



April 2006
(Updated September 2007)

**GENERAL USE LEVEL DESIGNATION FOR PRETREATMENT (TSS)
For
Stormceptor System®**

Ecology's Decision:

Based on Imbrium Systems Corporation's application submissions and recommendations by the Technical Review Committee (TRC), Ecology hereby issues the following Use Level Designation for the Imbrium Systems Corporation Stormceptor System®:

1. General Use Level Designation (GULD) for pretreatment, as defined in the Ecology Stormwater Management Manual for Western Washington Volume V, (a) ahead of infiltration treatment, or (b) to protect and extend the maintenance cycle of a basic or enhanced treatment device (e.g., sand or media filter). This GULD applies to Stormceptor System® units sized in accordance with Table 1 (below) at the water quality design flowrate as determined using the Western Washington Hydrology Model (WWHM):

Table 1

Unit	Treatment Flowrate (gpm)
STC 450i	143
STC 900	285
STC 1200	285
STC 1800	285
STC 2400	476
STC 3600	476
STC 4800	793
STC 6000	793
STC 7200	1110
STC 11000	1585
STC 13000	1585
STC 16000	2220

2. The GULD has no expiration date, but may be amended or revoked by Ecology.
3. All designations are subject to the conditions specified below.
4. Properly designed and operated Stormceptor Systems® may also have applicability in other situations (example: low-head situations such as bridges or ferry docks), for TSS removal where, on a case-by-case basis, it is found to be infeasible or impracticable to use any other approved practice. Jurisdictions covered under the Phase I or II municipal stormwater permits should use variance/exception procedures and criteria as required by their NPDES permit.
5. Ecology finds that the Stormceptor System® could also provide water quality benefits in retrofit situations.

Ecology's Conditions of Use:

Stormceptor Systems® shall be designed, installed, and maintained to comply with these conditions:

1. Stormceptor Systems® must be designed, assembled, installed, operated, and maintained in accordance with Imbrium Systems Corporation's applicable manuals and documents and the Ecology decision and conditions specified herein. Ecology recommends the inspection and maintenance schedule included here:

[Stormceptor Inspection & Maintenance](#)

2. Discharges from the Stormceptor System® shall not cause or contribute to water quality standards violations in receiving waters.

Applicant: Dan Nason
Imbrium Systems Corporation

Applicant Address: 100 Grove Street
Worcester, MA, 01605

Application Documents:

- Submission for Verification Acceptance, State of Washington Department of Ecology (WADOE), dated May 2005. This document contains the following elements:
 - Submission for Verification Acceptance, including an abridged version of the application and a technical manual
 - Field data, Westwood, MA, 1997

- Field data, Seatac, WA, 1999
- Testing summary, Como Park, MN, 1998
- Testing summary, Edmonton, AB, 1994-6
- Wisconsin DNR/USGS report, conference paper, and monitoring summary, 1998
- Laboratory evaluation, done for NJDEP, 2004
- Coventry University laboratory study, 1996
- Stormwater hydrology report, Bryant et. al.
- Canada Environmental Technology Verification report, 2003
- Massachusetts Strategic Envirotechnology Partnership report, 1998
- NJCAT certification report, 2005

With the exception of any files identified as confidential, a CD-ROM containing these submittal documents is available by contacting Imbrium Systems Corporation.

- A Review of Stormceptor™ - In Contrast to Other Wet Vaults that have Received Certification under the Washington State Department of Ecology's TAPE Program for Rinker Materials, Gary Minton, July 10, 2007

Applicant's Use Level Requests:

- General Use Level Designation (GULD) for pretreatment.

