Verification Statement

StormTrap SurgeSettler Hydrodynamic Separator
Registration number: V-2026-08-01
Date of issue: 2026-August-30

Technology type:	Hydrodynamic Separator (HDS)		
Application:	Technology to remove sediment, trash and debris from stormwater and snowmelt runoff as well as other pollutants that attach to sediment particles, such as nutrients and metals		
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Verified Performance Claims

Physical testing of the SurgeSettler Hydrodynamic Separator (HDS) was conducted at the StormTrap Research and Development Laboratory in Morris, IL under the on-site observation of an independent third-party witness, Jason Wiesbrock, PE, of SpaceCo Inc. The verification process evaluated performance test data generated under both the *New Jersey Department of Environmental Protection (NJDEP) Laboratory Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device, 2023* (NJDEP protocol) and the *Canadian Publicly Available Specification (PAS) for Testing and Verification of Oil and Grit Separators, June 2023* (Canadian OGS PAS). The performance test results for the SurgeSettler HDS technology were verified following the requirements of the International Organization for Standardization *ISO 14034:2016 Environmental management - Environmental technology verification (ETV)* standard, the VerifiGlobal Performance Verification Protocol, and the SurgeSettler HDS ISO 14034 ETV Verification Plan. The following performance claims were verified:

Capture test[1]:
During the sediment removal test with a false floor set to 20 cm (8 in), equivalent to 50% of the manufacturer's recommended maximum sediment storage depth, and a target influent test sediment concentration of 200 mg/L, the SurgeSettler 1.83 m × 4.27 m (6 ft × 14 ft) device removed 86%, 75%, 63%, 70%, 50%, 42%, and 39% of influent sediment by mass at surface loading rates of 40, 80, 200, 400, 600, 1000, and 1400 L/min-m² (82, 165, 412, 825, 1237, 2062, and 2886 GPM), respectively.

Scour test[1]:
During the scour test, a false floor set at 10 cm (4 in) was pre-loaded with 10 cm (4 in) of test sediment ($d_{50} = 182\ \mu$m), reaching 50% capacity (20 cm / 8 in). When subjected to a continuous high flow rate of 29,098 L/min (7,687 GPM / SLR of 3,728 L/min-m²) for 29 minutes, the SurgeSettler generated an average background-adjusted effluent concentration of 9.31 mg/L.

[1] The claims can be applied to other units smaller or larger than the tested unit as long as the untested units meet the scaling rule specified in the Canadian PAS for Testing and Verification of OGS (version June 2023).

Technology Application

The SurgeSettler is a hydrodynamic separator developed by StormTrap designed to provide water quality treatment and flow control for stormwater runoff before discharge into receiving waterways. The SurgeSettler removes suspended sediment and associated pollutants from runoff utilizing inclined tube settling technology. StormTrap possesses full ownership of the SurgeSettler HDS technology, and it is commercially available. The SurgeSettler HDS patent is pending.[2].

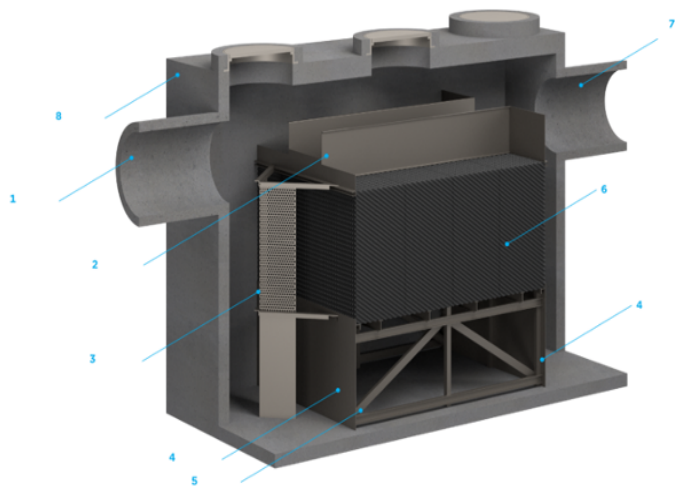
Technology Description

Stormwater enters the vault of the SurgeSettler unit through an inflow pipe and exits through an outflow pipe set at the same invert elevation. The vault is divided into three primary zones: a forebay, an enhanced settling section, and an outlet bay. The forebay incorporates a flow wedge structure engineered to distribute incoming energy and flow evenly across the vault. The enhanced settling section consists of an internal support structure housing inclined tube settling packs, divider walls, and overflow baffles. The outlet bay provides an open hydraulic zone allowing treated effluent and high-flow bypass streams to recombine prior to exiting through the discharge pipe.

