 | 942386.80                   |                        | 769,773.95              | 2,510,081    |
| 2012 – 2013         | 523732.00                               | 254427.00                               | 1445837.7                   | 723,076.00             | 474,763.80              | 3,421,836    |
| 2013 – 2014         | 371515.10                               | 161112.60                               | 1015625.86                  |                        | 309957.40               | 1858210.96   |
| 2014 - 2015         | 492876.00                               | 140322.20                               | 1226257.84                  | 784347.00              | 101286.30               | 2745089.34   |
| 2015 – 2016         | 1018724.00                              | 334393.00                               | 1626469.44                  | 1647855.83             | 389473.10               | 5016915.37   |



## **4.4.2 Materials Storage**

Tables 4.4.2.1 to 4.4.2.4 summarize the existing in-house and private materials storage facilities and provide an indication of the conditions identified at these facilities.

**4.4.2.1  
SALT STORAGE FACILITIES  
(2016)**

| YARD/DEPOT FACILITY               |                       | FACILITIES AUDIT<br>SALT STORAGE REVIEW |                |                  |                |                 |           |             |             |           |
|-----------------------------------|-----------------------|---|----------------|------------------|----------------|-----------------|-----------|-------------|-------------|-----------|
| LOCATION                          | OWNERSHIP<br>CITY - C | Salt Storage                            | Salt Structure | Floor Impervious | Loading Inside | Door / Overhang | Lighting  | Ventilation | Loading Pad | Grade Pad |
| TORONTO-EAST YORK AREA 1          |                       |   |                |                  |                |                 |           |             |             |           |
| Depot 1 - 777 Bayview Ave.        | C                     | Y                                       | Y              | Y                | N              | Y               | Y         | Y           | Y           | Y         |
| Depot 6 - 7 Leslie St.            | C                     | Y                                       | Y              | Y                | N              | Y               | Y         | Y           | Y           | Y         |
| 433 Eastern Avenue Yard           | C                     | Y                                       | Y              | Y                | Y              | N               | Y         | Y           | Y           | Y         |
| TORONTO-EAST YORK AREA 2          |                       |   |                |                  |                |                 |           |             |             |           |
| Depot 7 - 677 Wellington St. W.   | C                     | Y                                       | Y              | Y                | N              | Y               | Y         | Y           | Y           | Y         |
| 1401 Castlefield Ave. Yard        | C                     | N                                       |                |                  |                |                 |           |             |             |           |
| 1116 King St. Yard                | C                     | N                                       |                |                  |                |                 |           |             |             |           |
| ETOBICOKE-YORK DISTRICT           |                       |   |                |                  |                |                 |           |             |             |           |
| Depot 5 - 40 Boncer Dr.           | C                     | Y                                       | Y              | Y                | N              | Y               | Y         | Y           | Y           | Y         |
| Depot 9 - 49 Toryork Dr.          | C                     | Y                                       | Y              | Y                | N              | Y               | Y         | Y           | Y           | Y         |
| Depot 10 - 150 Disco Road         | C                     | Y                                       | Y              | Y                | N              | Y               | Y         | Y           | Y           | Y         |
| Toryork Yard - 61 Toryork Dr.     | C                     | N                                       |                |                  |                |                 |           |             |             |           |
| 320 Bering Avenue Yard            | C                     | Y                                       | Y              | Y                | N              | N               | N         | N           | Y           | Y         |
| NORTH YORK DISTRICT               |                       |   |                |                  |                |                 |           |             |             |           |
| Depot 2 - 64 Murray Rd.           | C                     | Y                                       | Y              | Y                | N              | Y               | Y         | Y           | Y           | Y         |
| 64 Murray Rd. Yard                | C                     | N                                       |                |                  |                |                 |           |             |             |           |
| Depot 3 - 195 Bermondsey Rd.      | C                     | Y                                       | Y              | Y                | Y              | Y               | Y         | Y           | Y           | Y         |
| Depot 10 - 2750 Old Leslie St.    | C                     | Y                                       | Y              | Y                | Y              | Y               | Y         | Y           | Y           | Y         |
| Oriole Yard - 2751 Old Leslie St. | C                     | N                                       |                |                  |                |                 |           |             |             |           |
| Depot 11 - 86 Ingram Dr.          | C                     | Y                                       | Y              | Y                | N              | Y               | Y         | Y           | Y           | Y         |
| SCARBOROUGH DISTRICT              |                       |   |                |                  |                |                 |           |             |             |           |
| Depot 4 - 1 Nantucket Blvd.       | C                     | Y                                       | Y              | Y                | N              | Y               | Y         | Y           | Y           | Y         |
| Depot 8 - 8270 Sheppard Ave       | C                     | Y                                       | Y              | Y                | N              | Y               | Y         | Y           | Y           | Y         |
| Depot 13 - 1050 Ellesmere         | C                     | Y                                       | Y              | Y                | N              | Y               | Y         | Y           | Y           | Y         |
| Depot 14 - 891 Morningside Ave.   | C                     | Y                                       | Y              | Y                | N              | Y               | Y         | Y           | Y           | Y         |
| TOTAL SITES                       | 21                    | 21                                      | 16             | 16               | 16             | 16              | 16        | 16          | 16          | 16        |
| SUMMARY                           | C - 21/21             | Y - 16/21                               | Y - 16/16      | Y - 16/16        | Y - 4/16       | Y - 14/16       | Y - 16/16 | Y - 16/16   | Y - 16/16   | Y - 16/16 |
| PERCENTAGE (%)                    | 100                   | 76                                      | 100            | 100              | 25             | 88              | 100       | 100         | 100         | 100       |

