



## State of New Jersey

Department of Environmental Protection

Division of Science, Research and Technology

Bureau of Sustainable Communities & Innovative Technologies

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Richard J. Codey  
Acting Governor

Bradley M. Campbell  
Commissioner

March 23, 2005

Austin Meyermann  
Director of Operations  
BaySaver Technologies, Inc.  
1302 Rising Ridge Road  
Unit 1  
Mount Airy, MD 21771

**RE:** Interim Certification of the BaySaver Separator Device.

Dear Mr. Meyermann:

In accordance with the Energy and Environmental Technology Verification (EETV) Act at N.J.S.A. 13:1D-134, the New Jersey Department of Environmental Protection (NJDEP) is pleased to issue a **Conditional Interim Certification** for the BaySaver Separator Model 1K developed by BaySaver Technologies, Inc. This technology is hydraulically designed to use gravitational separation as a means of capturing sediments. This conditional interim certification is being issued as a result of the submission of the New Jersey Corporation for Advanced Technology (NJCAT) verification report, dated December 2004. **This certification letter must be used in conjunction with the Interim Certification Findings document.**

According to NJCAT's verification report, and as indicated in the attached Conditional Interim Certification Findings, the BaySaver Separator Model 1K provides 51% Suspended-Sediment Concentration (SSC) removal efficiency (as per NJDEP treatment efficiency calculation methodology) for laboratory simulated stormwater runoff with an average influent concentration of 205 mg/L and an average  $d_{50}$  particle size of 85 microns. Also, SSC removal testing was conducted with sediment pre-loaded in the lower chamber to 50% sediment capacity for the 1K unit. Based on this demonstrated laboratory performance, the NJDEP acknowledges that the BaySaver Separator Model 1K, with the appropriate design modifications, has the capability of achieving in field applications, at a minimum, a TSS removal efficiency of 50%, providing that the manhole diameter is increased. *Therefore, NJDEP certifies that the BaySaver Separator Model 1K with a manhole size diameter of 60 inches is capable of achieving a TSS removal efficiency of 50% from stormwater runoff at a maximum designed flow rate of 1.1 cfs, and shall be permitted accordingly.* In addition, the following conditions shall apply to the conditional interim certification:

1. The **BaySaver Separator Model 1K** should be the first component, if used as part of a treatment train (i.e., utilized in front of best management practices such as detention, retention, and infiltration basins, etc., as defined in the NJ Stormwater Best Management Practices Manual).
2. The **BaySaver Separator Model 1K** shall be designed in accordance with New Jersey's water quality design storm, as required in the Stormwater Management Rules (N.J.A.C. 7:8).
3. A Quality Assurance Project Plan supporting the Technology Acceptance and Reciprocity Partnership (TARP) Tier II Protocol for Stormwater Best Management Practice Demonstration (July, 2003), and including any additional field testing requirements that the NJDEP shall request, shall be submitted to NJDEP and/or NJCAT within six (6) months from the date of this Conditional Interim Certification letter.
4. Field evaluation data that are consistent with the Tier II Protocol and any additional NJDEP requirements shall be submitted to NJDEP and/or NJCAT by December 31, 2006.
5. Additional BaySaver models, as described in **Table 1** of the Interim Certification Findings, can be used for the respective designed flow rates since the design of these units is the same as the **BaySaver Separator Model 1K**.
6. **This certification letter must be used in conjunction with the Interim Certification Findings.**

As specified in the Interim Certification Findings, the manhole sizes for the various BaySaver Separator models to be used in New Jersey are larger than those specified in the verification report. Therefore, the devices installed in New Jersey must satisfy the dimensions specified in Table 1 of the Interim Certification Findings. Please note that this approval letter shall expire on June 30, 2007, unless extended by NJDEP. For final certification of the BaySaver Separator, verified data must be generated from a full-scale field demonstration utilizing the TARP Tier II Protocol and additional NJDEP's field testing requirements. If you have any questions about this conditional interim certification, please contact Ravi Patraju of my staff at (609) 292-0125.

Sincerely,



Martin Rosen  
Chief - Bureau of Sustainable Communities  
and Innovative Technologies

Enclosure

c: Lisa Jackson, Assistant Commissioner, Land Use Management  
Sam Wolfe, Assistant Commissioner, Environmental Regulation  
Larry Baier, Director, Watershed Management Program  
Eileen Murphy, Director, Division of Science, Research, and Technology  
Mark Mauriello, Director, Land Use Regulation  
Narinder Ahuja, Director, Division of Water Quality  
Rhea Brekke, Executive Director, New Jersey Corporation for Advanced Technology

## Conditional Interim Certification Findings

### NJDEP Technology Certification Program:

Bureau of Sustainable Communities & Innovative Technologies  
Division of Science, Research & Technology  
401 E State Street, P.O. Box 409  
Trenton, NJ 08625  
(609) 292-9692

### Manufactured Treatment Device:

BaySaver Separation System

### Applicant Information:

BaySaver Technologies, Inc.  
1302 Rising Ridge Road  
Unit 1  
Mount Airy, MD 21771  
800-229-7283

### Technology Description:

A description of the BaySaver Separation System is reproduced from the New Jersey Corporation for Advanced Technology (NJCAT) verification report as follows:

The BaySaver system is hydraulically designed to use gravitational separation as a means of capturing sediments, and free floating oils, trash, and debris. The dual settling chambers and the internal flow splitter act in tandem to provide different levels of treatment for different runoff intensities. Coarse sediments are removed in the first structure, and finer sediments and floating pollutants are removed and trapped in the second. This is the case during the periods of low flow that comprise the majority of storm events.