Internal overflow weirs and baffles are set at fixed elevations to retain captured floatable material in the forebay at flows up to bypass activation. Internal bypass operates via a multi-stage mechanism: bypass over the central baffle weir and bypass over the lateral retention bay baffles. During bypass of the middle baffle, floatables are directed into lateral retention bays while high flows convey along the central channel. Full internal bypass occurs above the lateral back baffles only under extreme hydraulic flow conditions exceeding the rated treatment capacity.

Influent entering through the inlet pipe is split and directed into the enhanced settling section by the flow wedge. Flow enters the inclined settling packs and subdivides into numerous narrow lamella pathways, maintaining predominantly horizontal bulk transit toward the outlet. The inclined tube geometry reduces particle settling distances, promoting rapid sedimentation into the underlying vault sump. Treated water exits the settling packs, recombines in the outlet bay, and discharges through the outlet pipe.

Figure 1 identifies key SurgeSettler internal components. The internal components are fabricated using plastic or fiberglass parts housed within a concrete vault structure. Maintenance is performed by accessing the unit in three locations, including the forebay, the outlet bay, and a 0.6 m × 0.6 m (2 ft × 2 ft) maintenance opening accessible via a surface manhole.



1.	Inlet
2.	Overflow Baffles
3.	Flow Wedge
4.	Divider Wall
5.	Enhanced Settling Pack Support Frame
6.	Enhanced Settling Pack
7.	Outlet
8.	Tank Wall

Figure 1. SurgeSettler Internal Components

[2] US Patent Application No. 19/387,241 (Stormwater Treatment Device and Method), filed with the USPTO on November 12, 2025.

Description of Test Procedure

For this verification, a prototype of a commercially available SurgeSettler 1.83 m × 4.27 m (6 ft × 14 ft) unit consisting of standard commercial internal components housed in a metal vault was tested. The metal vault of the test unit is equivalent to commercial concrete vaults in all key internal dimensions. The test unit was equipped with a 60 cm (24 in) diameter access port with an invert 30 cm (12 in) above the floor to allow for easy recovery of captured sediment; this port contained a flush plug to maintain a smooth inner wall surface during testing. Additional unit dimensions are provided in Figure 2.

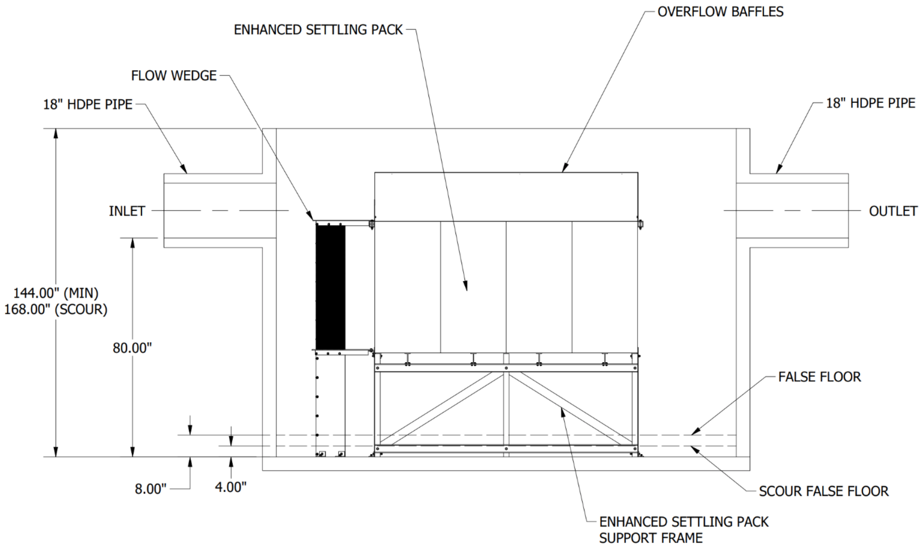


Figure 1. SurgeSettler Unit Elevations

Two test units were used during testing: one unit for sediment removal efficiency and hydraulic testing (West unit) and one unit for scour testing (East unit). The two units were identical except that the East unit was taller to accommodate the higher water surface elevations created by the high scour flow rates. The 457 mm (18 in) HDPE inlet and outlet pipe inverts were located 2.03 m (80 in) above the sump floor and set with 1.6% slopes. Each of the test units had a total sump area of 7.8 m^2 (84 ft^2) and a target maximum treatment flow rate (MTFR) of 215 L/s (3402 GPM / 7.58 cfs).

