



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Nonpoint Pollution Control

Division of Water Quality

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February 28, 2019

Walter Stein, P.E.
Division Manager
Jensen Stormwater BMP/LID Systems
Jensen Precast
825 Steneri Way
Sparks, NV 89431

Re: MTD Lab Certification
Jensen Deflective Separator (JDS) by Jensen Stormwater Systems
On-line Installation

TSS Removal Rate 50%

Dear Mr. Stein:

The Stormwater Management rules under N.J.A.C. 7:8-5.5(b) and 5.7 (c) 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). Jensen Stormwater Systems has requested a Laboratory Certification for the Jensen Deflective Separator (JDS).

The projects falls under the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advance Technology" dated January 25, 2013. 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 25, 2013.

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 February 2019) for this device is published online at <http://www.njcat.org/verification-process/technology-verification-database.html>.

The NJDEP certifies the use of the Jensen Deflective Separator (JDS) by Jensen Stormwater Systems 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 JDS stormwater treatment device 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 JDS stormwater treatment device 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 9.6 of the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual which can be found on-line at www.njstormwater.org.
5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the Jensen Deflective Separator. A copy of the maintenance plan is attached to this certification. However, it is recommended to review the maintenance website at <http://www.jensenengineeredsystems.com/wp-content/uploads/2019/02/JDS-OM-Manual.pdf> for any changes to the maintenance requirements.
6. Sizing Requirements:

The example below demonstrates the sizing procedure for the Jensen Deflective Separator:

Example: A 0.25-acre impervious site is to be treated to 50% TSS removal using a Jensen Deflective Separator. The impervious site runoff (Q) based on the New Jersey Water Quality Design Storm was determined to be 0.79 cfs.

Maximum Treatment Flow Rate (MTFR) Evaluation:

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

time of concentration = 10 minutes

i = 3.2 in/hr (page 5-8, Fig. 5-3 of the NJ Stormwater BMP Manual)

c = 0.99 (runoff coefficient for impervious)

$Q = ciA = 0.99 \times 3.2 \times 0.25 = 0.79 \text{ cfs}$

Given the site runoff is 0.79 cfs and based on Table A-1 below, the Jensen Deflective Separator Model JDS48-2424 with an MTFR of 0.92 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 under Table A-1.

Table A-1 JDS Models and associated MTFRs

JDS Model	Manhole Internal Diameter (ft)	Maximum Treatment Flow Rate ¹ (cfs)	Treatment Area (sq. ft.)	Hydraulic Loading Rate (gpm/sq. ft.)	50% Maximum Sediment Storage Volume ² (cu.ft.)
JDS36-1818	3	0.52	7.07	33.0	7.07
JDS48-2424	4	0.92	12.57	33.0	12.57
JDS60-2430	5	1.44	19.63	33.0	19.63
JDS72-3642	6	2.08	28.27	33.0	28.27
JDS84-4248	7	2.83	38.48	33.0	38.48
JDS96-4848	8	3.70	50.27	33.0	50.27
JDS120-6794	10	5.78	78.54	33.0	78.54
JDS144-94102	12	8.32	113.10	33.0	113.10
<ol style="list-style-type: none"> Using a tested Hydraulic Loading Rate of 33 gpm/sq.ft. with a test sediment of d50 of 62 µm and an annualized weighted TSS removal of 50% according to the NJDEP HDS protocol. 50% Maximum Sediment Storage Volume is calculated by the manhole internal area x 1 ft of sediment depth. The sediment sump depth is 2 ft on all units. 					

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 Mr. Nicholas X. Grotts of my office at (609) 633-7021.

Sincerely,



Gabriel Mahon, Chief
Bureau of Nonpoint Pollution Control

c: Chron File
Richard Magee, NJCAT
Nancy Kempel, Section Chief, BNPC
Jim Murphy, Supervisor, BNPC
Vince Mazzei, NJDEP-DLUR
Nicholas X. Grotts, NJDEP-BNPC

Attachment: Maintenance Plan

Operations and Maintenance Guidelines for

Jensen Deflective Separator (JDS) Units

SWTU: *Jensen Deflective Separator (JDS)*

INTRODUCTION

The *Jensen Deflective Separator (JDS)* Stormwater Treatment unit (**SWTU**) is an important and effective component of the stormwater management program and proper operation and maintenance of the unit are essential to demonstrate project's compliance with local, state and/or federal water pollution control requirements.

