State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATERSHED PROTECTION AND RESTORATION
BUREAU OF NJPDES STORMWATER PERMITTING
P.O. Box 420 Mail Code 501-02A
Trenton, New Jersey 08625-0420
609-633-7021 / Fax: 609-777-0432
https://dep.nj.gov/stormwater/

PHILIP D. MURPHY
Governor

TAHESHA L. WAY
Lt. Governor

SHAWN M. LATOURETTE
Commissioner

February 11, 2025

Joe Costa
Senior Scientist & Quality Manager
Oldcastle Infrastructure
7000 Central Park, Suite 800
Atlanta, GA 30328

Re: MTD Lab Certification
Oldcastle Nutrient Separating Baffle Box
Online Installation

TSS Removal Rate 50%

Dear Mr. Costa:

The Stormwater Management rules under N.J.A.C. 7:8-5.2(f) and 5.2(j) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by the New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). Oldcastle Infrastructure has requested a Laboratory Certification for the Oldcastle Nutrient Separating Baffle Box (NSBB).

The project falls under the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advance Technology" dated August 4, 2021. The applicable protocol is the "New Jersey Laboratory Testing Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device" dated January 1, 2021, and last updated April 25, 2023.

NJCAT verification documents submitted to the NJDEP indicate that the requirements of the aforementioned protocol have been met or exceeded. The NJCAT letter also included a recommended certification TSS removal rate and the required maintenance plan. The NJCAT Verification Report with the Verification Appendix (dated January 2025) for this device is published online at http://www.njcat.org/verification-process/technology-verification-database.html.

The NJDEP certifies the use of the Oldcastle Nutrient Separating Baffle Box at a TSS removal rate of 50% when designed, operated and maintained in accordance with the information provided in the Verification Appendix and the following conditions:

1. The maximum treatment flow rate (MTFR) for the manufactured treatment device (MTD) is calculated using the New Jersey Water Quality Design Storm (1.25 inches in 2 hrs) in N.J.A.C. 7:8-5.5.

2. The NSBB shall be installed using the same configuration reviewed by NJCAT and shall be sized in accordance with the criteria specified in item 6 below.

3. This NSBB cannot be used in series with another MTD or a media filter (such as a sand filter) to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.

4. Additional design criteria for MTDs can be found in Chapter 11.3 of the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual which can be found on-line at https://dep.nj.gov/stormwater/.

5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the NSBB. A copy of the maintenance plan is attached to this certification. However, it is recommended to review the maintenance website at https://oldcastleinfrastructure.com/wp-content/uploads/2024/12/NSBB-OM-Manual_2024_0827.pdf for any changes to the maintenance requirements.

6. Sizing Requirements:

   The example below demonstrates the sizing procedure for the NSBB:

   Example: A 0.25-acre impervious site with a slope of 5% is to be treated to 50% TSS removal using a NSBB. The hydraulically most distant point to the inlet of the NSBB is 110 feet. The site is located in an area for which the projected 2-year storm rainfall depth was calculated to be 3.84 inches.

   Maximum Treatment Flow Rate (MTFR) Evaluation:

   The site runoff (Q) was based on the following:

   CN = 98 (Curve Number for impervious)
   Dimensionless Unit Hydrograph (DUH) = SCS Standard DUH (peak rate factor of 484)
   Time of concentration = 0.8 minutes
   Q = 0.77 cfs

   Given the site runoff is 0.77 cfs and based on Table 1 below, the NSBB-48 Model with an MTFR of 0.94 cfs would be the smallest model approved that could be used for this site that could remove 50% of the TSS from the impervious area without exceeding the MTFR.

   The sizing table corresponding to the available system models is noted below. Additional specifications regarding each model can be found in the Verification Appendix.