Performance Test Results

The performance test data and other information pertaining to the SurgeSettler HDS were verified in accordance with the requirements of ISO 14034:2016 and the VerifiGlobal Performance Verification Protocol.

Test Sediment: Sediment Removal Efficiency - The test sediment used for removal efficiency using the NJDEP protocol was custom blended using commercially available silica sand with a specific gravity of 2.65. Sediment lots #24C-02, #25A-04, and #25B-01 were used in removal efficiency testing performed as a part of NJDEP certification. The test results for sediment lots #24C-02, #25A-04, and #25B-01 used for NJDEP-specific tests are shown graphically in Figure 3. Some of the reported particle size data had to be interpolated to allow for comparison to the required particle size specification.

The PSD of the test sediment is allowed to vary from the specified percent less than value by 2 percentage points as long as the median particle size (d_{50}) does not exceed 75 μm. The median (d_{50}) was 64 µm, 48 µm, and 54 µm respectively for lots #24C-02, #25A-04, and #25B-01, finer than the sediment required by the NJDEP protocol. All blended test sediment lots were found to meet the NJDEP protocol and the OGS PAS and were deemed acceptable for use.

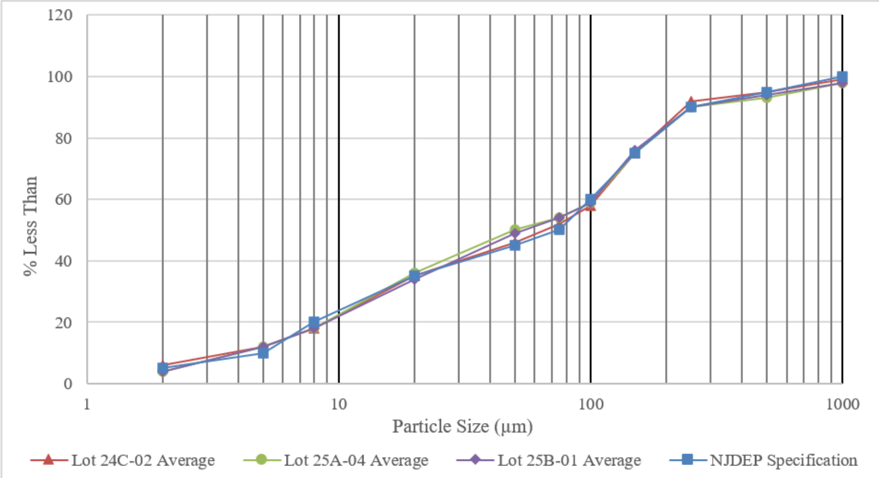


Figure 3. Average Particle Size Distribution of the Test Sediment (Lot #24C-02, #25A-04 and 25B-01) Used for the Removal Test Compared to the Specified PSD (NJDEP Target PSD)

New batches of custom blended sediment (lot #25D-01) using commercially available silica sand with a specific gravity of 2.65 were required for all removal efficiency tests performed for the ISO 14034 standard under the OGS PAS. The test results for sediment lot #25D-01 used for OGS PAS-specific tests are shown graphically in Figure 4. Some of the reported particle size data had to be interpolated to allow for comparison to the required particle size specification.

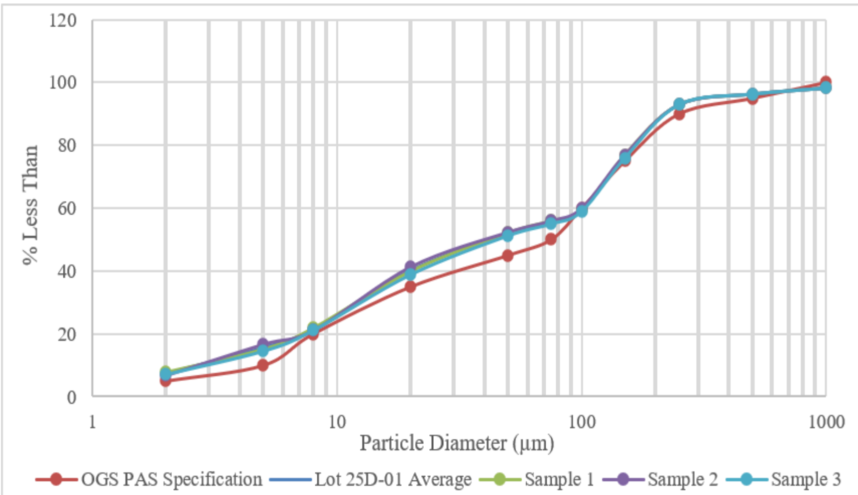


Figure 4. Average Particle Size Distribution of Test Sediment (Lot #25D-01) Used for the Removal Test Compared to the Specified PSD (OGS PAS Target PSD)

The PSD of the test sediment is allowed to vary from the specified percent less than value by three percentage points as long as the median particle size (d_{50}) does not exceed 75 μm. The test sediment was found to meet the OGS PAS particle size specification and was acceptable for use. With an average d_{50} of 32.4 μm, the test sediment was finer than the sediment required by the Canadian OGS PAS.

