CHAPTER 6
POLLUTION PREVENTION/GOOD HOUSEKEEPING DEBRIS CONTROL BMPS PROGRAM

Removing debris from highways and storm drainage structures minimizes the amount of pollutant material present in storm water runoff that enters receiving water bodies. The Debris Control BMPs Program (Debris Control Program) implements a series of BMPs to reduce the discharge of pollutants to and from the MS4 to the MEP.

The Debris Control Program consists of the following BMPs and sub-programs:

1. Use the AMS to maintain an inventory of highways, permanent BMPs (PBMPs), and MS4 structures; track system maintenance and debris removal activities; create schedules; and evaluate inspection and cleaning priorities.
2. Implement a Street Sweeping Program with priority-based schedules.
3. Implement a Storm Drain System Inspection and Cleaning Program with priority-based schedules.
4. Install and maintain storm drain placards at storm drain inlets for the purpose of educating the public.
5. Create and submit to DOH an Action Plan for Retrofitting Structural BMPs.
6. Implement a Trash Reduction Program to reduce trash loads to and from the MS4.

The Debris Control Program is administered in accordance with the MS4 Permit and Consent Decree requirements outlined in Table 6-1 and Table 6-2, respectively.

Table 6-1. MS4 Permit Requirements for the Debris Control Program

MS4 Permit Reference	SWMPP Section
Part D.1.f *The Permittee shall further develop and implement a system maintenance program to reduce to the MEP the discharge of pollutants from all Permittee-owned facilities, roads, parking lots, baseyards, maintenance facilities, and the DOT-HWYS' MS4. The program shall include:*	
Part D.1.f.(1).(i) *Asset Management System and Mapping - The Permittee shall implement a comprehensive Asset Management System and map of its MS4, including structural and vegetative BMPs; and inventory of related appurtenances including maintenance equipment, to ensure appropriate debris removal and system maintenance. The asset management system shall, at a minimum, assign an identification number for each drain inlet, outfall, and BMPs, and map their location on the Geographic Information System (GIS). The Permittee shall use this asset management system to establish priorities and to schedule and track efforts of appropriate system maintenance and debris removal program activities such as street sweeping, catch basin cleaning, and green waste and accumulated soil removal. The asset management system shall include justification of its priorities on the basis of potential impacts to water quality.*	Section 6.1 Section 6.2 Section 6.3

MS4 Permit Reference	SWMPP Section
Part D.1.f.(1).(ii) *Inspection/Maintenance Schedule - The Permittee shall include in its SWMP procedures and a schedule for inspections of:* *a) All state highways on Oahu for the purpose of identifying if sweeping of roadways, shoulders, and/or medians is needed; and* *b) All state highway storm drainage system catch basins, gutters and open ditches, trenches, and BMPs on Oahu for the purpose of identifying if maintenance/cleaning of such structures are needed.* *In both cases, the need for sweeping and/or maintenance/cleaning shall, at a minimum, be determined based upon material accumulation rates and/or potential threat of discharge to State waters that may have an effect on water quality. The schedule shall provide that each highway mile, storm drainage feature, and BMP is inspected at least once during the term of this permit (maintenance/cleaning may be conducted in lieu of inspections to satisfy this requirement). The adopted procedures shall provide for the identification of highway segments and their associated storm drainage features and BMPs that may require more frequent sweeping and/or structure cleaning based upon material accumulation rates and potential threat of discharge to State waters that may have an effect on water quality. The procedures shall establish debris accumulation thresholds above which sweeping and/or structure cleaning must occur. The priority-based schedule shall be annually reviewed; updated as necessary; and the changes, along with explanations of the changes submitted within the Annual Report.*	Section 6.2 Section 6.3
Part D.1.f.(1).(iii) *Storm Drain Placards - The Permittee shall evaluate the effectiveness of its placards and revise it as necessary to meet its purpose. The purpose of the placards shall be discussed within the SWMP. A minimum of 75 new placards shall be installed per year. Priority shall be given to the Permittee's highways in industrial and commercial areas and areas with pedestrian traffic. The Permittee shall implement its system to track placement of placards and procedures for maintenance staff to inspect and replace, as necessary, placards during routine maintenance activities.*	Section 6.4
Part D.1.f.(1).(iv) *Action Plan for Retrofitting Structural BMPs - Provide the DOH with an Action Plan for Retrofitting Structural BMPs within one (1) year of the effective date of this permit, which shall identify retrofits to be implemented, explanation on the basis for their selection and an implementation schedule. The implementation schedule shall cover a five (5) year period and be updated yearly to include additional retrofit projects with water quality protection measures. The annual updates to the implementation schedule shall be included in the Annual Report with a description of the projects status. The Action Plan may include, but not be limited to projects in compliance with any TMDL implementation and monitoring plan.*	Section 6.5
Part D.1.f.(1).(v) *Trash Reduction Plan - Within three (3) years after the effective date of this permit, the Permittee shall develop and submit to DOH for review and acceptance, a trash reduction plan which assesses the issue, identifies and implements control measures, and monitor these activities to reduce trash loads from the MS4. The plan shall include, at a minimum and be formatted consistent with the following:* *• Quantitative estimate of the debris currently being discharged (baseline load) from the MS4, including methodology used to determine the load.* *• Description of control measures currently being implemented as well as those needed to reduce debris discharges from the MS4 consistent with short-term and long-term reduction targets.* *• A short-term plan and proposed compliance deadline for reducing debris discharges from the MS4 by 50% from the baseline load.*	Section 6.6

