Stormceptor is protected by one or more of the following patents:

Canadian Patent No. 2,137,942
 Canadian Patent No. 2,175,277
 Canadian Patent No. 2,180,305
 Canadian Patent No. 2,180,338
 Canadian Patent No. 2,206,338
 Canadian Patent No. 2,327,768
 U.S. Patent No. 5,753,115
 U.S. Patent No. 5,849,181
 U.S. Patent No. 6,068,765
 U.S. Patent No. 6,371,690
 U.S. Patent No. 7,582,216
 U.S. Patent No. 7,666,303
 Australia Patent No. 693,164
 Australia Patent No. 707,133
 Australia Patent No. 729,096
 Australia Patent No. 779,401
 Australia Patent No. 2008,279,378
 Australia Patent No. 2008,288,900
 Indonesia Patent No. 0007058
 Japan Patent No. 3581233
 Japan Patent No. 9-11476
 Korean Patent No. 0519212
 Malaysia Patent No. 118987
 New Zealand Patent No. 314,646
 New Zealand Patent No. 583,008
 New Zealand Patent No. 583,583
 South African Patent No. 2010/00682
 South African Patent No. 2010/01796
 Other Patents Pending
Table of Contents

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2 – Stormceptor Operation & Components

3 – Stormceptor Identification

4 – Stormceptor Inspection & Maintenance
   Recommended Stormceptor Inspection Procedure
   Recommended Stormceptor Maintenance Procedure

5 – Contact Information (Stormceptor Licensees)
Congratulations!

Your selection of a Stormceptor® means that you have chosen the most recognized and efficient stormwater oil/sediment separator available for protecting the environment. Stormceptor is a pollution control device often referred to as a “Hydrodynamic Separator (HDS)” or an “Oil Grit Separator (OGS)”, engineered to remove and retain pollutants from stormwater runoff to protect our lakes, rivers and streams from the harmful effects of non-point source pollution.

1 – Stormceptor Overview

Stormceptor is a patented stormwater quality structure most often utilized as a treatment component of the underground storm drain network for stormwater pollution prevention. Stormceptor is designed to remove sediment, total suspended solids (TSS), other pollutants attached to sediment, hydrocarbons and free oil from stormwater runoff. Collectively the Stormceptor provides spill protection and prevents non-point source pollution from entering downstream waterways.

Key benefits of Stormceptor include:
- Removes sediment, suspended solids, debris, nutrients, heavy metals, and hydrocarbons (oil and grease) from runoff and snowmelt.
- Will not scour or re-suspend trapped pollutants.
- Provides sediment and oil storage.
- Provides spill control for accidents, commercial and industrial developments.
- Easy to inspect and maintain (vacuum truck).
- “STORMCEPTOR” is clearly marked on the access cover (excluding inlet designs).
- Relatively small footprint.
- 3rd Party tested and independently verified.
- Dedicated team of experts available to provide support.

Model Types:
- STC (Standard)
- STF (Fiberglass)
- EOS (Extended Oil Storage)
- OSR (Oil and Sand Removal)
- MAX (Custom designed unit, specific to site)

Configuration Types:
- Inlet unit (accommodates inlet flow entry, and multi-pipe entry)
- In-Line (accommodates multi-pipe entry)
- Submerged Unit (accommodates the site’s tailwater conditions)
- Series Unit (combines treatment in two systems)
Please Maintain Your Stormceptor

To ensure long-term environmental protection through continued performance as originally designed for your site, **Stormceptor must be maintained**, as any stormwater treatment practice does. The need for maintenance is determined through inspection of the Stormceptor. Procedures for inspection are provided within this document. Maintenance of the Stormceptor is performed from the surface via vacuum truck.

If you require information about Stormceptor, or assistance in finding resources to facilitate inspections or maintenance of your Stormceptor please call your local Stormceptor Licensee or Imbrium® Systems.