Test Sediment: Scour Performance - The test sediment used for sediment scour NJDEP certification testing was custom blended using commercially available silica sand (sediment lot #25B-04) with a specific gravity of 2.65. The test results are shown graphically in Figure 5. Some of the reported particle size data had to be interpolated to allow for comparison to the required particle size specification. The PSD of the three-sample average of the test sediment is allowed to vary from the specified percent less than NJDEP Scour Test Sediment Specification value by three percentage points as long as the median particle size (d_{50}) does not exceed 230 μm. The scour sediment was found to meet the NJDEP particle size specification and was acceptable for use. With a median particle size (d_{50}) of 182 μm, the test sediment was finer than the sediment required by the NJDEP test protocol (230 μm).

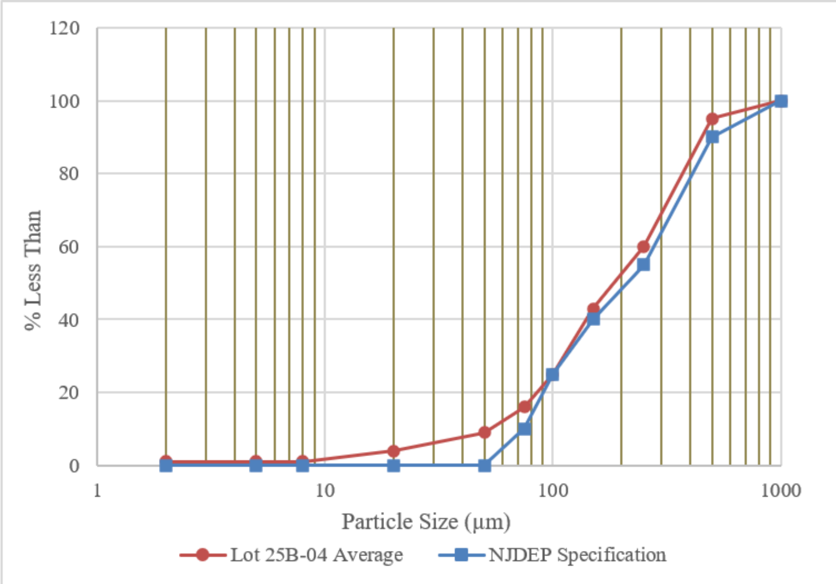


Figure 5. Average Particle Size Distribution of Test Sediment (Lot #25B-04) Used for the Scour Performance Test Compared to the Specified PSD (NJDEP Target PSD)

Sediment Removal Efficiency Testing - The capacity of the device to retain sediment was determined at seven surface loading rates using the modified mass balance method. This method involved measuring the mass of the injected and retained sediment for each test run. Sediment removal efficiency testing was conducted in two phases. In the first phase, 7 runs were conducted in accordance with the NJDEP protocol. In the second phase, four additional runs were conducted in accordance with the OGS PAS test. The data from the second phase was combined with the data from 3 runs in the first phase (SLR: 400, 1000, and 1400 L/min-m²).

Table 1 summarizes the removal efficiency of the SurgeSettler, based on the mass of the captured sediment. The captured sediment was reported as two quantities; the amount captured in the unit and the amount captured in the inlet pipe.

Table 1. Sediment Removal Efficiency of the SurgeSettler Based on Retained Sediment

Surface Loading Rate (L/min-m²)	40	80	200	400*	600	1000*	1400*
Total Mass Added kg (lb)	15.66 (34.52)	16.58 (36.56)	16.18 (35.66)	17.67 (38.96)	20.14 (44.40)	18.90 (41.66)	18.91 (41.70)
Sediment Fed into Unit kg (lb)	15.30 (33.72)	15.80 (34.84)	14.30 (31.53)	13.68 (30.15)	18.32 (40.39)	15.05 (33.19)	15.11 (33.31)
Sediment Captured in Inlet Pipe kg (lb)	0.13 (0.29)	0.00 (0.00)	0.02 (0.04)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Sediment Recovered from Unit kg (lb)	13.09 (28.85)	11.87 (26.16)	9.04 (19.93)	9.56 (21.14)	9.16 (20.19)	6.26 (13.81)	5.91 (13.03)
Removal Efficiency (%)	86.31	75.44	63.31	70.11	50.0	41.61	39.12