MS4 Permit Reference	SWMPP Section
• *A long-term plan and proposed compliance deadline for reducing debris discharges from the MS4 to zero.* • *Geographical targets for trash reduction activities with priority on waterbodies listed as impaired for trash on the State's CWA Section 303(d) list.* • *Trash reduction-related education activities as a component of Part D.1.a.* • *Integration of control measures, education and monitoring to measure progress toward reducing trash discharges.* • *An implementation schedule.* • *Monitoring plan to aid with source identification and loading patterns as well as measuring progress in reducing the debris discharges from the MS4.* • *The Annual Report shall include a summary of its trash load reduction actions (control measures and best management practices) including the types of actions and levels of implementation, the total trash loads and dominant types of trash removed by its actions, and the total trash loads and dominant types of trash for each type of action.* *The plan shall provide for compliance with the above short-term and long-term discharge limits in the shortest practicable timeframe.*	

Table 6-2. Consent Decree Requirements for the Debris Control Program

Consent Decree Reference	SWMPP Section
Pg 21, Section V.10.f *HDOT shall revise its SWMPP to develop procedures and a schedule for inspections of:* *(1) all state highways on Oahu for the purpose of identifying whether sweeping or brooming of roadways, shoulders, or medians is needed, and* *(2) all state highway storm draining system catch basins, gutters and open ditches, trenches, and storm drains on Oahu for the purpose of identifying whether cleaning of such structures is needed.* *In both cases identified in the preceding Subparagraphs, the need for sweeping, brooming, or structure cleaning shall, in addition to other criteria, be determined based upon material accumulation rates and potential threat of discharges to waters of the United States that may have an effect on water quality. The schedule shall provide the each highway mile and storm drainage features is inspected at least once annually, but that highway segment drainages and their associated storm features that are located in High Priority Watersheds shall be inspected at least semiannually. The adopted procedures shall also provide for the identification of other highway segments (in addition to those located in High Priority Watersheds) and their associated storm drainage features that may require more frequent sweeping, brooming, or structure cleaning based upon material accumulation rates and potential threat of discharges to waters of the United States that may have an effect on water quality. The procedures shall establish debris accumulation thresholds above which sweeping, brooming, or structure cleaning must occur.*	Section 6.2 Section 6.3

6.0 Program Organization

To fulfill the requirements of the MS4 Permit and the Consent Decree, the following organizational structure has been established for the Debris Control Program.