2 – Stormceptor Operation & Components

Stormceptor is a flexibly designed underground stormwater quality treatment device that is unparalleled in its effectiveness for pollutant capture and retention using patented flow separation technology.

Stormceptor creates a non-turbulent treatment environment below the insert platform within the system. The insert diverts water into the lower chamber, allowing free oils and debris to rise, and sediment to settle under relatively low velocity conditions. These pollutants are trapped and stored below the insert and protected from large runoff events for later removal during the maintenance procedure.

With thousands of units operating worldwide, Stormceptor delivers reliable protection every day, in every storm. The patented Stormceptor design prohibits the scour and release of captured pollutants, ensuring superior water quality treatment and protection during even the most extreme storm events. Stormceptor’s proven performance is backed by the longest record of lab and field verification in the industry.
Stormceptor Schematic and Component Functions
Below are schematics of two common Stormceptor configurations with key components identified and their functions briefly described.

<table>
<thead>
<tr>
<th>Figure 1. Inline Stormceptor</th>
<th>Figure 2. Inlet Stormceptor</th>
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</thead>
<tbody>
<tr>
<td>Access Cover</td>
<td>Inlet Grate</td>
</tr>
<tr>
<td>Orifice Plate</td>
<td>Oil Port</td>
</tr>
<tr>
<td>Weir</td>
<td>Safety Grate</td>
</tr>
<tr>
<td>18” Skirt</td>
<td>Fiberglass Insert</td>
</tr>
<tr>
<td>Inlet Drop Tee</td>
<td>Outlet Pipe</td>
</tr>
<tr>
<td>Precast Reinforced Concrete Structure</td>
<td>24”Ø Outlet Pipe</td>
</tr>
<tr>
<td>Fiberglass Insert</td>
<td>Removable Inlet Drop Tree</td>
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<tr>
<td>18” Skirt</td>
<td>Outlet Pipe</td>
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<tr>
<td>Inlet Grate</td>
<td>Orifice Plate</td>
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<td>Oil Port</td>
<td>Safety Grate</td>
</tr>
<tr>
<td>Safety Grate</td>
<td>Fiberglass Insert</td>
</tr>
<tr>
<td>Fiberglass Insert</td>
<td>Outlet Pipe</td>
</tr>
</tbody>
</table>

- **Manhole access cover** – provides access to the subsurface components
- **Precast reinforced concrete structure** – provides the vessel’s watertight structural support
- **Fiberglass insert** – separates vessel into upper and lower chambers
- **Weir** – directs incoming stormwater and oil spills into the lower chamber
- **Orifice plate** – prevents scour of accumulated pollutants
- **Inlet drop tee** – conveys stormwater into the lower chamber
- **Fiberglass skirt** – provides double-wall containment of hydrocarbons
- **Outlet riser pipe** – conveys treated water to the upper chamber; primary vacuum line access port for sediment removal
- **Oil inspection port** – primary access for measuring oil depth and oil removal
- **Safety grate** – safety measure to cover riser pipe in the event of manned entry into vessel

3 – Stormceptor Identification

Stormceptor is available in both precast concrete and fiberglass vessels, with precast concrete often being the dominant material of construction.

In the Stormceptor, a patented, engineered fiberglass insert separates the structure into an upper chamber and lower chamber. The lower chamber will remain full of water, as this is where the pollutants are sequestered for later removal. Multiple Stormceptor model (STC, OSR, EOS, MAX and STF) configurations exist, each to be inspected and maintained in a similar fashion.

Each unit is easily identifiable as a Stormceptor by the trade name “Stormceptor” embossed on each access cover at the surface. To determine the location of “inlet” Stormceptor units with horizontal catch basin inlet, look down into the grate as the Stormceptor insert will be visible. The name “Stormceptor” is not embossed on inlet models due to the variability of inlet grates used/approved across North America.
Once the location of the Stormceptor is determined, the model number may be identified by comparing the measured depth from the fiberglass insert level at the outlet pipe’s invert (water level) to the bottom of the tank using Table 1.