During more intense storms, water is pushed up the T-pipes from below the surface in the first manhole. This water is free of floatable pollutants and large suspended sediments. At moderate flow rates, the T-pipes convey water from the center of the first manhole and discharge it directly downstream. Operating in conjunction with the T-pipes, influent water is diverted into the second manhole by the surface skimming trapezoidal weir. In this manner, the BaySaver Separation System continues to remove fine sediments and floatable pollutants in the second manhole as flow rates increase throughout the system.

The BaySaver Separator Unit includes an internal bypass that conveys high energy flows directly downstream. Bypass mode is effective when

the flow rates begin approaching the peak design flow. By bypassing extreme flows, the BaySaver Separator Unit prevents the re-suspension and discharge of the pollutants that are already trapped within the system.

The BaySaver Separation System is a versatile and flexible BMP device that can be retrofitted into existing storm drains or incorporated into new and existing developments. These systems can be used to improve the quality of stormwater runoff from high traffic areas, to contain potential oil spills, as a pretreatment step in a treatment train, and for other applications.



**Figure 1.** BaySaver Separation System

New Jersey Corporation for Advanced Technology Verified Claim:

**The BaySaver Separator Model 1K provides 51% Suspended-Sediment Concentration (SSC) removal efficiency (as per NJDEP treatment efficiency calculation methodology) for laboratory simulated stormwater runoff with an average influent concentration of 205 mg/L and an average  $d_{50}$  particle size of 85 microns. SSC removal testing was conducted with sediment pre-loaded in the lower chamber to 50% sediment capacity for the 1K unit.**

Technology Limitations/Concerns:

- Since the overall efficiency removal was only demonstrated at 51%, the NJDEP feels that a design safety factor is required, which is addressed in the certification section below.
- Lack of maintenance may cause the system to operate at a reduced efficiency and eventually fill with sediment. Therefore, inspections of accumulated pollutants should be performed as recommended by the manufacturer. Inspections would need to be conducted more frequently in the winter where sanding operations may lead to rapid accumulations.

<b>BaySaver Model</b>	<b>Maximum Treatment Flow (cfs)</b>	<b>Peak Design Flow (cfs)</b>	<b>BaySaver Manhole Depth (feet)</b>	<b>BaySaver Unit Diameter (feet)</b>	<b>Standard Manhole Size (inches)</b>	<b>New Jersey Manhole Size (inches)</b>	<b>% Increase in Surface Area</b>
½K	0.8	6.8	6	2	48	<b>60</b>	56.3
1K	1.1	7.5	8	2	48	<b>60</b>	56.3
3K	3.3	23.1	8	3	60	<b>72</b>	44.0
5K	6.8	47.3	8	4	72	<b>96</b>	77.8
10K	12.3	83	8	5	120	<b>144</b>	44.0

**Table 1.** Design Specifications of Units in New Jersey

NJDEP Conditional Interim Certification:

Based on the demonstrated laboratory performance, NJDEP acknowledges that the BaySaver Separator Model 1K has the capability of achieving in field applications, at a minimum, a TSS removal efficiency of 50%, providing that the manhole diameter is increased. Therefore, **NJDEP certifies that the BaySaver Separator Model 1K is capable of achieving a TSS removal efficiency of 50% from stormwater runoff at a maximum designed flow rate of 1.1 cfs with a manhole size diameter of 60 inches,** and shall be permitted accordingly. Since this technology was verified for 51% TSS removal, the manhole sizes for the various BaySaver Separator models to be used in New Jersey are larger than those specified in the verification report in order to establish a safety factor. In addition, the following conditions shall apply to the conditional interim certification:

1. The **BaySaver Separator Model 1K** should be the first component, if used as part of a treatment train (i.e., utilized in front of best management practices such as detention, retention, and infiltration basins, etc., as defined in the NJ Stormwater Best Management Practices Manual).
2. The **BaySaver Separator Model 1K** shall be designed in accordance with New Jersey's water quality design storm, as required in the Stormwater Management Rules (N.J.A.C. 7:8).
3. A Quality Assurance Project Plan supporting the Technology Acceptance and Reciprocity Partnership (TARP) Tier II Protocol for Stormwater Best Management Practice Demonstration (July, 2003), and including any additional field testing requirements that the NJDEP shall request, shall be submitted to NJDEP and/or NJCAT within six (6) months from the date of this Conditional Interim Certification letter.
4. Field evaluation data that are consistent with the Tier II Protocol and any additional NJDEP requirements shall be submitted to NJDEP and/or NJCAT by December 31, 2006.
5. Additional BaySaver models, as described in Table 1, can be used for the respective designed flow rate since the design of these units is the same as the **BaySaver Separator Model 1K**.
6. The appropriate devices satisfying site selection and sizing criteria must be consistent with the specifications as described in Table 1.

East Coast Associates, Inc.  
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