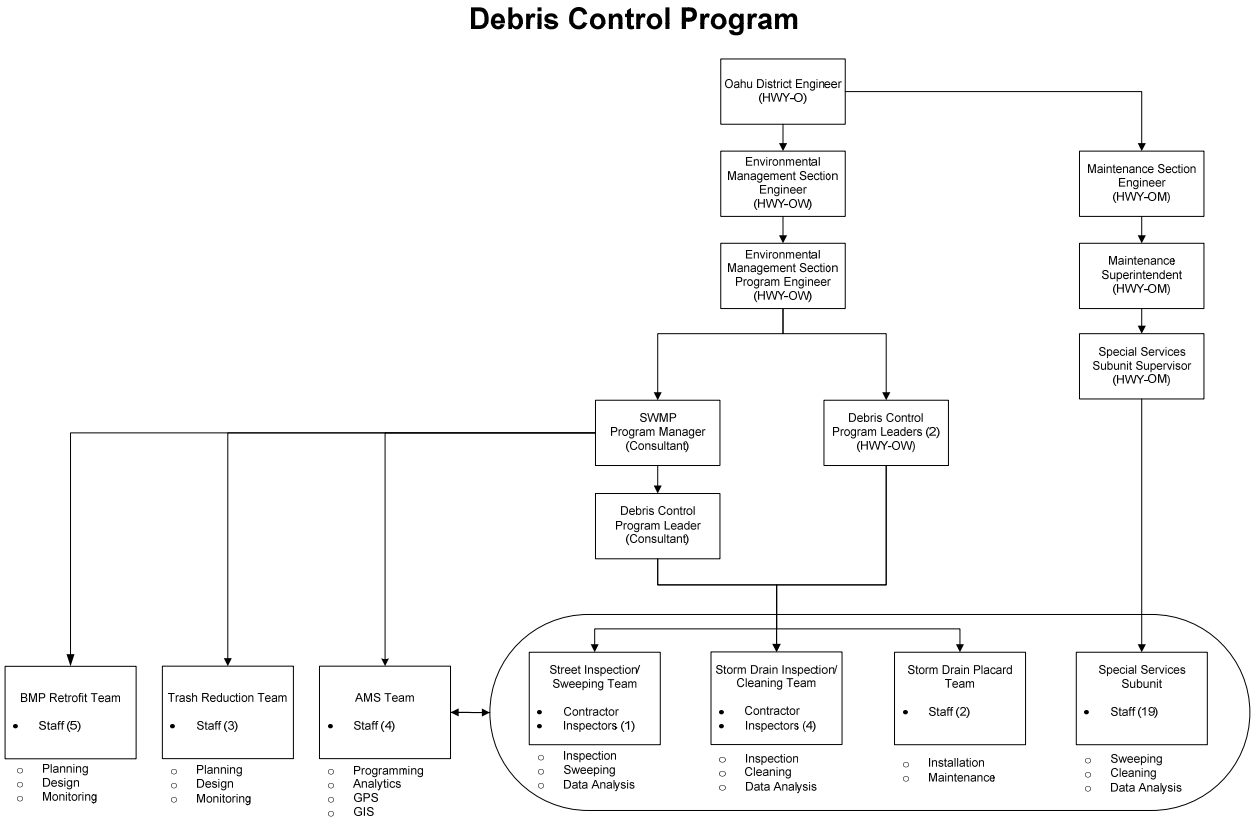

Figure 6-1. Debris Control Program Organizational Chart
(Note: The number in parenthesis indicates the number of individuals involved.)

6.1 Asset Management System (AMS)

The AMS is utilized to ensure that system maintenance and debris removal activities are conducted effectively. The AMS supports the Debris Control Program by providing a comprehensive GIS map as well as a relational database to inventory and monitor MS4 assets, drainage structures, and related equipment. A unique point identification (PID) number, which facilitates data inventory and tracking, is assigned to each MS4 structure. Inspection priority assignments and maintenance cleaning contract information are captured for each MS4 structure and street sweeping segment, to allow for real time inspection frequency compliance tracking and contract management support.

The function of the AMS is to systematically track activities conducted under the Debris Control Program, in order to facilitate an analysis of the efficiency and effectiveness of various program efforts. Maintaining a map of street sweeping segments and drainage system infrastructure, while tracking debris control activities, and inspections and cleaning results, allows the Debris Control Program to spatially analyze material accumulation rates and potential impacts to water quality. Therefore, the AMS provides the framework necessary for establishing priority-based sweeping, inspection and cleaning schedules. Priority-based street sweeping and storm drain inspection and cleaning schedules will be reviewed annually and revised as necessary.

The AMS Team manages the AMS and coordinates with the various teams depicted in Figure 6-2 to track and enter data. Furthermore, managerial staff utilize the AMS to establish priority-based schedules.

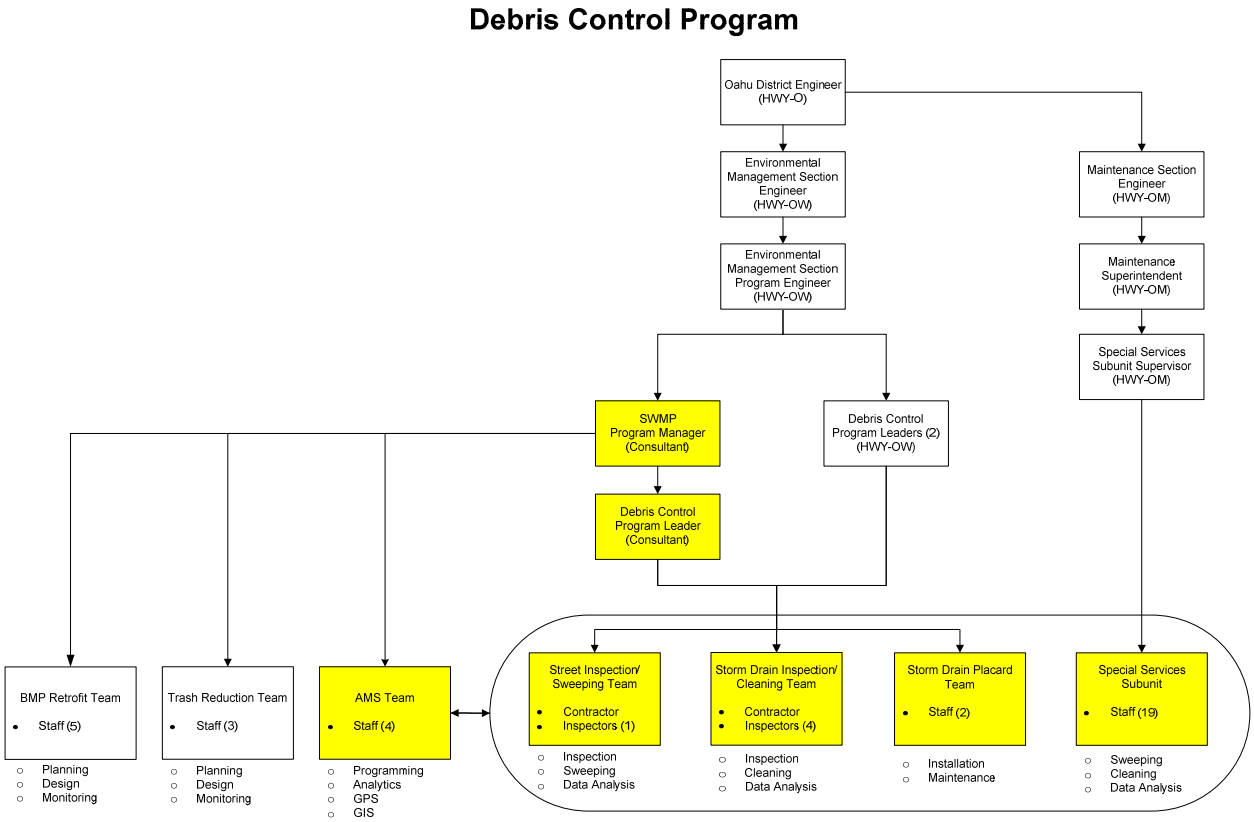

Figure 6-2. Debris Control Program Organizational Chart for Roles and Responsibilities Related to the AMS

6.2 Street Sweeping

Street sweeping has proven to be an effective method of removing sediment and debris from roadways before it reaches the drainage system.