* Test runs completed under the NJDEP protocol

Removal efficiency generally decreased as surface loading rate increased. The removal efficiency measured at the 400 L/min-m² SLR (70.11%) was greater than that measured at the 200 L/min-m² SLR (63.31%). The 400 L/min-m² SLR performance claim was based on the qualifying NJDEP test result (Run 4) evaluated in accordance with the Canadian OGS PAS and the Verification Plan. The custom test sediment used for the OGS PAS tests had a substantially lower median particle size (d_{50} = 32.4 μm) compared to the coarser sediment blend utilized during the phase 1 NJDEP test runs (d_{50} = 48-64 μm). The finer gradation of the OGS PAS sediment inherently presents greater resistance to sedimentation, which together with normal test-to-test variability, accounts for the slight increase in capture efficiency observed at the 400 L/min-m² loading rate. The reported removal efficiencies represent discrete measured results and are not intended to define a continuous curve for performance claim purposes.

Sediment Scour Testing - Sediment scour testing was performed per the NJDEP protocol. The scour test was performed at an average flow rate of 29,098 L/min (7,687 GPM). During the scour test, the water flow rate and temperature were recorded once every 30 seconds. Testing commenced by increasing the flow into the system until the target flow rate was achieved within three minutes of starting the test. Background and effluent sampling began one minute after starting flow. An effluent grab sample was taken once every two minutes, until a total of 15 effluent samples (plus 15 duplicate samples) were collected. A total of eight background samples (plus eight duplicate samples) were taken with every odd-numbered effluent sample.

The background water samples that were collected were analyzed for SSC by Gabriel Environmental Services in accordance with ASTM D3977-97. All samples collected met the OGS PAS and the NJDEP acceptance criterion of less than 20 mg/L.

The effluent water samples were also collected and tested for SSC; the initial results and the results corrected for background concentration are reported in Table 2. For the background correction, the background SSC was interpolated for the time points in between background sampling. For calculation purposes, a value of 1.00 mg/L (half of the method limit of quantitation, or LOQ) was used for any result of <LOQ.

Table 2. Scour Test Effluent Sediment Concentration of the SurgeSettler

Scour Suspended Sediment Concentration (mg/L)			
Sample #	Effluent	Background	Adjusted Effluent
1	10.2	1.00	9.20
2	8.4		7.40
3	7.63	1.00	6.63
4	5.49		4.49
5	11.9	1.00	10.9
6	15.5		13.7
7	12.4	2.58	9.82
8	8.38		6.59
9	17.4	1.00	16.4
10	14.7		12.6
11	13.3	3.13	10.2
12	14.6		10.8
13	13.2	4.54	8.66
14	12.0		7.06
15	10.5	5.34	5.16
Average Adjusted Effluent Concentration: 9.31 mg/L			

Results showed an average adjusted effluent sediment concentration of 9.31 mg/L at an average flow rate of 29,098 L/min (7687 GPM), equivalent to an SLR of 3728 L/min-m² for 29 minutes. Because this testing flow rate significantly exceeds the maximum Canadian OGS PAS requirement (2600 L/min-m²), it represents a conservative assessment. The magnitude of scour is dependent on the internal flow patterns (velocity and turbulence) and water volume within the unit, which is related to the depth below the inlet and outlet. The SurgeSettler possessed a large water volume in the sump and consequently, low velocity which prevented incipient motion of the sediment of sufficient magnitude for scour to occur.

Hydraulic Testing - Head loss across the SurgeSettler was measured across eight flow rates ranging from 1,147 L/min to 28,841 L/min (303 GPM to 7,619 GPM) on a clean unit with a false floor installed at 20 cm (8 in) above the floor, corresponding to 50% of the maximum sediment storage depth. Influent and effluent water surface elevations were continuously monitored using piezometer taps installed one pipe diameter upstream and downstream of the unit, equipped with calibrated Vega VEGAPULS 31 radar level sensors (precision ±2 mm). Internal bypass over the vertical baffle weir was observed to initiate at approximately 7,570 L/min (2,000 GPM), corresponding to an SLR of 970.5 L/min-m². Prior to bypass, head loss (Δh) reached 17.17 cm (6.76 in) at a flow rate of 6,450

L/min (1,704 GPM), with calculated loss coefficients (K_L) ranging between 0.13 and 0.19. Across the full hydraulic range up to peak flow, maximum head loss reached 87.05 cm (34.27 in) at 28,841 L/min (7,619 GPM).