The *JDS* SWTU features the Continuous deflective separation non-blocking, indirect screening technique to treat Stormwater runoff and is highly effective in capturing floatables, suspended solids, large particles and even fine sediments. Because of its non-blocking screening capacity, the *JDS* unit is un-matched in its ability to capture and retain gross pollutants such as trash and debris that are greater than 0.05 inch. In addition, it is also very effective in capturing at least 50% of fine sand particles and other storm water pollutants to such as free oil and grease when sorbents are placed in the separation chamber.

OPERATIONS

The *JDS* unit is a non-mechanical self-operating system and will function any time there is flow in the storm drainage system. The unit will continue to effectively capture pollutants even during extreme rainfall events when the influent flow exceeds the design flow. The pollutants captured previously in the *JDS* unit's separation chamber and sump will be retained even when the units design capacity is exceeded.

JDS UNIT CLEANOUT

The frequency of cleaning the *JDS* unit will depend upon the accumulation of trash, debris and sediments based on the application and the land use activity in the drainage watershed. Cleanout and preventive maintenance schedules shall be determined based on operating experience unless precise pollutant loadings have been determined. The unit should be periodically inspected to determine the amount of accumulated pollutants and to ensure that the cleanout frequency is adequate to handle the predicted pollutant

load being processed by the **JDS** unit. The recommended cleanout of solids within the **JDS** unit's sump should be done at 50% to 75% (50% for NJDEP) of the sump capacity.

Access to the **JDS** unit is typically achieved through the manhole access cover. The access cover allows for the inspection and cleanout of the separation chamber (screen/cylinder) & sump.

Recommendations for Achieving Optimal Performance from **JDS SWTU:**

NEW INSTALLATIONS – The condition of the unit should be checked after every runoff event for the first 30 days. The visual inspection should ascertain that the unit is functioning properly (no blockages or obstructions to inlet and/or separation screen), measuring the amount of solid materials that have accumulated in the sump, the amount of fine sediment accumulated behind the screen, and determining the amount floating trash and debris in the separation chamber. This can be done with a calibrated “dip stick” so that the depth of deposition can be tracked. Schedules for inspections and cleanout should be based on storm events and pollutant accumulation.

ONGOING OPERATION – During the rainfall season, the unit should be inspected at least once every 30 days. The floatables should be removed and the sump cleaned when it is 50-75% full (50% for NJDEP). If floatables accumulate more rapidly than the settleable solids, the floatables should be removed using a vactor truck or dip net before the layer thickness exceeds one to two feet.

Cleanout of the **JDS** unit at the end of a rainfall season is recommended because of the nature of pollutants collected and the potential for odor generation from the decomposition of material collected and retained. This end of season cleanout will assist in preventing the discharge of pore water from the **JDS** unit during summer months.

USE OF SORBENTS – It needs to be emphasized that the addition of sorbents is not a requirement for the **JDS** units to effectively control oil and grease from storm water. The conventional oil baffle within the unit assures satisfactory oil and grease removal. However, the addition of sorbents will enhance the capacity to capture oil and grease beyond that attainable by conventional oil baffle systems.

Under normal operations, **JDS** units will provide effluent concentrations of oil and grease that are less than 15 parts per million (ppm) for all dry weather spills where the volume is

less than or equal to the spill capture volume of the **JDS** unit. During wet weather flows, the oil baffle system can be expected to remove between 40 and 70% of the free oil and grease from the storm water runoff.

Jensen only recommends the addition of sorbents to the separation chamber if there are specific land use activities in the catchment watershed that could produce exceptionally large concentrations of oil and grease in the runoff; concentration levels well above typical amounts. If site evaluations merit an increased control of free oil and grease then oil sorbents can be added to the **JDS** unit to thoroughly address these particular pollutants of concern.

Recommended Oil Sorbents

ClearTec™ Rubberizer® products sorb and transform into a rubber-like material many petroleum products to include typical oil and greases in stormwater runoff. **Jensen** recommends Rubberizer® Particulate 8-4 mesh Particulate for Filtration, HPT4100 or equal. Rubberizer® is supplied by Haz-Mat Response Technologies, Inc. 4626 Santa Fe Street, San Diego, CA 92109 (800) 618-13856, www.rubberizer.com.