 - Not Applicable


**TABLE 4.4.2.2**  
**SALT STORAGE FACILITIES – OUTDOOR STORAGE**  
**(2016)**

| YARD/DEPOT FACILITY               |                       | FACILITIES AUDIT<br>OUTSIDE SALT STORAGE |                      |
|-----------------------------------|-----------------------|--|----------------------|
| LOCATION                          | OWNERSHIP<br>CITY – C | Loaded On<br>Impervious Pad              | Salt Pile<br>Covered |
| TORONTO-EAST YORK DISTRICT AREA 1 |                       |  |                      |
| Depot 1 – 777 Bayview Ave.        | C                     |  |                      |
| Depot 6 – 7 Leslie St.            | C                     |  |                      |
| 433 Eastern Avenue Yard           | C                     |  |                      |
| TORONTO-EAST YORK DISTRICT AREA 2 |                       |  |                      |
| Depot 7 – 677 Wellington St. W.   | C                     |  |                      |
| 1401 Castlefield Ave. Yard        | C                     |  |                      |
| 1116 King St. Yard                | C                     |  |                      |
| ETOBICOKE-YORK DISTRICT           |                       |  |                      |
| Depot 5 – 40 Boncer Dr.           | C                     |  |                      |
| Depot 9 – 49 Toryork Dr.          | C                     |  |                      |
| Depot 10 - 150 Disco Road         | C                     |  |                      |
| Emery Yard – 61 Toryork Dr.       | C                     |  |                      |
| 320 Bering Avenue Yard            | C                     |  |                      |
| NORTH YORK DISTRICT               |                       |  |                      |
| Depot 2 – 64 Murray Rd.           | C                     |  |                      |
| 64 Murray Rd. Yard                | C                     |  |                      |
| Depot 3 – 195 Bermondsey Rd.      | C                     |  |                      |
| Depot 11 – 2750 Old Leslie St.    | C                     |  |                      |
| Oriole Yard – 2751 Old Leslie St. | C                     |  |                      |
| Depot 12 – 86 Ingram Dr.          | C                     |  |                      |
| SCARBOROUGH DISTRICT              |                       |  |                      |
| Depot 4 – 1 Nantucket Blvd.       | C                     |  |                      |
| Depot 8 – 8270 Sheppard Ave       | C                     |  |                      |
| Depot 13 – 1050 Ellesmere Rd      | C                     |  |                      |
| Depot 14 - 891 Morningside Ave.   | C                     |  |                      |
| TOTAL SITES                       | 21                    | 0  | 0                    |
| SUMMARY                           | C – 21/21             |  |                      |
| PERCENTAGE (%)                    | 100                   |  |                      |