In addition, starting in 1996 a metal serial number tag containing the model number has been affixed to the inside of the unit, on the fiberglass insert. If the unit does not have a serial number, or if there is any uncertainty regarding the size of the unit using depth measurements, please contact your local Stormceptor Representative for assistance.

Sizes/Models
Typical general dimensions and capacities of the standard precast STC, EOS & OSR Stormceptor models in both USA and Canada/International (excluding South East Asia and Australia) are provided in Tables 1 and 2. Typical rim to invert measurements are provided later in this document. The total depth for cleaning will be the sum of the depth from outlet pipe invert (generally the water level) to rim (grade) and the depth from outlet pipe invert to the precast bottom of the unit. Note that depths and capacities may vary slightly between regions.

Table 1A. (US) Stormceptor Dimensions – Insert to Base of Structure

<table>
<thead>
<tr>
<th>STC Model</th>
<th>Insert to Base (in.)</th>
<th>EOS Model</th>
<th>Insert to Base (in.)</th>
<th>OSR Model</th>
<th>Insert to Base (in.)</th>
<th>Typical STF m (in.)</th>
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</thead>
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<td>60</td>
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<td>1.5 (60)</td>
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<td>900</td>
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<td>9-365</td>
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<td>12-590</td>
<td>71</td>
<td></td>
<td></td>
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<tr>
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<td>36-1700</td>
<td>134</td>
<td>390</td>
<td>128</td>
<td>3.2 (127)</td>
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<tr>
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<td>60-2500</td>
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<tr>
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</table>

Notes:
1. Depth Below Pipe Inlet Invert to the Bottom of Base Slab can vary slightly by manufacturing facility, and can be modified to accommodate specific site designs, pollutant loads or site conditions. Contact your local representative for assistance.

*Consist of two chamber structures in series.
### Table 1B. (CA & Int'l) Stormceptor Dimensions – Insert to Base of Structure

<table>
<thead>
<tr>
<th>STC Model</th>
<th>Insert to Base (m)</th>
<th>EOS Model</th>
<th>Insert to Base (m)</th>
<th>OSR Model</th>
<th>Insert to Base (m)</th>
<th>Typical STF m (in.)</th>
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</table>

**Notes:**
1. Depth Below Pipe Inlet Invert to the Bottom of Base Slab can vary slightly by manufacturing facility, and can be modified to accommodate specific site designs, pollutant loads or site conditions. Contact your local representative for assistance.

*Consist of two chamber structures in series.

### Table 2A. (US) Storage Capacities

<table>
<thead>
<tr>
<th>STC Model</th>
<th>Hydrocarbon Storage Capacity gal</th>
<th>Sediment Capacity ft³</th>
<th>EOS Model</th>
<th>Hydrocarbon Storage Capacity gal</th>
<th>Sediment Capacity ft³</th>
<th>OSR Model</th>
<th>Hydrocarbon Storage Capacity gal</th>
<th>Sediment Capacity ft³</th>
<th>Typical STF gal</th>
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**Notes:**
1. Hydrocarbon & Sediment capacities can be modified to accommodate specific site design requirements, contact your local representative for assistance.

*Consist of two chamber structures in series.
Table 2B. (CA & Int’l) Storage Capacities

<table>
<thead>
<tr>
<th>STC Model</th>
<th>Hydrocarbon Storage Capacity</th>
<th>Sediment Capacity</th>
<th>EOS Model</th>
<th>Hydrocarbon Storage Capacity</th>
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</tbody>
</table>

Notes:
1. Hydrocarbon & Sediment capacities can be modified to accommodate specific site design requirements, contact your local representative for assistance.

*Consist of two chamber structures in series.