DOT-HWYS is required, by the Consent Decree, to inspect each highway mile within high priority watersheds at least semiannually, and all other highway miles at least once annually. Inspections are typically conducted during sweeping activities. Upon termination of the Consent Decree, all state highways on Oahu will be inspected at least once during the MS4 Permit term for the purpose of identifying if sweeping of roadways, shoulder, and/or medians is needed.

Street sweeping schedules are currently completed in accordance with the minimum requirements specified in the Consent Decree. Highway segment sweeping schedules are divided into categories "A" and "B" based upon material accumulation rates and the potential threat of discharge affecting water quality. Category "A" segments are considered high priority and are swept at least once every five weeks. Category "B" segments are considered low priority and are swept once every fifteen weeks. Tables 6-3 and 6-4 list the schedule category for each highway segment.

Table 6-3. Schedule Category for Group "A" Highway Street Sweeping Segments

GROUP A - Swept once every five (5) weeks			
Route No.	**Route Name**	**MP Start - End**	**Approx. Curb Mileage**
H-1	Queen Liliuokalani Fwy., Lunalilo Fwy.	Palalai IC (0.00) to Ainakoa Ave. (27.16)	108.64
H-2	Veterans Memorial Fwy.	Waiawa IC (0.00) to Wilikina Dr. (8.33)	33.32
H-3	John A. Burns Fwy.	Halawa IC (0.00) to MCBH-Kaneohe (15.32)	61.28
H-201	Moanalua Fwy.	Halawa IC (0.00) to Middle St. IC (4.09)	16.36
61	Pali Hwy., Kalanianaole Hwy., Kailua Rd.	Vineyard Blvd. (0.00) to Kawainui Br. (10.60)	42.40
63	Kalihi St., Likelike Hwy.	Kalihi St. North of Kam. Shopping Ctr. (1.42) to Kahekili Hwy. (8.28)	27.44
64	Sand Island Access Rd.	Sand Is. Park (0.00) to Matson (0.88)	1.76
	Sand Island Access Rd.	Matson (0.88) to over Bridge (1.54)	2.64
	Sand Island Access Rd.	Bridge (1.54) to Auiki St. (2.01)	0.96
	Sand Island Access Rd.	Auiki St. (2.01) to Nimitz Hwy. (2.60)	2.32
65	Kaneohe Bay Dr., Mokapu Blvd.	Kamehameha Hwy. (0.00) to Puohala St. (0.39)	1.56
	Kaneohe Bay Dr., Mokapu Blvd.	Puohala St. (0.39) to Mikiola Dr. (1.68)	2.58
	Kaneohe Bay Dr., Mokapu Blvd.	Mikiola Dr. (1.68) to Kalaheo Ave. (4.15)	9.88
72	Kalanianaole Hwy.	Kailua Rd. (0.00) to Ranch (2.50)	10.00
	Kalanianaole Hwy.	Ranch (2.50) to Bellows Gate (4.13)	3.26
	Kalanianaole Hwy.	Lunalilo Home Rd. (13.26) to Hawaii Kai Marina (13.91)	1.30
	Kalanianaole Hwy.	Hawaii Kai Marina (13.91) to Ainakoa Ave. (18.44)	18.12