Quality Assurance

QA/QC measures are documented in the NJDEP protocol and the Canadian OGS PAS to ensure results are accurate and precise, and that tests conducted by multiple vendors of the same category of technology employ the same test method. QA/QC measures include the use of accredited laboratories, established standard test methods, regular calibration of instruments, tolerance limits for operational variation, continuous data monitoring, and stringent chain-of-custody documentation. To satisfy these requirements, physical testing was conducted at the StormTrap Research and Development Laboratory in Morris, IL, which operates under an internal quality management system conforming to ISO 9001:2015 principles. All physical testing, equipment setups, sediment dosing, sample collections, weightings, and device security sealing were continuously observed and audited by an independent third-party witness (Jason Wiesbrock, P.E., SpaceCo Inc.).

Particle size distribution (PSD) and moisture content analyses were performed by GeoTesting Express (Acton, MA; ISO/IEC 17025 accredited by A2LA per ASTM D6913/D7928 and ASTM D2216). Aqueous Suspended Sediment Concentration (SSC) testing was performed by Gabriel Environmental Services (Chicago, IL; NELAP-accredited laboratory utilizing ASTM D3977-97 Test Method B, with demonstrated competency verified via blind proficiency testing per NJDEP laboratory evaluation criteria). Key QA/QC procedures, acceptance criteria, and validation results are summarized in Table 3.

Table 2. Scour Test Effluent Sediment Concentration of the SurgeSettler

QC Parameter	Acceptance Criteria
Water Flow Rate Stability	Target flow rate maintained within $\pm 10\%$ with a Coefficient of Variation (COV) ≤ 0.03 (NJDEP) or ≤ 0.04 (OGS PAS). **Met:** Flow variation was $< 1\%$, and COV ranged from 0.0005 to 0.02 across all removal runs and 0.001 for scour testing.
Water Temperature	Maximum temperature $\leq 26.7°C$ $(80.0°F)$ for NJDEP runs and $\leq 25.0°C$ $(77.0°F)$ for OGS PAS runs. **Met:** Temperatures reached $18°C$-$21°C$ $(65°F$-$69°F)$ for PAS runs and $25.0°C$-$25.9°C$ $(77.2°F$-$78.7°F)$ for NJDEP runs.
Influent Sediment Concentration	Target concentration of 200 ± 25mg/L $(175$-225 mg/L$)$ with a feed rate COV ≤ 0.10 across a minimum of 6 calibration samples per run. **Met:** Average concentrations ranged from 189 to 208 mg/L with feed rate COV between 0.01 and 0.046.
Background Water SSC	Background SSC must remain < 20.0 mg/L across all test runs. **Met:** All removal run background samples were ≤ 8.44 mg/L (most < 2.0 mg/L LOQ); scour background samples ranged from < 2.0 to 5.34 mg/L.
Test Sediment PSD Compliance	Median particle size $(d_{50}) \leq 75\mu$m for removal testing and $\leq 230\mu$m for scour testing, varying by $\leq 3\%$ from target specification. **Met:** Removal test lots achieved an average d_{50} of 32μm (PAS Lot #25D-01) and 48-64μm (NJDEP Lots); scour sediment achieved $d_{50} = 182\mu$m.
Sediment Moisture Content	Analyzed per ASTM D2216-19. **Met:** Moisture content was $\leq 0.10\%$ for PAS sediment and $< 0.28\%$ for NJDEP sediment; no mass correction was required.
Decant Sediment Drying & Weighing	Dried at $\leq 100°C$ $(212°F)$ until constant mass ($\leq 0.1\%$ mass difference between successive weighings ≥ 2 hours apart) weighed to a precision ≤ 9g $(0.02$ lbs$)$. **Met:** All recovered sediment trays and filter bags achieved constant mass per protocol rules. Scales were verified daily with NIST-traceable weights.
Laboratory Accreditation & Analytical Methods	Sample analysis conducted by qualified laboratories using standard analytical procedures in accordance with ISO/IEC 17025 or equivalent standards. **Met:** SSC analysis conducted by Gabriel Environmental Services per ASTM D3977-97 (competence demonstrated via blind proficiency testing per NJDEP protocol provisions); PSD and moisture analysis conducted by GeoTesting Express (A2LA /

QC Parameter	Acceptance Criteria
	ISO/IEC 17025 accredited per ASTM D6913/D7928 and ASTM D2216).
Chain of Custody & Device Security	Signed Chain of Custody (COC) forms for all external lab submissions and tamper-evident security tags placed on unit access hatches, decant filters, and drying ovens when unattended. **Met:** Fully executed and verified by the independent third-party observer. Physical testing, sample handling, and sediment drying were continuously witnessed and audited by an independent third-party observer (P.E.), with COC documentation executed for all external laboratory submissions.