The amount of sorbent to be added to the **JDS** separation chamber can be determined if sufficient information is known about the concentration of oil and grease in the runoff. Frequently the actual concentrations of oil and grease are too variable and the amount to be added and frequency of cleaning will be determined by periodic observation of the sorbents.

As an initial application, it is recommended that approximately 4 to 8 pounds of sorbent material be added to the separation chamber of the **JDS** units per acre of parking lot or road surface per year. Typically this amount of sorbent results in a ½ inch to one (1") inch depth of sorbent material on the liquid surface of the separation chamber. The oil and grease loading of the sorbent material should be observed after major storm events. Oil Sorbent material may also be furnished in pillow or boom configurations.

The sorbent material should be replaced when it is fully discolored by skimming the sorbent from the surface. The sorbent may require disposal as a special or hazardous waste, but will depend on local and state regulatory requirements.

CLEANOUT AND DISPOSAL

A vactor truck is recommended for cleanout of the **JDS** unit and can be easily accomplished in less than 30-40 minutes for most installations. Standard vactor operations should be employed in the cleanout of the unit. Disposal of material from the **JDS** unit should be in accordance with the local municipality's requirements.

Disposal of the decant liquid/material to a Publically Operated Waste Water Treatment Plant is recommended. Field decanting to the storm drainage system is not recommended, unless through a proven fine filtration process.

Solids can be disposed of in a similar fashion as those materials collected from street sweeping operations and catch-basin cleanouts.

MAINTENANCE

The **JDS** unit should be pumped down at least once a year and a thorough inspection of the separation chamber (inlet/cylinder and separation screen) and oil baffle should be performed. The unit's internal components should not show any signs of damage or any loosening of the bolts used to fasten the various components to the manhole structure and to each other. Ideally, the screen should be power washed for the inspection. If any of the internal components are damaged or if any fasteners appear to be damaged or missing, please contact **Jensen** Precast (**Jensen Stormwater Systems**) to make arrangements to have the damaged items repaired or replaced:

Jensen Stormwater Systems (**Jensen** Precast)

521 Dunn Circle

Sparks, NV 89431

Toll Free: (877) 649-0095

Fax: (775) 440-2013

The screen assembly is fabricated from ASTM Type 316 stainless steel and fastened with Type 316 stainless steel fasteners that are easily removed and/or replaced with conventional hand tools. Damaged screen assembly should be replaced with the new expanded metal screen assembly placing the expanded apertures in the same orientation as existing screen section that was removed.

CONFINED SPACE

The **JDS** unit is a confined space environment and only properly trained personnel possessing the necessary safety equipment should enter the unit to perform maintenance or inspection procedures. Inspections of the internal components can, in most cases, be accomplished through observations from the ground surface.

RECORDS OF OPERATION AND MAINTENANCE

JDS recommends that the owner maintain annual records of the operation and maintenance of the **JDS** unit to document the effective maintenance of this important component of your storm water management program. The attached **Annual Record of Operations and Maintenance** form (see **Appendix A**) is suggested and should be retained for a minimum period of three years.

Appendix A
Annual Record of
Operations & Maintenance

Jensen Deflective Separator (JDS) ANNUAL RECORD OF OPERATION AND MAINTENANCE

OWNER _____

ADDRESS _____

OWNER REPRESENTATIVE _____ PHONE _____

JDS INSTALLATION:

MODEL DESIGNATION _____ DATE _____

SITE LOCATION _____

DEPTH FROM COVER TO BOTTOM OF SUMP _____

VOLUME OF SUMP _____ CUYD VOLUME/INCH DEPTH _____ CUYD

INSPECTIONS:

DATE/INSPECTOR	SCREEN INTEGRITY	FLOATABLES DEPTH	SEDIMENT VOLUME	SORBENT DISCOLORATION

OBSERVATIONS OF FUNCTION: _____

CLEANOUT:

DATE	VOLUME FLOATABLES	VOLUME SEDIMENTS	METHOD OF DISPOSAL OF FLOATABLES, SEDIMENTS, DECANT AND SORBENTS

OBSERVATIONS OF FUNCTION: _____

SCREEN MAINTENANCE:
DATE OF POWER WASHING, INSPECTION AND OBSERVATIONS: _____

CERTIFICATION: _____ **TITLE:** _____ **DATE:** _____