

# POST-CONSTRUCTION STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

Hawaii State Department of Transportation  
Highways Division, Oahu District



# STORM WATER MANAGEMENT PROGRAM ELEMENTS

PUBLIC EDUCATION AND OUTREACH

ILLCIT DISCHARGE DETECTION AND ELIMINATION

**CONSTRUCTION SITE RUNOFF CONTROL**

**POST-CONSTRUCTION STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND  
REDEVELOPMENT**

POLLUTION PREVENTION/GOOD HOUSEKEEPING DEBRIS CONTROL BMPS

POLLUTION PREVENTION/GOOD HOUSEKEEPING CHEMICAL APPLICATIONS BMPS

POLLUTION PREVENTION/GOOD HOUSEKEEPING EROSION CONTROL BMPS

POLLUTION PREVENTION/GOOD HOUSEKEEPING MAINTENANCE ACTIVITIES BMPS

INDUSTRIAL AND COMMERCIAL ACTIVITIES DISCHARGE MANAGEMENT

MUNICIPAL INDUSTRIAL FACILITIES

MONITORING

TOTAL MAXIMUM DAILY LOAD

REPORTING

# POST-CONSTRUCTION (PERMANENT) BMPs & LID

## **Post-Construction Best Management Practice (PBMP):**

A BMP that will remain in place following construction to minimize the discharge of pollutants from activities on-site.

## **Low Impact Development (LID):**

PBMPs that attempt to mimic predevelopment site hydrology by using site design techniques that store, infiltrate, evaporate, and detain runoff.

# POST-CONSTRUCTION (PERMANENT) BMP REQUIREMENT TRIGGERS

## Unified Criteria (Permanent BMP Manual)

- “All non-exempt projects (new development or redevelopment) that disturb an area of one (1) acre or more of land are required to be reviewed for storm water controls.”
- Also, smaller projects that have the potential to pollute:
  - Retail Gasoline Outlets with at least 10,000 SF Area
  - Carwashes with at least 10,000 SF Area
  - Auto Repair Shops with at least 10,000 SF Area
  - Restaurants with at least 10,000 SF Area
  - Parking Lots with at least 10,000 SF Area



# PERMANENT BMP REQUIREMENT TRIGGERS



Storm Water Permanent  
Best Management Practices Manual



**PROTECT  
OUR WATER**

MĀLAMA I KA WAI  
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION

[www.stormwaterhawaii.com](http://www.stormwaterhawaii.com)

Hawaii State Department of Transportation  
Highways Division  
Storm Water Management Program  
NPDES Permit No. HI S000001  
April 2015

# POST-CONSTRUCTION (PERMANENT) BMP REQUIREMENT TRIGGERS

Permanent BMPs are also being constructed and installed under other SWMP programs:

- Action Plan for Retrofitting Structural BMPs
- Total Maximum Daily Load Implementation and Monitoring Plans (Waste Load Allocations)
- Erosion Control BMPs Program
- Action Plan to Address Erosional Outfalls
- Trash Reduction Plan

Once complete, these PBMPs are tracked, inspected, and maintained under the Post-Construction Program.

# POST-CONSTRUCTION (PERMANENT) BMP CONSTRUCTION CONSIDERATIONS

- Proper construction and installation techniques are critical for the optimal long-term function of PBMPs.
- Structural PBMP treatment device projects typically include a 9 to 12-month maintenance period.
- Vegetative PBMP projects typically include a plant establishment period followed by a maintenance period.



# HDOT HIGHWAYS, OAHU DISTRICT

## TYPICAL POST-CONSTRUCTION BMPs



# “Permanent” Erosion Repair





# “Permanent” Erosion Repair



# Grass Swale/Bioswale (LID)

## Grass Swale:

Vegetated Drainage Channel or  
Depression for Surface Storm Water Flow

## Bioswale:

Vegetated Drainage Channel or  
Depression on top of Engineered Soils  
and that provide Biofiltration, sometimes  
includes storage layer or underdrain.