4 – Stormceptor Inspection & Maintenance

Regular inspection and maintenance is a proven, cost-effective way to maximize water resource protection for all stormwater pollution control practices, and is required to insure proper functioning of the Stormceptor. Both inspection and maintenance of the Stormceptor is easily performed from the surface. Stormceptor’s patented technology has no moving parts, simplifying the inspection and maintenance process.

Please refer to the following information and guidelines before conducting inspection and maintenance activities.

When is inspection needed?
- Post-construction inspection is required prior to putting the Stormceptor into service.
- Routine inspections are recommended during the first year of operation to accurately assess the sediment accumulation.
- Inspection frequency in subsequent years is based on the maintenance plan developed in the first year.
- Inspections should also be performed immediately after oil, fuel, or other chemical spills.

When is maintenance cleaning needed?
- For optimum performance, the unit should be cleaned out once the sediment depth reaches the recommended maintenance sediment depth, which is approximately 15% of the unit’s total storage capacity (see Table 2). The frequency should be adjusted based on historical inspection results due to variable site pollutant loading.
• Sediment removal is easier when removed on a regular basis at or prior to the recommended maintenance sediment depths, as sediment build-up can compact making removal more difficult.
• The unit should be cleaned out immediately after an oil, fuel or chemical spill.

What conditions can compromise Stormceptor performance?
• If construction sediment and debris is not removed prior to activating the Stormceptor unit, maintenance frequency may be reduced.
• If the system is not maintained regularly and fills with sediment and debris beyond the capacity as indicated in Table 2, pollutant removal efficiency may be reduced.
• If an oil spill(s) exceeds the oil capacity of the system, subsequent spills may not be captured.
• If debris clogs the inlet of the system, removal efficiency of sediment and hydrocarbons may be reduced.
• If a downstream blockage occurs, a backwater condition may occur for the Stormceptor and removal efficiency of sediment and hydrocarbons may be reduced.

What training is required?
The Stormceptor is to be inspected and maintained by professional vacuum cleaning service providers with experience in the maintenance of underground tanks, sewers and catch basins. For typical inspection and maintenance activities, no specific supplemental training is required for the Stormceptor. Information provided within this Manual (provided to the site owner) contains sufficient guidance to maintain the system properly.

In unusual circumstances, such as if a damaged component needs replacement or some other condition requires manned entry into the vessel, confined space entry procedures must be followed. Only professional maintenance service providers trained in these procedures should enter the vessel. Service provider companies typically have personnel who are trained and certified in confined space entry procedures according to local, state, and federal standards.

What equipment is typically required for inspection?
• Manhole access cover lifting tool
• Oil dipstick / Sediment probe with ball valve (typically ¾-inch to 1-inch diameter)
• Flashlight
• Camera
• Data log / Inspection Report
• Safety cones and caution tape
• Hard hat, safety shoes, safety glasses, and chemical-resistant gloves
Recommended Stormceptor Inspection Procedure:

- Stormceptor is to be inspected from grade through a standard surface manhole access cover.
- Sediment and oil depth inspections are performed with a sediment probe and oil dipstick.
- Oil depth is measured through the oil inspection port, either a 4-inch (100 mm) or 6-inch (150 mm) diameter port.
- Sediment depth can be measured through the oil inspection port or the 24-inch (610 mm) diameter outlet riser pipe.
- Inspections also involve a visual inspection of the internal components of the system.

Figure 3.  Figure 4.

What equipment is typically required for maintenance?

- Vacuum truck equipped with water hose and jet nozzle
- Small pump and tubing for oil removal
- Manhole access cover lifting tool
- Oil dipstick / Sediment probe with ball valve (typically ¾-inch to 1-inch diameter)
- Flashlight
- Camera
- Data log / Inspection Report
- Safety cones
- Hard hats, safety shoes, safety glasses, chemical-resistant gloves, and hearing protection for service providers
- Gas analyzer, respiratory gear, and safety harness for specially trained personnel if confined space entry is required
Recommended Stormceptor Maintenance Procedure

Maintenance of Stormceptor is performed using a vacuum truck.