 - Not Applicable


**TABLE 4.4.2.3  
SAND/SALT STORAGE REVIEW  
(2016)**

| YARD/DEPOT FACILITY                        |                       | FACILITIES AUDIT<br>SAND/SALT STORAGE REVIEW |                     |                      |                 |        |
|--|-----------------------|--|---------------------|----------------------|-----------------|--------|
|  |                       |  | Inside Storage      |                      | Outside Storage |        |
| LOCATION                                   | OWNERSHIP<br>CITY – C | Salt/Sand<br>Storage                         | Inside<br>Structure | On Impervious<br>Pad | Pad             | Tarped |
| <b>Toronto-East York District – Area 1</b> |                       |  |                     |                      |                 |        |
| Depot 1 – 777 Bayview Ave.                 | C                     | Y  | Y                   | Y                    |                 |        |
| Depot 6 – 7 Leslie St.                     | C                     | Y  | Y                   | Y                    |                 |        |
| 433 Eastern Avenue Yard                    | C                     | Y  | Y                   | Y                    |                 |        |
| <b>Toronto-East York District – Area 2</b> |                       |  |                     |                      |                 |        |
| Depot 7 – 677 Wellington St. W.            | C                     | N  |                     |                      |                 |        |
| 1401 Castlefield Ave. Yard                 | C                     | Y  | Y                   | Y                    |                 |        |
| 1116 King St. Yard                         | C                     | N  |                     |                      |                 |        |
| <b>ETOBICOKE-YORK DISTRICT</b>             |                       |  |                     |                      |                 |        |
| Depot 5 – 40 Boncer Drive.                 | C                     | Y  | Y                   | Y                    |                 |        |
| Depot 9 – 49 Toryork Dr.                   | C                     | Y  | Y                   | Y                    |                 |        |
| Depot 11 - 150 Disco Road                  | C                     | Y  | Y                   | Y                    |                 |        |
| Toryork Yard – 61 Toryork Dr.              | C                     | N  | Y                   | Y                    |                 |        |
| 320 Bering Avenue Yard                     | C                     | N  |                     |                      |                 |        |
| <b>NORTH YORK DISTRICT</b>                 |                       |  |                     |                      |                 |        |
| Depot 2 – 64 Murray Rd.                    | C                     | Y  | Y                   | Y                    |                 |        |
| 64 Murray Rd. Yard                         | C                     | Y  |                     |                      |                 |        |
| Depot 3 – 195 Bermondsey Rd.               | C                     | Y  | Y                   | Y                    |                 |        |
| Depot 11 – 2750 Old Leslie St. *           | C                     | Y  | Y                   | Y                    |                 |        |
| Oriole Yard – 2751 Old Leslie St.          | C                     | N  |                     |                      |                 |        |
| Depot 12 - 86 Ingram Dr. *                 | C                     | Y  | Y                   | Y                    |                 |        |
| <b>SCARBOROUGH DISTRICT</b>                |                       |  |                     |                      |                 |        |
| Depot 4 – 1 Nantucket Blvd.                | C                     | Y  | Y                   | Y                    |                 |        |
| Depot 8 – 8270 Sheppard Ave.               | C                     | Y  | Y                   | Y                    |                 |        |
| Depot 13 – 1050 Ellesmere Rd.              | C                     | Y  | Y                   | Y                    |                 |        |
| Depot 14 – 891 Morningside Ave.            | C                     | Y  | Y                   | Y                    |                 |        |
| TOTAL SITES                                | 21                    | 21   | 16                  | 16                   |                 |        |
| SUMMARY                                    | C - 21/21             | Y – 16/21                                    | Y – 16/16           | Y – 16/16            |                 |        |
| PERCENTAGE (%)                             | 100                   | 76   | 100                 | 100                  |                 |        |