GROUP A - Swept once every five (5) weeks			
Route No.	**Route Name**	**MP Start - End**	**Approx. Curb Mileage**
76	Ft. Weaver Rd., Kunia Rd.	Farrington Hwy. (6.01) to H-1 Fwy. (6.64)	2.52
78	Moanalua Fwy.	Aiea I/C (0.00) to Rte. H-201/Halawa I/C (0.74)	2.96
80	Kamehameha Hwy.	Wilikina Dr. (0.00) to Avocado St. (0.10)	0.40
	Kamehameha Hwy.	Avocado St. (0.10) to Kamananui Rd. (1.88)	3.56
83	Kahekili Hwy., Likelike Hwy., Kamehameha Hwy.	Kahuhipa Rd. (39.92) to Likelike Hwy. Ramp (40.71)	3.16
	Kahekili Hwy., Likelike Hwy., Kamehameha Hwy.	Likelike Hwy. Ramp (40.71 - 41.12)	0.82
	Kahekili Hwy., Likelike Hwy., Kamehameha Hwy.	Likelike Hwy. Ramp (41.12) to Pali Hwy. (43.92)	11.20
92	Nimitz Hwy., Ala Moana Blvd.	Pearl Harbor Main Gate (0.00) to Sand Island Access Rd. (9.26)	37.04
92	Nimitz Hwy. Frontage Rd.	Aolele St. (1.49) to Lagoon Dr. (2.88)	2.78
93	Farrington Hwy.	Palailai I/C (0.00) to Tracks Beach (4.20)	16.80
	Farrington Hwy.	Tracks Beach (4.20) to Hakimo Rd. (6.90)	5.40
	Farrington Hwy.	Hakimo Rd. (6.90) to Kaukama Rd. (7.95)	4.20
	Farrington Hwy.	Kaukama Rd. (7.95) to Kaena Pt. (19.53)	23.16
98	Vineyard Blvd., Halona St., Olomea St.	Houghtailing St. (N/A) to H-1 EB on-ramp (1.76)	8.48
99	Kamehameha Hwy., Kamananui Rd., Wilikina Dr., Farrington Hwy.	2.5 miles Mauka of Weed Circle (2.50) to McNair Gate (8.00)	11.00
	Kamehameha Hwy., Kamananui Rd., Wilikina Dr., Farrington Hwy.	McNair Gate (8.00) to (after) Lanikuhana Blvd. (13.45)	21.80
	Kamehameha Hwy., Kamananui Rd., Wilikina Dr., Farrington Hwy.	(after) Lanikuhana Blvd. (13.45) to Ka Uka Blvd. (15.14)	3.38
	Kamehameha Hwy., Kamananui Rd., Wilikina Dr., Farrington Hwy.	KaUka Blvd. (15.14) to above H-1 Fwy. EB Nimitz/Hickam off-ramp (23.31)	32.68
750	Kunia Rd.	H-1 (0.00) to WalMart (0.60)	2.40
	Kunia Rd.	Walmart (0.60) to Wright Ave. (Adj.) (7.20)	13.20
	Kunia Rd.	Wright Ave. (Adj.) (7.20) to Wilikina Dr. (8.05)	3.40
930	Farrington Hwy., Kaukonahua Rd.	Puuiki St. (5.52) to Cane Haul Rd. (5.95)	0.86
	Farrington Hwy., Kaukonahua Rd.	Cane Haul Rd. (5.95) to Goodale Ave. (6.13)	0.72
	Farrington Hwy., Kaukonahua Rd.	Goodale Ave. (6.13) to Weed Circle (7.64)	3.02
	Farrington Hwy., Kaukonahua Rd.	Weed Circle (7.64 - 7.85)	0.84
	Farrington Hwy., Kaukonahua Rd.	Weed Circle (7.85 - 7.92)	0.14
7012	Whitmore Ave.	Kamehameha Hwy. (0.00) to Naval Comm. Sta. (1.90)	3.80
7101	Farrington Hwy.	Kunia Rd. (0.00) to Kamehameha Hwy.-Pearl City (3.00)	12.00
7239	Ulune St., Halawa Valley Rd.	Kahuapaani St. (0.00) to Intersection (0.20)	0.80
	Ulune St., Halawa Valley Rd.	Intersection (0.20) to Iwaiwa St. (0.32)	0.24
7241	Kahuapani St., Halawa Hts. Rd.	Salt Lake Blvd. (0.00) to Hulumanu St. (1.10)	4.40
	Kahuapani St., Halawa Hts. Rd.	Hulumanu St. (1.10) to Camp Smith (2.32)	2.44

GROUP A - Swept once every five (5) weeks			
Route No.	**Route Name**	**MP Start - End**	**Approx. Curb Mileage**
7350	Bougainville Dr.	Radford Dr. (0.00) to Salt Lake Blvd. (0.59)	1.18
7351	Radford Dr.	Kamehameha Hwy. (0.00) to Bougainville Dr. (0.23)	0.46
7401	Kamehameha Hwy.	Middle St. (0.00) to 100' east of Kalihi Stream Bridge (0.10)	0.40
7413	Liliha St.	King St. (0.00) to H-1 Liliha O/P (0.35)	0.70
7415	Middle St.	Kaua St. (0.00) to Kamehameha Hwy. (0.41)	0.82
	Middle St.	Kamehameha Hwy. (0.41) to Dillingham Blvd. (0.51)	0.40
7601	Old Waialae Rd.	Kapiolani Blvd (0.00) to S.King St. (0.41)	0.82
TOTAL MILEAGE (approx), GROUP A			**588.20**