# Bioswale with Underdrain



# Bioswale, H-3 Kaneohe





# Bioswale, H-3 Kaneohe





# Bioswale, H-3 Kaneohe





# Bioswale, H-3 Kaneohe





# Bioswale, H-3 Kaneohe





# Downspout Filter Box





# Curb Inlet Screens

## Automatic Retractable Screens (ARS)





# Curb Inlet Screens

## Automatic Retractable Screens (ARS)





# Curb Inlet Screens

## Automatic Retractable Screens (ARS)



# Grate Inlet Skimmer Box (GISB)

## Grate Inlet Filter (CBF)



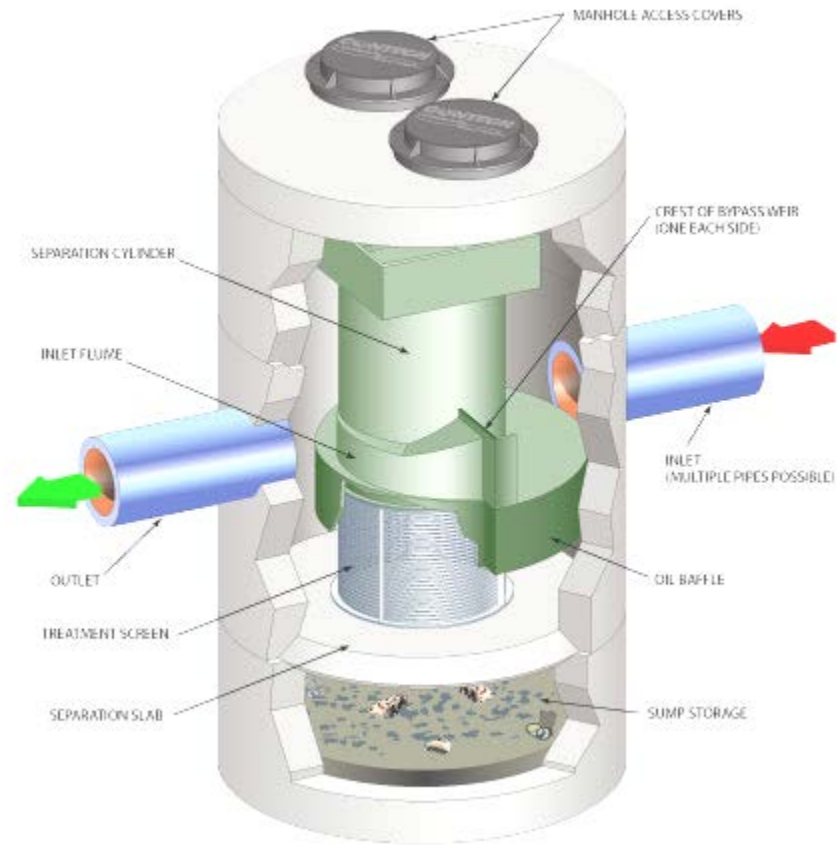


# Grate Inlet Skimmer Box (GISB)



# Hydrodynamic Separators

## Continuous Deflection Separation (CDS) Unit





# Continuous Deflection Separation (CDS) Maintenance



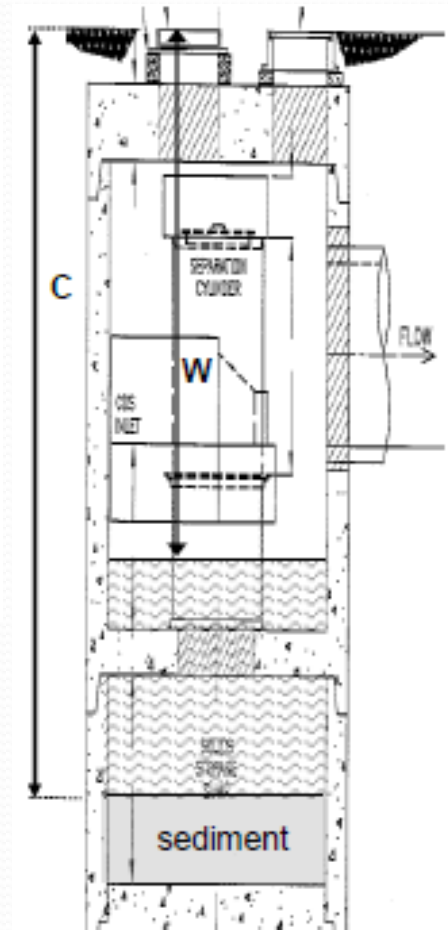