 -Not Applicable

**TABLE 4.4.2.4  
FACILITIES AUDIT – SITE DRAINAGE ISSUES  
(2016)**

| YARD/DEPOT FACILITY                 |                       | FACILITIES AUDIT<br>SITE DRAINAGE ISSUES |                           |                        |          |
|-------------------------------------|-----------------------|--|---------------------------|------------------------|----------|
| LOCATION                            | OWNERSHIP<br>CITY – C | Vehicle Washing<br>On Site               | Washing<br>Inside/Outside | Oil/Water<br>Separator | Drainage |
| Toronto-East York District Area 1 1 |                       |  |                           |                        |          |
| Depot 1 – 777 Bayview Ave.          | C                     | Y  | OUTSIDE                   | Y                      | STORM    |
| Depot 6 – 7 Leslie St.              | C                     | Y  | OUTSIDE                   | Y                      | STORM    |
| 433 Eastern Avenue Yard             | C                     | Y  | INSIDE                    | Y                      | SANITARY |
| Toronto-East York District Area 2   |                       |  |                           |                        |          |
| Depot 7 – 677 Wellington St. W.     | C                     | N  |                           |                        |          |
| 1401 Castlefield Ave. Yard          | C                     | N  |                           |                        |          |
| 1116 King St. Yard                  | C                     | Y  | INSIDE                    | Y                      | SANITARY |
| ETOBICOKE-YORK DISTRICT             |                       |  |                           |                        |          |
| Depot 5 – 40 Boncer Dr.             | C                     | Y  | OUTSIDE                   | Y                      | STORM    |
| Depot 9 –49 Toryork Dr.             | C                     | Y  | OUTSIDE                   | Y                      | STORM    |
| Depot 11 - 150 Disco Road           | C                     | N  |                           |                        |          |
| Toryork Yard – 61 Toryork Dr.       | C                     | Y  | INSIDE                    | Y                      | SANITARY |
| 320 Bering Avenue Yard              | C                     | Y  | INSIDE                    | Y                      | SANITARY |
| NORTH YORK DISTRICT                 |                       |  |                           |                        |          |
| Depot 2 – 64 Murray Rd.             | C                     | Y  | OUTSIDE                   | Y                      | STORM    |
| 64 Murray Rd. Yard                  | C                     | Y  | INSIDE                    | Y                      | STORM    |
| Depot 3 – 195 Bermondsey Rd.        | C                     | Y  | OUTSIDE                   | Y                      | STORM    |
| Depot 11 – 2750 Old Leslie St.      | C                     | Y  | OUTSIDE                   | Y                      | STORM    |
| Oriole Yard – 2751 Old Leslie St.   | C                     | Y  | INSIDE                    | Y                      | SANITARY |
| Depot 12 - 86 Ingram Dr.            | C                     | Y  | OUTSIDE                   | Y                      | STORM    |
| SCARBOROUGH DISTRICT                |                       |  |                           |                        |          |
| Depot 4 – 1 Nantucket Blvd.         | C                     | Y  | OUTSIDE                   | Y                      | STORM    |
| Depot 8 – 8270 Sheppard Ave         | C                     | N  |                           |                        |          |
| Depot 13 – 1050 Ellesmere Rd        | C                     | Y  | OUTSIDE                   | N                      | SANITARY |
| Depot 14 – 891 Morningside Ave.     | C                     | Y  | INSIDE                    | Y                      | STORM    |
| TOTAL SITES                         | 21                    | 21                                       | 22                        | 22                     | 22       |
| SUMMARY                             | C – 21/21             | Y – 17/21                                | O – 9/17                  | Y – 16/17              | SAN-6/17 |
| PERCENTAGE (%)                      | 100                   | 81                                       | 53                        | 94                     | 35       |

 - Not Applicable