No entry into the unit is required for maintenance. **DO NOT ENTER THE STORMCEPTOR CHAMBER** unless you have the proper personal safety equipment, have been trained and are qualified to enter a confined space, as identified by local Occupational Safety and Health Regulations (e.g. 29 CFR 1910.146 or Canada Occupational Safety and Health Regulations – SOR/86-304). Without the proper equipment, training and permit, entry into confined spaces can result in serious bodily harm and potentially death. Consult local, provincial, and/or state regulations to determine the requirements for confined space entry. Be aware, and take precaution that the Stormceptor fiberglass insert may be slippery. In addition, be aware that some units do not have a safety grate to cover the outlet riser pipe that leads to the submerged, lower chamber.

- Ideally maintenance should be conducted during dry weather conditions when no flow is entering the unit.
- Stormceptor is to be maintained through a standard surface manhole access cover.
- Insert the oil dipstick into the oil inspection port. If oil is present, pump off the oil layer into separate containment using a small pump and tubing.
- Maintenance cleaning of accumulated sediment is performed with a vacuum truck.
  - For 6-ft (1800 mm) diameter models and larger, the vacuum hose is inserted into the lower chamber via the 24-inch (610 mm) outlet riser pipe.
  - For 4-ft (1200 mm) diameter model, the removable drop tee is lifted out, and the vacuum hose is inserted into the lower chamber via the 12-inch (305 mm) drop tee hole.

![Figure 5](image1.png) ![Figure 6](image2.png)
• Using the vacuum hose, decant the water from the lower chamber into a separate containment tank or to the sanitary sewer, if permitted by the local regulating authority.
• Remove the sediment sludge from the bottom of the unit using the vacuum hose. For large Stormceptor units, a flexible hose is often connected to the primary vacuum line for ease of movement in the lower chamber.
• Units that have not been maintained regularly, have surpassed the maximum recommended sediment capacity, or contain damaged components may require manned entry by trained personnel using safe and proper confined space entry procedures.

Figure 7. Figure 8.

A maintenance worker stationed at the above ground surface uses a vacuum hose to evacuate water, sediment, and debris from the system.

**What is required for proper disposal?**
The requirements for the disposal of material removed from Stormceptor units are similar to that of any other stormwater treatment Best Management Practices (BMP). Local guidelines should be consulted prior to disposal of the separator contents. In most areas the sediment, once dewatered, can be disposed of in a sanitary landfill. It is not anticipated that the sediment would be classified as hazardous waste. This could be site and pollutant dependent. In some cases, approval from the disposal facility operator/agency may be required.

**What about oil spills?**
Stormceptor is often implemented in areas where there is high potential for oil, fuel or other hydrocarbon or chemical spills. Stormceptor units should be cleaned immediately after a spill occurs by a licensed liquid waste hauler. You should also notify the appropriate regulatory agencies as required in the event of a spill.

**What if I see an oil rainbow or sheen at the Stormceptor outlet?**
With a steady influx of water with high concentrations of oil, a sheen may be noticeable at the Stormceptor outlet. This may occur because a hydrocarbon rainbow or sheen can be seen at
very small oil concentrations (< 10 ppm). Stormceptor is effective at removing 95% of free oil, and the appearance of a sheen at the outlet with high influent oil concentrations does not mean that the unit is not working to this level of removal. In addition, if the influent oil is emulsified, the Stormceptor will not be able to remove it. The Stormceptor is designed for free oil removal and not emulsified or dissolved oil conditions.

**What factors affect the costs involved with inspection/maintenance?**
The Vacuum Service Industry for stormwater drainage and sewer systems is a well-established sector of the service industry that cleans underground tanks, sewers and catch basins. Costs to clean Stormceptor units will vary. Inspection and maintenance costs are most often based on unit size, the number of units on a site, sediment/oil/hazardous material loads, transportation distances, tipping fees, disposal requirements and other local regulations.