# Continuous Deflection Separation (CDS) Maintenance

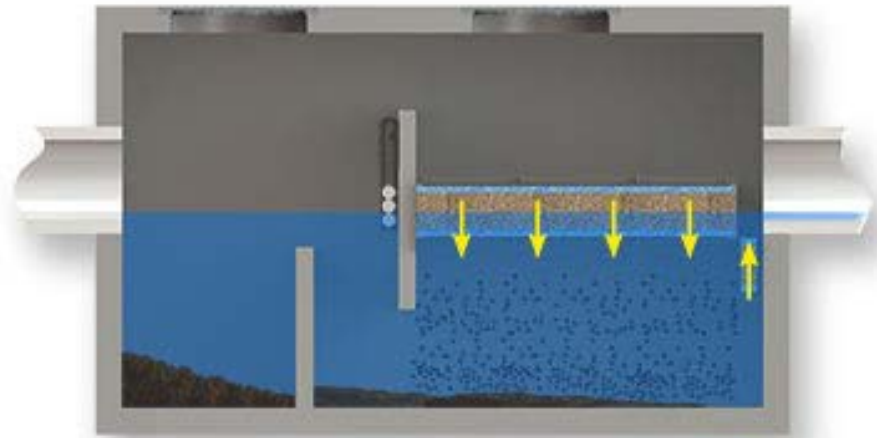
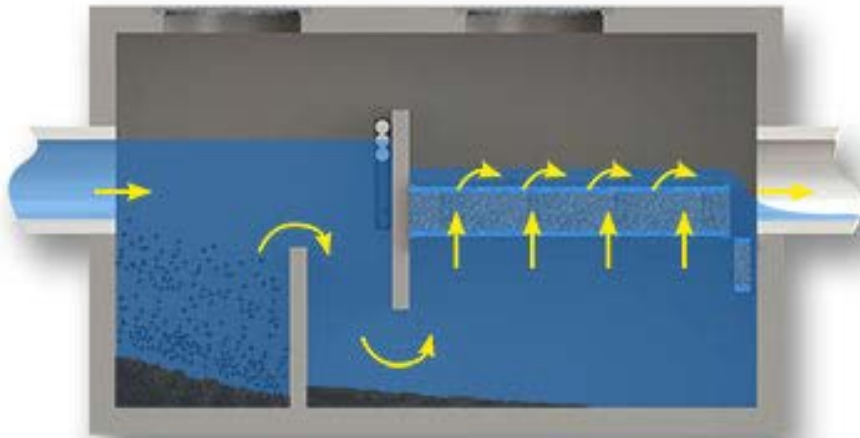
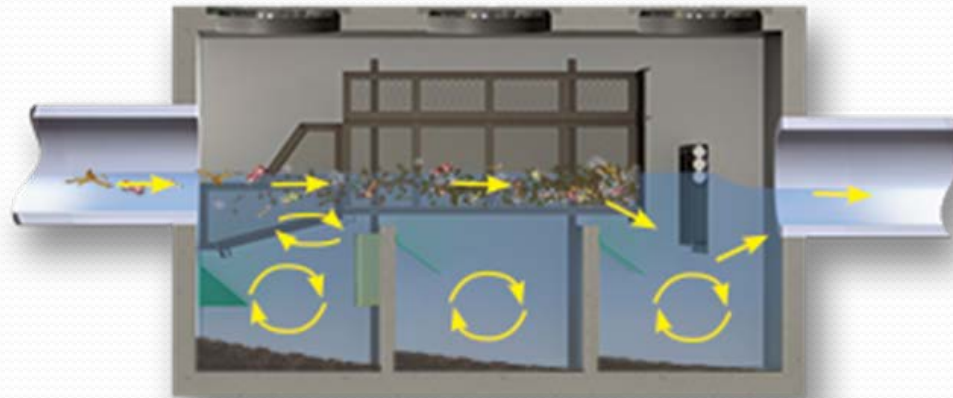
Unit Name	BMP ID	PID	Downstream Feature PID	Unit Model	Height (feet, in.)	
					Grade to floor	Cleaning Depth C <sub>cutoff</sub>
Inlet 1	CDSU 1	800001	600369	PMS U20_20	11'	9', 4"
Inlet 2	CDSU 2	800002	501489	PSWC40_40	24', 6"	22', 7"
Inlet 3	CDSU 3	800003	505165	PMSUC30_30	15', 7"	14', 1"
Inlet 4A	CDSU 4A	800004	511841	PMIU20_15_5	9', 7"	8', 5"
Inlet 4B	CDSU 4B	800005	511840	PMIU20_15_5	9', 6"	8', 4"
Inlet 4C	CDSU 4C	800006	511837	PMIU20_15_5	9', 2"	8', 1"
Inlet 5	CDSU 5	800007	510536	PMSU40_30	15', 8"	13', 5"
Inlet 9B	CDSU 9B	800008	47446 (CCH)	PMSU30_30	21', 5"	20', 11"
Inlet 10	CDSU 10	800009	511825	PMSU40_30	17', 1"	15', 9"