Table 1: NSBB Models and Associated MTFRs

NSBB Model	Vault Dimensions (ft)	Maximum Treatment Flow Rate (cfs)	Effective Treatment Area (sq. ft.)	Hydraulic Loading Rate (gpm/sq. ft.)
NSBB-48	4x8	0.94	29.3	14.4
NSBB-510	5x10	1.50	46.6	14.4
NSBB-612	6x12	2.19	68.0	14.4
NSBB-715	7x15	3.23	100.3	14.4
NSBB-816	8x16	3.86	120.0	14.4
NSBB-1020	10x20	6.11	190.0	14.4
NSBB-1224	12x24	8.88	276.0	14.4

Be advised a detailed maintenance plan is mandatory for any project with a Stormwater BMP subject to the Stormwater Management Rules, N.J.A.C. 7:8. The plan must include all the items identified in the Stormwater Management Rules, N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of inspection and maintenance equipment and tools, specific corrective and preventative maintenance tasks, indication of problems in the system, and training of maintenance personnel. Additional information can be found in Chapter 8: Maintenance and Retrofit of Stormwater Management Measures.

If you have any questions regarding the above information, please contact Minesh Patel of my office at minesh.patel@dep.nj.gov.

Sincerely,

Gabriel Mahon, Chief
Bureau of NJPDES Stormwater Permitting
Division of Watershed Protection and Restoration
New Jersey Department of Environmental Protection