**What factors predict maintenance frequency?**
Maintenance frequency will vary with the amount of pollution on your site (number of hydrocarbon spills, amount of sediment, site activity and use, etc.). It is recommended that the frequency of maintenance be increased or reduced based on local conditions. If the sediment load is high from an unstable site or sediment loads transported from upstream catchments, maintenance may be required semi-annually. Conversely once a site has stabilized, maintenance may be required less frequently (for example: two to seven year, site and situation dependent). Maintenance should be performed immediately after an oil spill or once the sediment depth in Stormceptor reaches the value specified in **Table 3** based on the unit size.

**Table 3A. (US) Recommended Sediment Depths Indicating Maintenance**

<table>
<thead>
<tr>
<th>STC Model</th>
<th>Maintenance Sediment depth (in)</th>
<th>EOS Model</th>
<th>Maintenance Sediment depth (in)</th>
<th>Oil Storage Depth (in)</th>
<th>OSR Model</th>
<th>Maintenance Sediment depth (in)</th>
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<tr>
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<td>4-175</td>
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<td>24</td>
<td>065</td>
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<td>12-590</td>
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<td>48-2000</td>
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<td>79</td>
<td>1125*</td>
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**Note:**
1. The values above are for typical standard units.

*Per structure.
Table 3B. (CA & Int'l) Recommended Sediment Depths Indicating Maintenance

<table>
<thead>
<tr>
<th>STC Model</th>
<th>Maintenance Sediment depth (mm)</th>
<th>EOS Model</th>
<th>Maintenance Sediment depth (mm)</th>
<th>Oil Storage Depth (mm)</th>
<th>OSR Model</th>
<th>Maintenance Sediment depth (mm)</th>
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<td>14000*</td>
<td>425</td>
</tr>
</tbody>
</table>

Note:
1. The values above are for typical standard units.

*Per structure.

Replacement parts
Since there are no moving parts during operation in a Stormceptor, broken, damaged, or worn parts are not typically encountered. Therefore, inspection and maintenance activities are generally focused on pollutant removal. However, if replacements parts are necessary, they may be purchased by contacting your local Stormceptor Representative, or Imbrium Systems.

The benefits of regular inspection and maintenance are many – from ensuring maximum operation efficiency, to keeping maintenance costs low, to the continued protection of natural waterways – and provide the key to Stormceptor’s long and effective service life.

Stormceptor Inspection and Maintenance Log

Stormceptor Model No: ________________________________________________

Allowable Sediment Depth: __________________________________________

Serial Number: ______________________________________________________

Installation Date: ___________________________________________________

Location Description of Unit: _________________________________________

Other Comments: ____________________________________________________
Contact Information

Questions regarding the Stormceptor can be addressed by contacting your area Stormceptor Licensee, Imbrium Systems, or visit our website at www.stormceptor.com.

Stormceptor Licensees:

CANADA

Lafarge Canada Inc.  
www.lafargepipe.com  
403-292-9502 / 1-888-422-4022 Calgary, AB  
780-468-5910 Edmonton, AB  
204-958-6348 Winnipeg, MB, NW. ON, SK

Langley Concrete Group  
www.langleyconcretegroup.com  
604-502-5236 BC

Hanson Pipe & Precast Inc.  
www.hansonpipeandprecast.com  
519-622-7574 / 1-888-888-3222 ON

Lécuyer et Fils Ltée.  
www.lecuyerbeton.com  
450-454-3928 / 1-800-561-0970 QC

Strescon Limited  
www.strescon.com  
902-494-7400 NS, NF  
506-633-8877 NB, PE

UNITED STATES

Rinker Materials  
www.rinkerstormceptor.com  
1-800-909-7763

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Imbrium Systems Inc. & Imbrium Systems LLC

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1-416-960-9900 / 1-800-565-4801

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