Table 6-4. Schedule Category for Group "B" Highway Street Sweeping Segments

GROUP B - Swept once every fifteen (15) weeks			
Route No.	**Route Name**	**MP Start - End**	**Approx. Curb Mileage**
63	Kalihi St., Likelike Hwy.	Nimitz Hwy. (0.00) to Day Pl. (0.74)	1.48
	Kalihi St., Likelike Hwy.	Day Pl. (0.74) to Kalihi St. North of Kam. Shopping Ctr. (1.42)	2.72
72	Kalanianaole Hwy.	Bellows Gate (4.13) to Lunalilo Home Rd. (13.26)	18.26
76	Ft. Weaver Rd., Kunia Rd.	Ft. Weaver Gate (0.00) to Hanakahi St. (2.11)	4.22
	Ft. Weaver Rd., Kunia Rd.	Hanakahi St. (2.11) to Farrington Hwy. (6.01)	15.60
83	Kamehameha Hwy., Kahekili Hwy., Likelike Hwy.	Weed Circle (0.00) to Haiku Rd. (South Bound) (39.59)	79.18
	Kamehameha Hwy., Kahekili Hwy., Likelike Hwy.	Haiku Rd. (39.59) to Kahuhipa St. (39.92)	1.32
99	Kamehameha Hwy., Kamananui Rd., Wilikina Dr., Farrington Hwy.	Weed Circle (0.00) to 2.5 miles Mauka of Weed Circle (2.50)	5.00
	Kamehameha Hwy., Kamananui Rd., Wilikina Dr., Farrington Hwy.	Above H-1 Fwy & EB Nimitz/Hickam off-ramp (23.31) to Pearl Harbor I/C (23.83)	2.08
901	Ft. Barrette Rd.	Renton Rd. (0.00) to Kapolei H.S. (0.14)	0.56
	Ft. Barrette Rd.	Kapolei HS (0.14) to H-1 East Entrance (1.38)	2.48
930	Farrington Hwy., Kaukonahua Rd.	Kaena Pt. (0.00) to Puuiki St. (0.52)	11.04
7110	Farrington Hwy.	Kunia Rd. (0.00) to Old Ft. Weaver Rd. (0.62)	2.48
7141	Iroquois Rd.	Ft. Weaver Rd. (0.00) to W. Loch Navy Gate (1.51)	3.02
7310	Puuloa Rd.	Nimitz Hwy. (0.00) to Kilihau St. (0.14)	0.56

GROUP B - Swept once every fifteen (15) weeks			
Route No.	**Route Name**	**MP Start - End**	**Approx. Curb Mileage**
	Puuloa Rd.	Kilihau St. (0.14) to Pukoloa St. (0.69)	0.80
	Puuloa Rd.	Pukoloa St. (0.69) to Moanalua Fwy. (1.03)	1.96
7345	Jarrette White Rd.	Moanalua Fwy. (0.00) to Ala Mahamoe St. (0.33)	1.32
	Jarrette White Rd.	Ala Mahamoe St. (0.33) to Tripler Hospital (0.55)	0.44
8930	North-South Rd.	H-1 Fwy. (0.00) to Kapolei Pkwy. (2.47)	9.88
8940	Franklin D. Roosevelt Ave.	Geiger Rd./FBPNAS Gate (0.00) to West Permimeter Fence BDRY (3.44)	6.88
8945	Enterprise Ave.	Franklin D. Roosevelt Ave. (0.00) to Midway Ave. (0.98)	1.96
8955	Coral Sea Rd.	Franklin D. Roosevelt Ave. (0.00) to Barbers Point Air Station Gate (2.69)	5.38
TOTAL MILEAGE (approx), GROUP B			**178.62**

Figure 6-3 displays all “A” and “B” highway street sweeping segments on a map of Oahu.

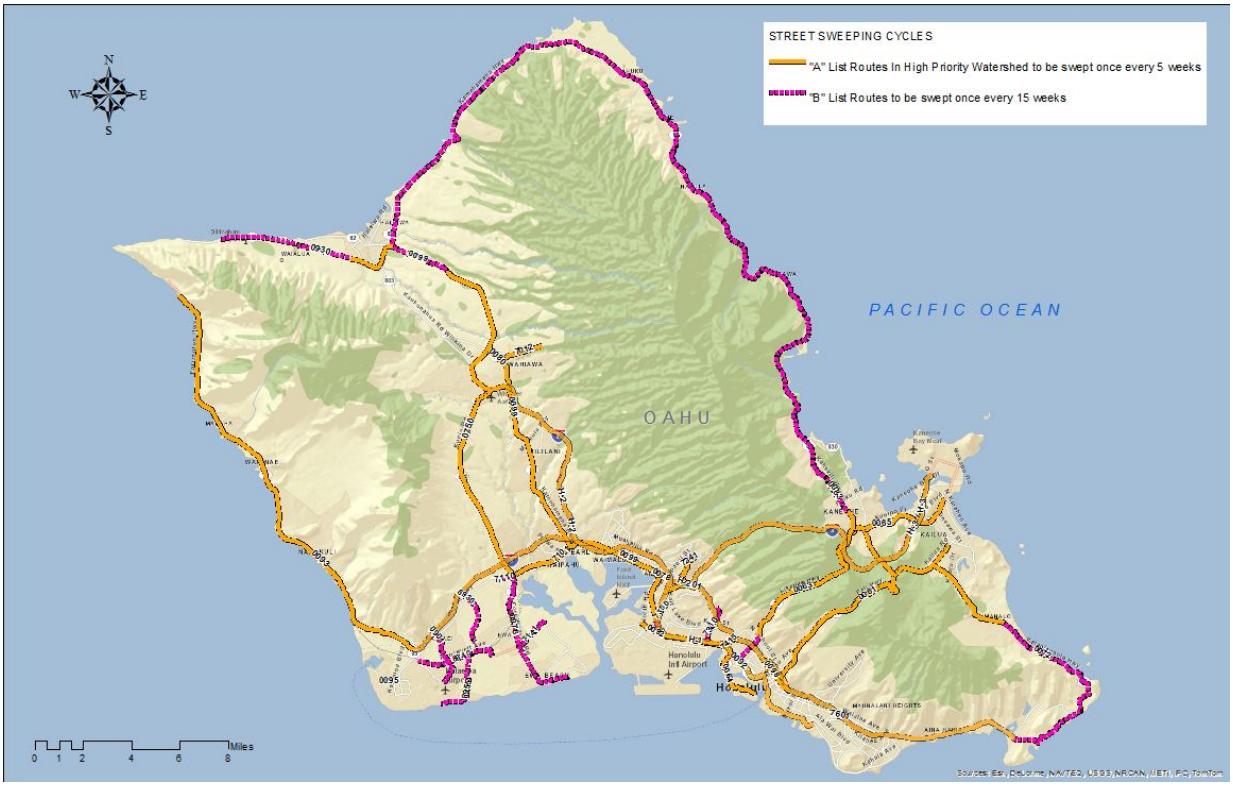

Figure 6-3. Group “A” and “B” Highway Street Sweeping Segments.