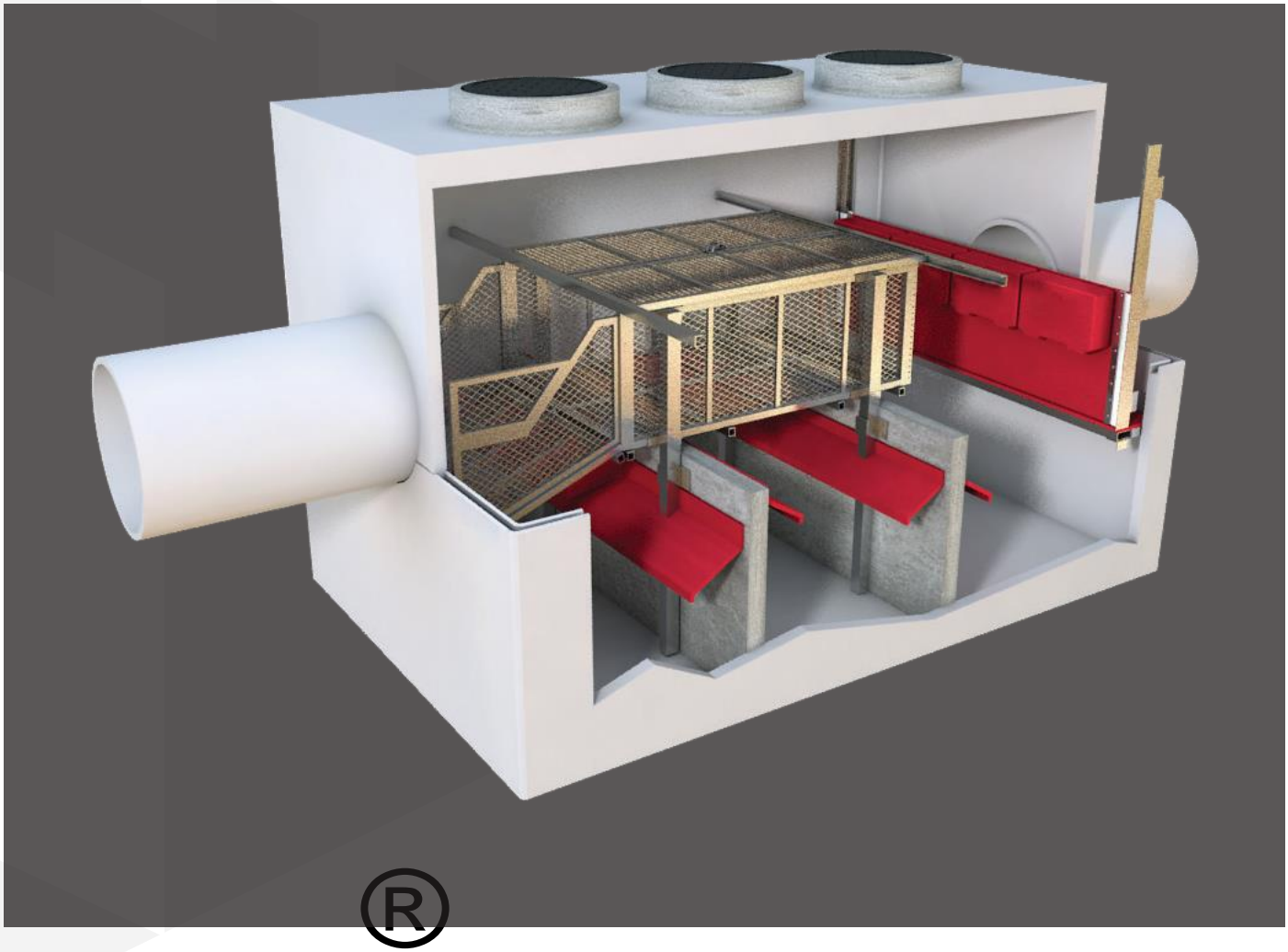
Attachment: Maintenance Plan

c: Richard Magee, NJCAT

NSBB®

Nutrient Separating Baffle Box®

Operation and Maintenance Manual



Oldcastle Infrastructure™
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TABLE OF CONTENTS

WARNING

Read the Following Information, Instructions and Warnings Before Inspecting, Cleaning or Performing Maintenance on this Stormwater Treatment Device.

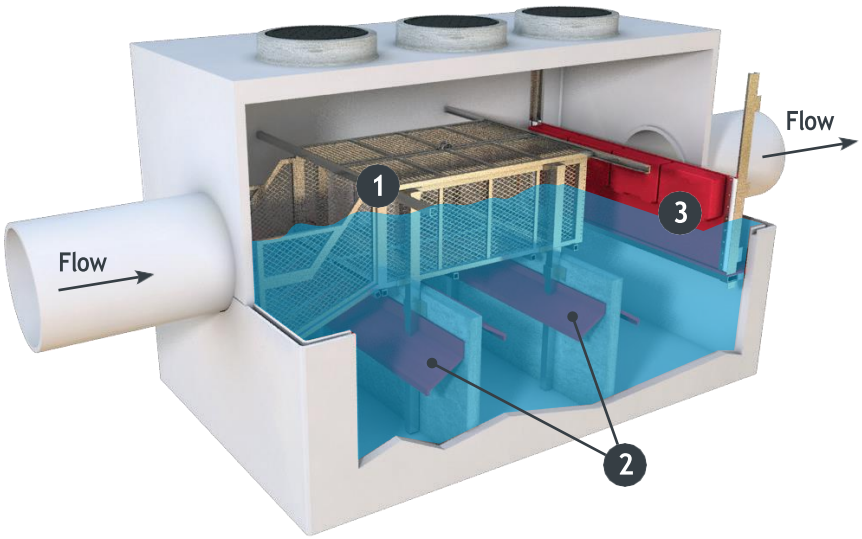
This manual is intended to explain the specifics of the Oldcastle Infrastructure Nutrient Separating Baffle Box and to review the aspects of existing regulations and safety procedures. It is the responsibility of all personnel to familiarize themselves with, understand and comply with all applicable local, state and federal laws before attempting to inspect or service this unit. All precautions and procedures in this manual are current at the time of printing but are subject to change based on the development of new processes and procedures. Oldcastle Infrastructure assumes no responsibility and is not accountable for any injuries, fines, penalties or losses that occur involving any procedure in this manual or other unaddressable actions taken. The Nutrient Separating Baffle Box performance is based on the procedures being followed in this manual. Non-Compliance with the outlined measures will be the responsibility of the owner.

GENERAL INFORMATION

The Nutrient Separating Baffle Box (NSBB) is a key component of your stormwater management program. To maintain proper operation, maintenance of these units is essential. The NSBB designed and manufactured by Oldcastle Infrastructure contains patented technologies to treat and manage stormwater. The NSBB is highly effective in capturing Nitrogen, Phosphorus, Total Suspended Solids, organics, trash, oils and grease. Independent testing has shown the NSBB is capable of capturing up to 95% of trash, 90% of Total Suspended Solids, 20% of nitrogen and 19% of phosphorus. Oldcastle Infrastructure recommends inspections be conducted semi-annually for the first year and annually thereafter for optimal removal efficiency.