W = \_\_\_\_\_ in.  
(depth to water level in  
CDS unit from grade)

C = \_\_\_\_\_ in.  
(depth from grade to  
bottom of collected  
solids/sediment)



# Nutrient Separating Baffle Box (NSBB) and Water Polisher





# Nutrient Separating Baffle Box (NSBB)





# Nutrient Separating Baffle Box (NSBB)





# Observations During Construction NSBB Plus Water Polisher



# Observations During Construction NSBB Plus Water Polisher





# Observations During Construction NSBB Plus Water Polisher





# Water Polisher Inspection and Maintenance





# Water Polisher Inspection and Maintenance






# Water Polisher Inspection and Maintenance





# Water Polisher Inspection and Maintenance



**Inspection and Maintenance Report**  
**Bio Clean Water Polisher**

---

Project Name \_\_\_\_\_

Project Address \_\_\_\_\_ (city) (Zip Code)

Owner / Management Company \_\_\_\_\_

Contact \_\_\_\_\_ Phone ( ) - \_\_\_\_\_

Inspector Name \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Time \_\_\_\_ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm ☐ Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition \_\_\_\_\_ Additional Notes \_\_\_\_\_

For Office Use Only

(Reviewed By) \_\_\_\_\_

(Date) \_\_\_\_\_

Office personnel to complete section to the left.

---

Site Map #	GPS Coordinates of Vault	Model #	Sediment Accumulation - Chamber 1 (lbs)	Condition of Upflow Media 25/50/75/100 (will be changed @ 75%)	Structural Notes	Operational Per Manufacturers' Specifications (if not, why?)
	Lat: _____ Long: _____					
	Lat: _____ Long: _____					
	Lat: _____ Long: _____					

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2972 San Luis Rey Road, Oceanside, CA 92058 P. 760.433.7640 F. 760.433.3178

# Questions?



[www.stormwaterhawaii.com](http://www.stormwaterhawaii.com)

[www.trashfreehawaii.com](http://www.trashfreehawaii.com)