Key Performance Indicators (KPIs) are utilized to allow Debris Control Program staff to visually track the progress of scheduled debris control activities, such as street sweeping and inspections of storm drain structures, with the target frequencies for a given cycle schedule. KPIs are generated at the beginning of each cycle schedule and can be viewed graphically or numerically. For example, street sweeping is tracked independently for "A" and "B" segments using the KPIs shown in Figure 6-4. The grey arrow corresponds to the "target", or number of street sweeping segments that are scheduled for sweeping during the given cycle. The orange arrow indicates the "actual" number of segments that have been swept since the beginning of the cycle. With the use of KPIs, inspectors and managers can quickly assess whether or not they are on target for completing scheduled debris control activities for each cycle. Street sweeping KPIs are generated based on the information uploaded by the inspector and are automatically updated daily.

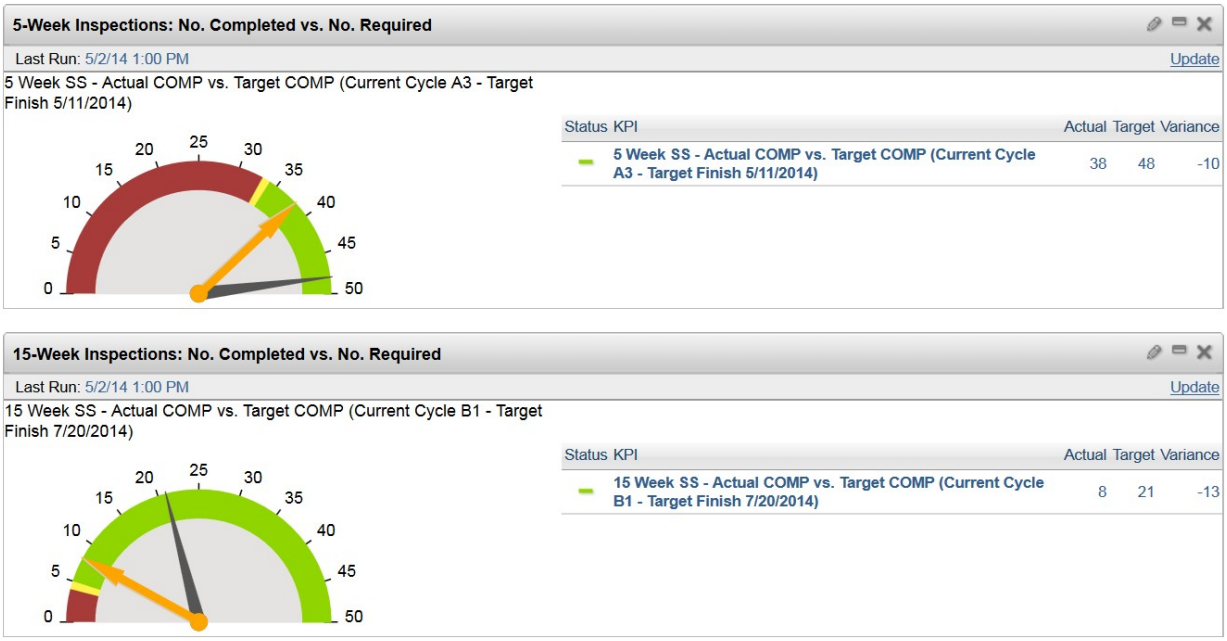

Figure 6-4. Street Sweeping Module KPI

A map depicting completed and non-completed segments provides both the inspector and program leader with an additional visual representation of the schedule status (Figure 6-5).

Figure 6-5. Street Sweeping Inspection by Status (Blue – Complete, Yellow – Not Complete)

DOT-HWYS has initiated a Debris Cleaning Assessment (DCA) (Appendix K.1) as part of the TMDL Program. The results of the DCA will be used to support future decisions regarding street sweeping frequencies. The DCA is described in more detail in Section 13.1. The need for sweeping is, at a minimum, determined based upon material accumulation rates and/or the potential threat of discharge to State Waters that may have an effect on water quality. The priority-based schedules are annually reviewed, and adjusted as necessary. To date, the annual review of material accumulation rates has not indicated a need for more frequent sweeping. Any changes made to the schedule, along with explanations of the changes, will be submitted within the Annual Report.

The Street Inspection & Cleaning Team and the Special Services Subunit implement the Street Sweeping Program, as shown in Figure 6-6. The Debris Control Program Leaders manage contracts related to this program.