During Storm Event

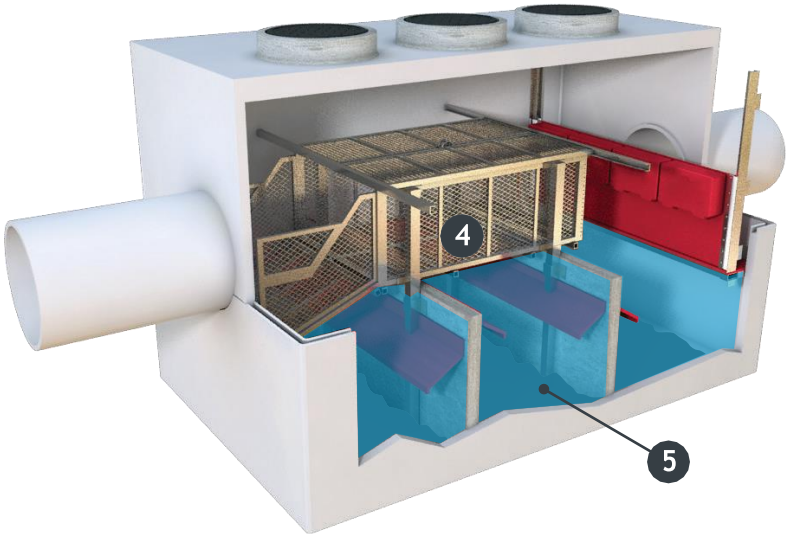
Nutrient rich organics and litter are captured in the screen system.



1. Runoff filters through the screen and skimmer leaving pollutants behind. Left over runoff evaporates over time.
2. Turbulence defectors prevent captured sediment from becoming resuspended.
3. Hydrocarbons and other floating debris are trapped upstream of the floating skimmer.

After Storm Event

Debris dry out between storm events while pollutants are stored above the static water. As a result, the system does not turn septic.



4. Nutrient pollutant load is not lost to static water and will not be flushed out during the next storm event.
5. Separating organic matter from the static water prevents bacterial buildup.

INSPECTION INFORMATION

Oldcastle Infrastructure recommends the following guidelines for inspection: After installation and the site has stabilized, post construction inspections should be conducted after every runoff event. To ensure the Nutrient Separating Baffle Box obtains optimal pollutant removal efficiencies, subsequent sediment accumulation inspections should be conducted a minimum of every six (6) months. In the event the sediment accumulation equals or exceeds 80% of the minimum sediment storage volume (Fig 1), then all accumulated sediment must be removed.

Table A-1: 50% NJDEP Certification Performance – MTFRs & Sediment Removal Intervals for NSBB Models

NSBB® Model	Vault Dimensions (ft)	NJDEP 50% TSS Maximum Treatment Flow Rate (cfs)	Treatment Area (ft^2)	Hydraulic Loading Rate (gpm/ft^2)	50% Max Sediment Storage Volume (ft^3)	Required Sediment Removal Interval (months)
NSBB-48	4x8	0.94	29.3	14.4	14.7	111
NSBB-510	5x10	1.50	46.6	14.4	23.3	111
NSBB-612	6x12	2.19	68.0	14.4	34.0	111
NSBB-715	7x15	3.23	100.3	14.4	50.2	111
NSBB-816	8x16	3.86	120.0	14.4	60.0	111
NSBB-1020	10x20	6.11	190.0	14.4	95.0	111
NSBB-1224	12x24	8.88	276.0	14.4	138.0	111

Table A-2: 50% NJDEP Certification Performance – Standard Dimensions for NSBB Models

NSBB® Model	Maximum Treatment Flow Rate (cfs)	Chamber Depth (ft)	Sediment Sump Depth (ft)	Treated Chamber Depth[1,2] (ft)	Aspect Ratio of Treatment Area[3]	
					Length : Width	Width : Treated Chamber Depth
NSBB-48	0.94	3.0	1	2.5	2	1.6
NSBB-510	1.50	3.0	1	2.5	2	2.0
NSBB-612	2.19	3.0	1	2.5	2	2.4
NSBB-715	3.23	4.5	1	4.0	2.14	1.8
NSBB-816	3.86	5.1	1	4.6	2	1.7
NSBB-1020	6.11	6.4	1	5.9	2	1.7
NSBB-1224	8.88	7.7	1	7.2	2	1.7

[1] Treated Chamber Depth is the chamber depth minus 1/2 the sediment sump depth.