All quality control parameters met or exceeded the prescribed acceptance criteria of the NJDEP protocol, the Canadian OGS PAS, and the VerifiGlobal Verification Plan. Equipment calibrations (flow meters, radar level sensors, temperature probes, and analytical scales) were verified prior to testing, and calibration certificates are maintained in the project records. The verifier confirms that the data generated are quality-assured, defensible, and suitable for verifying the technology performance claims.

Variances

Testing and verification of the StormTrap SurgeSettler Hydrodynamic Separator was conducted in accordance with the *Canadian Procedure for Laboratory Testing of Oil-Grit Separators Publicly Available Specification* (TRCA, 2023) and the *NJDEP Laboratory Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device* (NJDEP, 2023), following the protocol harmonization framework established in the SurgeSettler Verification Plan. The Canadian 2023 OGS PAS establishes standardized provisions for protocol harmonization and data alignment with NJDEP laboratory testing methodologies. A summary of accepted variances, technical deviations, and scope exclusions is outlined below.

Surface Loading Rates: In accordance with the SurgeSettler Verification Plan, qualifying historical NJDEP removal datasets (Runs 4, 6, and 7) were evaluated and accepted as fulfilling Canadian OGS PAS surface loading rate requirements.

Fractional PSD Mass Balance: Per the accepted TSTP, fractional PSD mass balance of recovered sediment was omitted due to documented particle agglomeration and binding during post-test oven drying (at 100°C). Sediment removal efficiency was determined strictly via whole-mass recovery (modified mass balance) from the unit sump, inlet pipe, and decant bag filters.

Sediment Scour & Re-suspension Testing: Rather than executing the 5-stage stepped flow hydrograph (200 to 2,600 L/min-m²) per Section 6.0 of the OGS PAS, scour testing was conducted in accordance with the NJDEP continuous high-flow protocol. The test unit was pre-loaded to 50% capacity (10 cm bed over a 10 cm false floor) with test sediment ($d_{50} = 182\ \mu$m) and subjected to a continuous high flow rate of 29,098 L/min (7,687 GPM, equivalent to an SLR of 3,728 L/min-m²) for 29 minutes ($n = 15$ effluent grab samples). Because this flow rate exceeds the maximum OGS PAS requirement (20,290 L/min / 2,600 L/min-m²) by over 43%, it represents a conservative assessment and was accepted by the verifier.

Light Liquid Retention Simulation Test: The light liquid (low-density polyethylene plastic bead) retention simulation test was not conducted. The verified performance claims for the SurgeSettler are explicitly restricted to sediment removal efficiency, scour prevention, and hydraulic characteristics.

Apparatus Housing Material: The physical evaluation utilized a full-scale prototype housed within a welded metal vault rather than a standard commercial precast concrete vault. The welded metal vault matched standard commercial precast concrete units in all key internal dimensions, settling pack geometry, baffles, and pipe invert elevations. Structural integrity was confirmed during testing with no observable wall flexing or distortion under maximum hydraulic and scour loading conditions (up to 29,098 L/min). The use of alternate materials for the structure is not believed to significantly affect system performance.

Commercial Model Sizing and Scaling: The SurgeSettler is engineered as a modular HDS available in various standard commercial vault sizes. Scaling the performance of the tested unit (6×14) to larger commercial models is governed by the scaling principles outlined in the respective protocols. Under the Canadian OGS PAS (TRCA, 2023), untested models must maintain geometric proportionality with the tested unit across key dimensions (length, width, and effective treatment depth) within an allowable variance of 15%. Standard commercial models 12×24 and 12×32 maintain the required geometric proportionality and effective treatment depth scaling, making them eligible for the verified performance claim extension. Conversely, while commercial models 8×21 and 10×21 comply with NJCAT and NJDEP scaling rules, they utilize a shallower depth configuration (6.00 ft effective treatment depth [ETD]) that does not satisfy the depth-scaling criteria of Section 8.0 of the 2023 OGS PAS. Consequently, performance claims under this verification apply exclusively to the tested 6×14 model and the geometrically compliant 12×24 and 12×32 units, as summarized in Table 4.