Applicant's Performance Claims:

- The Stormceptor System® has been shown to attain the State of Washington's pretreatment (TSS) criteria based on analyses of data from field and laboratory studies. Laboratory studies utilized both OK-110 sand and the NJDEP particle size distribution..
- The Stormceptor System® has been proven to remove material finer than 500 microns. It is not designed to remove litter and debris.
- The Stormceptor System® removes large portions of sand and silt from stormwater on a long-term basis, thereby preventing material from entering a downstream treatment facility, thus extending the maintenance cycle of the downstream facility.
- The Stormceptor System® has demonstrated through field performance and laboratory studies its scour prevention capability. The system's unique design prevents loss of previously captured pollutants during periods with higher flowrates.
- The Stormceptor System® is an easy-to-maintain device that is much more cost-effective to maintain/clean than many alternative methods such as filtration systems and detention ponds.
- The Stormceptor System® has demonstrated through field and laboratory study its capability to function as an effective spill capture device for petroleum hydrocarbon spills, thereby preventing potentially catastrophic environmental damage from such spills.
- The Stormceptor System® is an effective treatment measure for retrofit and other space-constrained or infrastructure-constrained applications which preclude the use of other approved treatment systems.

Technical Review Committee Recommendations: The TRC, based on the weight of the evidence and using its best professional judgment, finds that:

- Pretreatment guidelines are needed to assess facilities performing at less-than-Basic treatment levels, but adequate to serve as presettling facilities ahead of infiltration treatment. The TRC recommends guidelines are set at 50% removal of 50-micron particles and 80% removal of 125-micron particles. The TRC further recommends these guidelines be applied uniformly to this and all future technology submissions, developed, and included in Ecology's stormwater manual.
- The Stormceptor System®, sized according to Table 1 (above) should provide, at a minimum, equivalent performance to a presettling basin as defined in the most recent *Stormwater Management Manual for Western Washington, Volume V, Chapter 6*.
- Imbrium Systems Corporation should be given the opportunity to demonstrate, through additional laboratory and field testing, whether the Stormceptor System® can attain Ecology's Basic (TSS) Treatment performance goal.

Findings of Fact:

- Imbrium Systems Corporation has submitted laboratory data for its Stormceptor System® STC-900, testing silica material prepared to satisfy New Jersey Department of Environmental Protection (NJDEP) standards (mean particle size 97 microns; range 1 to 1000 microns). Weighted TSS removal rates averaged 75% across a range of operating rates (25% to 125% of the design rate), with TSS influent concentrations (97 micron mean particle size) averaging 295 mg/L. Unweighted TSS removal rates averaged 74%, and the removal rate at 285 gpm was 73%.
- Scour tests were run at 125% of the design flowrate with initial sediment loading of 50% and 100% in the lower chamber of the unit. No scouring occurred at 50% loading and minimal scouring occurred at 100% loading.
- Several substantial field data sets were submitted. However, most data do not represent flow-weighted composite samples for individual storms, which are required by the WADOE protocol. The Madison site used flow-weighted composites, and TSS removal rates were in the 20% to 30% range. The Madison site is a maintenance yard with dirt and salt piles and Imbrium Systems believes the results do not represent typical system performance.
- The system is readily maintained using a vacuum truck.
- There are approximately 15,000 Stormceptor systems in use nationwide and 510 in the Pacific Northwest.

Technology Description:

Design manual and technical bulletins can be downloaded from company's web site.

Recommended Research and Development:

Ecology encourages Imbrium Systems Corporation to pursue continuous improvements to the Stormceptor System®. To that end, the following actions are recommended:

- No field-testing data are currently available to reliably ascertain the Stormceptor System®'s ability to remove the finer particles (typically represented by Sil-Co-Sil 106, a U.S. Silica product, in laboratory testing) comprising TSS found on local highways, parking lots, and other high-use areas. Design of future facilities should consider:
 - a. Sizing for specific applications based on actual particle size distribution in the target runoff. Ecology's TAPE can be used as guidance on the expected particle size distributions for Basic Treatment.
 - b. Laboratory and field testing to evaluate whether the Stormceptor System® can reliably achieve Basic Treatment criteria.

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Applicant website: www.stormceptor.com

Ecology web link: http://www.ecy.wa.gov/programs/wq/stormwater/new_tech/

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