[2] For units <250% MTFR of the tested unit (NSBB-48), the depth must be equal or greater than the depth of the unit treated. A variance of 15% is allowable.

[3] For models >250% MTFR of the tested unit (NSBB-48), the unit must be geometrically proportionate to the tested unit. A variance of 15% is allowable.

Table A-3: 80% NJDEP Coarse Sediment Performance – MTFRs & Sediment Removal for Standard NSBB Models

NSBB® Model	Vault Dimensions (ft)	80% TSS Weighted Removal Treatment Flow Rate[1] (cfs)	Treatment Area (ft^2)	Hydraulic Loading Rate (gpm/ft^2)	50% Max Sediment Storage Volume (ft^3)
NSBB-48	4x8	1.13	29.3	17.3	14.7
NSBB-510	5x10	1.80	46.6	17.3	23.3
NSBB-612	6x12	2.62	68.0	17.3	34.0
NSBB-715	7x15	3.87	100.3	17.3	50.2
NSBB-816	8x16	4.63	120.0	17.3	60.0
NSBB-1020	10x20	7.32	190.0	17.3	95.0
NSBB-1224	12x24	10.6	276.0	17.3	138.0

[1] Tested with OK-110 equivalent sediment.

Table A-4: 80% NJDEP Coarse Sediment Performance – MTFRs Standard Dimensions for NSBB Models

NSBB® Model	Maximum Treatment Flow Rate (cfs)	Chamber Depth (ft)	Sediment Sump Depth (ft)	Treated Chamber Depth[1,2] (ft)	Aspect Ratio of Treatment Area[3]	
					Length : Width	Width : Treated Chamber Depth
NSBB-48	1.13	3.0	1	2.5	2	1.6
NSBB-510	1.80	3.0	1	2.5	2	2.0
NSBB-612	2.62	3.0	1	2.5	2	2.4
NSBB-715	3.87	4.5	1	4.0	2.14	1.8
NSBB-816	4.63	5.1	1	4.6	2	1.7
NSBB-1020	7.32	6.4	1	5.9	2	1.7
NSBB-1224	10.6	7.7	1	7.2	2	1.7

[1] Treated Chamber Depth is the chamber depth minus 1/2 the sediment sump depth.

[2] For units <250% MTFR of the tested unit (NSBB-48), the depth must be equal or greater than the depth of the unit treated. A variance of 15% is allowable.

[3] For models >250% MTFR of the tested unit (NSBB-48), the unit must be geometrically proportionate to the tested unit. A variance of 15% is allowable.

Table A-5: Trash Capture Sizing

NSBB® Model	Vault Dimensions (ft)	Max Pipe Size (in)	Min Rim to Invert Depth[1] (ft)	Sump Depth (ft)	Sump Volume (cf)	Screen Volume	5mm Trash Capture Treatment Flow[6] (cfs)	Max Peak Flow[7] (cfs)
NSBB-48	4x8	24	4.17	3.0	88.1	25.8	28.80	21.5
NSBB-612	6x12	36	5.17	3.0	204.1	54.5	42.80	56.2
NSBB-816	8x16	48	6.00	3.0	360.0	124.6	72.00	94.1

[1] Minimum Rim to Invert Depth based on Max Pipe Size listed. For depths less than minimum contact Soln Engr for design assistance.

[2] 50% Maximum Sediment Storage Volume per NJCAT verification.

[3] Based on NJCAT verification and NJDEP certification for 50% removal of D50 = 75 micron.