Table 4. SurgeSettler Commercial Dimensions, Capacities, and OGS PAS Scaling Compliance

Model	Width (ft)	Length (ft)	Treatment Area (ft^2)	50% Max. Sediment Storage (ft^3)	Chamber Depth (ft)	Effective Treatment Depth (ft)	NJDEP Scaling	Canadian OGS PAS Scaling
6 x 14 Tested Unit	6	14	84	56	6.67	6.00	Complies	Complies
8 x 21	8	21	168	112	6.67	6.00	Complies	Excluded Depth scaling not compliant
10 x 21	10	21	210	140	6.67	6.00	Complies	Excluded Depth scaling not compliant
12 x 24	12	24	288	192	12.5	11.83	Complies	Complies
12 x 32	12	32	384	256	13.5	12.83	Complies	Complies

Note:
- Chamber depth is defined as the depth from the effluent pipe invert to the vault sump floor.
- Effective treatment depth (ETD) is defined as the depth from the effluent pipe invert to 50% of the maximum sediment storage depth.
- Scaling rule compliance under Section 8.0 of the Canadian OGS PAS requires that units maintain geometric proportionality within 15% tolerance across length, width, and effective depth relative to the tested model. Models 8×21 and 10×21 meet NJDEP scaling criteria but are excluded from OGS PAS claim extension due to reduced depth ratios.

Verification Summary

Verification of the performance claims for the StormTrap SurgeSettler Hydrodynamic Separator was conducted following the requirements outlined in the *Verification Plan for the StormTrap SurgeSettler High Flow Hydrodynamic Separator* (VerifiGlobal, 2026), which is based on the ISO 14034:2016 ETV standard. The verified performance claims are as follows:

1. Sediment Removal Efficiency: During the sediment removal test with a false floor set to 20 cm (8 in), equivalent to 50% of the manufacturer's recommended maximum sediment storage depth, and a target influent test sediment concentration of 200 mg/L, the SurgeSettler 1.83 m × 4.27 m (6 ft × 14 ft) device removed 86%, 75%, 63%, 70%, 50%, 42%, and 39% of influent sediment by mass at surface loading rates of 40, 80, 200, 400, 600, 1000, and 1400 L/min-m² (82, 165, 412, 825, 1237, 2062, and 2886 GPM), respectively.

2. Sediment Scour and Re-suspension: During the scour test, a false floor set at 10 cm (4 in) was pre-loaded with 10 cm (4 in) of test sediment ($d_{50} = 182\ \mu$m), reaching 50% capacity (20 cm / 8 in). When subjected to a continuous high flow rate of 29,098 L/min (7,687 GPM / SLR of 3,728 L/min-m²) for 29 minutes, the device generated an average background-adjusted effluent concentration of 9.31 mg/L.

3. Maximum Hydraulic Flow Capacity & Head Loss: Hydraulic flow capacity was evaluated across 8 flow rates ranging from 1,147 L/min to 28,841 L/min (303 GPM to 7,619 GPM) on a clean unit with a false floor set at 50% capacity (20 cm / 8 in). Observed head loss (Δh) ranged from 3.86 cm to 87.05 cm (1.52 in. to 34.27 in.), with calculated loss coefficients (K_L) ranging from 0.13 to 1.43 for flow rates up to the point of bypass.

4. Onset of Internal Bypass: Internal bypass over the vertical baffle was observed to initiate at a flow rate of approximately 7,570 L/min (2,000 GPM). At flows above this threshold, excess flow routes over the internal baffle while floatables are retained in the forebay.

In conclusion, the StormTrap SurgeSettler Hydrodynamic Separator is an effective technology that, when sized and applied in accordance with manufacturer specifications and local regulatory requirements, captures and retains suspended sediment and associated pollutants from stormwater runoff.

What is ISO 14034?

The purpose of environmental technology verification is to provide a credible and impartial account of the performance of environmental technologies. Environmental technology verification is based on a number of principles to ensure that verifications are performed and reported accurately, clearly, unambiguously and objectively. The International Organization for Standardization (ISO) standard for environmental technology verification (ETV) is ISO 14034, which was published in November 2016.

Benefits of ETV

ETV contributes to protection and conservation of the environment by promoting and facilitating market uptake of innovative environmental technologies, especially those that perform better than relevant alternatives. ETV is particularly applicable to those environmental technologies whose innovative features or performance cannot be fully assessed using existing standards. Through the provision of objective evidence, ETV provides an independent and impartial confirmation of the performance of an environmental technology based on reliable test data. ETV aims to strengthen the credibility of new, innovative technologies by supporting informed decision-making among interested parties.

For more information on the StormTrap SurgeSettler Hydrodynamic Separator, contact:	For more information on VerifiGlobal, contact:
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