[4] Based on AET Tech, LLC Technical Memo (Smith, 7/20/18). Contact Soln Engr for alternative particle size treatment flows.

[5] Based on maximum WSE 2" below inside top of vault. For smaller pipe sizes confirm capacity with Soln Engr.

[6] Based on empty 5mm Screen Basket.

[7] Based on maximum WSE 2" below inside top of vault. For smaller pipe sizes confirm capacity with Soln Engr.

INSPECTION PROCEDURE

- Inspect the unit from surface.
- Open access points (Manhole / Hatch) and secure properly.
- Visually inspect screen system to determine overall debris accumulation.
- Inspect sediment chambers under screen system.
- Inspect condition of joints and inflow / outflow pipe grout areas.

INSPECTION CHECKLIST

Inspection Checklist and Maintenance Guidance: Nutrient Separating Baffle Box.
To be completed at Time of Inspection or Maintenance.

OWNER NAME

LOCATION

ADDRESS

PHONE

DATE & TIME

SITE CONDITIONS

INSPECTION ITEMS	RECOMMENDED INTERVAL	COMMENTS
Access Openings	Semi-annually	
Screen System	Semi-annually	
Skimmer	Semi-annually	
Sediment Chambers	Semi-annually	
Vault Condition	Semi-annually	

1. Inspection items are to determine accessibility into Nutrient Separating Baffle Box.
2. Inspect screen system for debris volume and broken parts.
3. Inspect sediment chambers for estimated quantity.
4. Inspect general condition of vault for any clogged areas.

MAINTENANCE ITEMS	VOLUME COLLECTED	DATE	COMMENTS
Screen System			
Sediment Chambers			

1. Inspection items are to determine accessibility into Nutrient Separating Baffle Box.
2. After cleaning screen system, open bottom doors and vacuum out sediment chambers. (Estimate Volume Collected)

NSBB® COMPONENTS

Component Descriptions

The Nutrient Separating Baffle Box is a multi stage, self contained treatment system. Each subsequent component in the system protects prior stages from clogging. These stages include screening, separation and hydrocarbon absorption.

- Screening is provided by a rectangular basket system which is suspended above the static water level of the sedimentation chambers. The screening filter has a storage capacity of several cubic yards depending on the model. The primary function of the basket is to capture gross solids like trash and nutrient rich debris. The screening system contains debris and provides a dry storage state to prevent nutrient leaching and contamination of static water, causing a septic state.
- Sediment Separation is facilitated by three settling chambers each with a capacity of several cubic yards depending on the model. These chambers work to target smaller sediments and particulate metals.

View of Nutrient Separating Baffle Box and SkimBoss Upflow Filter

REQUIREMENTS & PARTS

Minimum Equipment Requirements

The use of a vacuum truck is required for servicing of the Nutrient Separating Baffle Box. Service crews are recommended to check all local, state and federal guidelines for servicing and disposal of any collected debris and sediments.

Structural Components

The structural components of the NSBB are designed to have a life span of several decades. Structural inspections are not required unless stipulated in guidelines set by the local municipality, state or federal agencies.

Replacement Parts

All interior components are designed and sized to be assembled and removed from the NSBB for servicing or for parts replacement. This can easily be accomplished via the access ports atop the structure. For any replacement parts or further instructions please contact:

Oldcastle Infrastructure
7000 Central Parkway
Suite 800
Atlanta, GA 30328

Phone: (888) 965-3227

SERVICING SUMMARY

Service Information

Maintenance activities include the removal of captured sediments and debris. Maintenance can be performed from outside the NSBB through access points such as manhole covers or hatches installed in the vault surface above the sediment chambers. During maintenance, the screen system may have either SunGlide™ Sliding Doors or Hinged Doors.

These top doors open to gain access to the debris captured by the screen system. This system also has bottom doors that open to give access to the sediment collected in the settling chambers. A vacuum truck is required for debris and sediment removal. Although not every circumstance can be covered in this manual, a situation may arise where the structure needs to be entered. Servicing does not require specialized tools.

Caution!
Any Service Work done in traffic areas must meet all DOT Roadway Work guidelines and necessary safety procedures.

Warning!
All OSHA confined space requirements must be met while cleaning any of the Nutrient Separating Baffle Box structures.

Service Procedure

1. Open the access openings (Manhole, Hatch or Grate) on the top of the Baffle Box.
2. Vacuum the debris captured by the screen system to expose the sediment collection chambers.
3. Open the bottom doors to the basket system to expose the sediment collection chambers. These doors have eyebolts to attach the service tool in order to open the bottom doors which hinge off to the side.
4. Vacuum each sediment chamber until they are empty.
5. After cleaning the sediment chambers close the bottom screen doors of the screen system. Lower or Slide the top doors and assure they lock correctly (if equipped with SunGlide Lids).
6. When all maintenance work is completed, be sure to close the access covers or hatches.

Note

All vacuum servicing of NSBB components can be done with the use of any vacuum truck designed for catch basin cleaning.

When possible, maintenance should be performed from the surface level.

SCREEN MAINTENANCE

Screen Maintenance Procedure

The Nutrient Separating Baffle Box Screen Basket is recommended to be inspected every 6 months and cleaned every 12 months.

1. Remove all manhole covers (or open hatches or grates) to gain access to the screening basket.
2. Remove all trash, litter, debris, organics and sediments captured by the screened basket either manually or with the use of a vacuum truck. The vacuum hose will not damage the screen.
3. Remove vacuum hose and replace manhole covers or hatch doors.
4. Transport all debris, trash, litter, organics and sediments to an approved disposal facility in accordance with local and state requirements.

Note

The screen basket must be cleaned before vacuuming each sediment separation chamber.

The bottom of the screen basket is designed with three hinged panels that are lifted vertically to access each separation chamber.

Nutrient Separating Baffle Box with trash / debris collected inside the screening system basket.

CHAMBER MAINTENANCE

Separation Chamber Maintenance Procedure
The Nutrient Separating Baffle Box Hydrodynamic Separation Chambers are recommended to be inspected every six (6) months and cleaned every twelve (12) months.

1. Remove all manhole covers (or open hatches or grates) to gain access to the separation chambers.
2. Lower vacuum truck hose into the first separation chamber through the screening basket closest to the inflow pipe. Pressure washing may be needed to remove compacted sediments.
3. Repeat this process in each separation chamber.
4. Remove vacuum hose and lower hinged panels of screening basket back to a horizontal position.

Open lower screen panels to remove sediments via vacuum truck.

POST SERVICING PROTOCOL

After completing inspection or maintenance, the service operator should prepare a record of service. The record should include maintenance activities performed, amount and description of debris collected and system condition.

- The owner will retain the service / inspection record for a minimum of five (5) years from the date of maintenance, or in accordance to specified EPA / DEP requirements.
- All records should be made available to the governing municipalities for inspection upon request at any time.
- Transport all debris, trash, litter, organics and sediments to an approved facility for disposal in accordance with local and state requirements.

Nutrient Separating Baffle Box with collected trash, organics and debris inside the screened basket system ready for disposal.

WARRANTY

Warranty Information

Oldcastle Infrastructure products are engineered and manufactured with the intent of being a permanent part of the infrastructure. Oldcastle Infrastructure warranties its products to be free from manufacturing defects for a period of 5 years from the purchase date. In the event a warranty claim is made and determined to be valid, Oldcastle Infrastructure will replace or repair the product at their own discretion. Warranty claims must be submitted, evaluated and approved by Oldcastle Infrastructure for the claim to be determined valid. All warranty work must be authorized by Oldcastle Infrastructure prior to work beginning not covered by this warranty. There are no warranties expressed or implied other than what is specified herein. Abusive treatment, neglect or improper use of the Nutrient Separating Baffle Box will not be covered by this warranty.

CONTACT INFORMATION

General Inquires

For additional information concerning installation, general usage, maintenance products, warranties or replacement parts please contact:

Oldcastle Infrastructure
7000 Central Parkway
Suite 800
Atlanta, GA 30328

Phone: (888) 965-3227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