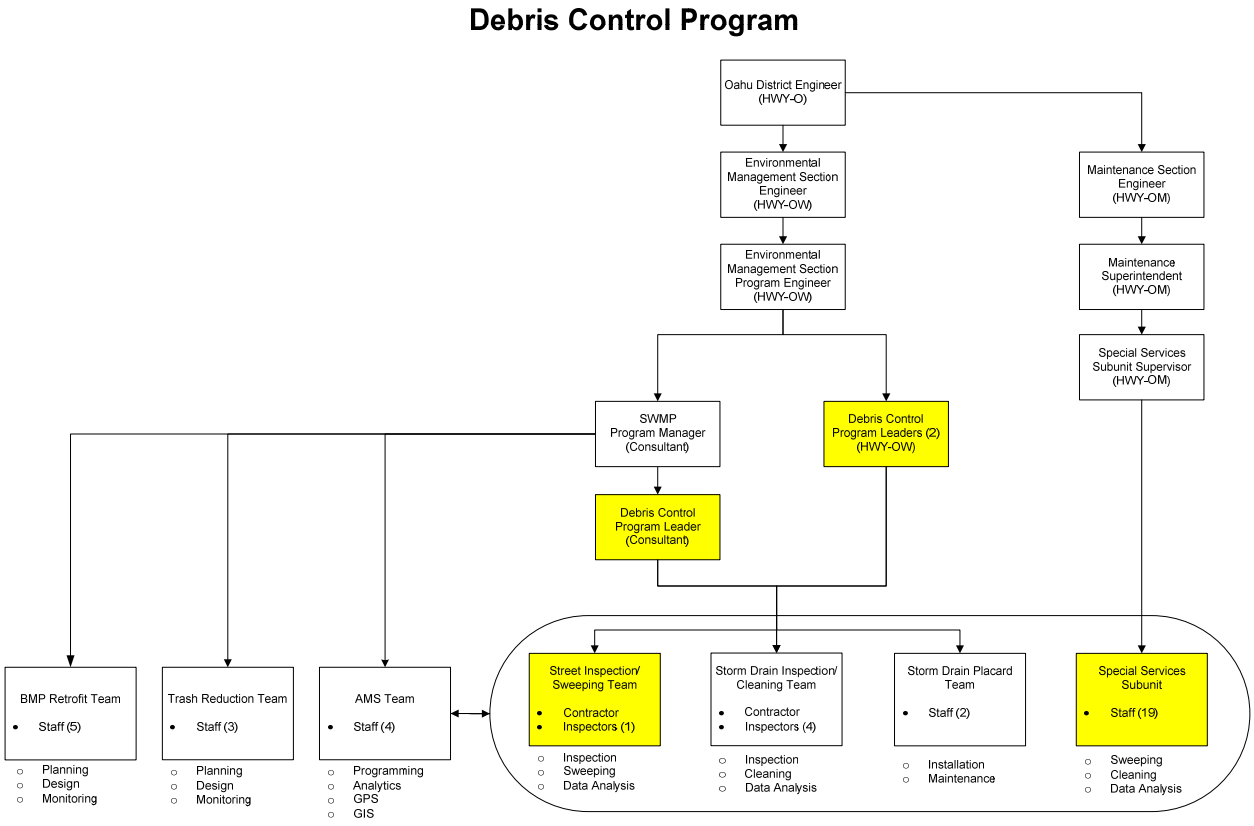

Figure 6-6. Debris Control Program Organizational Chart for Roles and Responsibilities Related to the Street Sweeping Program

6.3 Storm Drain System Inspection and Cleaning

It is necessary to remove debris from the drainage system in order to reduce the amount of pollutants discharged to receiving waters to the MEP. The Debris Control Program inspects the MS4 for the purpose of determining if cleaning or maintenance is needed. Storm drainage system infrastructure inspected and cleaned under this program includes catch basins, gutters, and open channels. Inspection and maintenance activities for PBMPs are discussed in Section 5.3.

Inspection and maintenance schedules are based on requirements prescribed by the Consent Decree and on an annual assessment of material accumulation rates and/or potential impacts to water quality. The Consent Decree dictates that storm drain structures located within CWA Section 303d listed high priority watersheds are inspected at least once semi-annually. Structures that may require more frequent cleaning due to high material accumulation rates or a potential threat to water quality are also inspected semi-annually. All other structures are inspected at least

once annually. The priority-based schedules are annually reviewed and adjusted as necessary. Any changes made to the schedule, along with explanations of the changes, will be submitted within the Annual Report.

Storm drainage structures are cleaned when a one-third debris accumulation threshold is reached or exceeded. If the depth of deposited sediment and debris is at least one-third the depth from the invert of the structure to the invert of the lowest pipe or opening into or out of the structure, cleaning is required. Linear features are cleaned at the discretion of the Debris Control Program managers.

The AMS is used to establish priorities and to schedule and track efforts of appropriate system maintenance and debris removal activities. KPIs are used to monitor the progress of drainage structure inspections and cleanings. Example KPIs are shown in Figures 6-7 and 6-8. In the KPIs, "COMP" indicates the number of inspections and/or cleanings completed (if cleaning was necessary). "INPRG" indicates the number of structures that have been inspected and marked for cleaning, for which cleaning has not yet occurred. "WINSP" indicates the number of structures that have not yet been inspected. The KPIs provided below show the structures that one individual inspector is responsible for, and therefore do not numerically represent the complete inventory of that structure type.

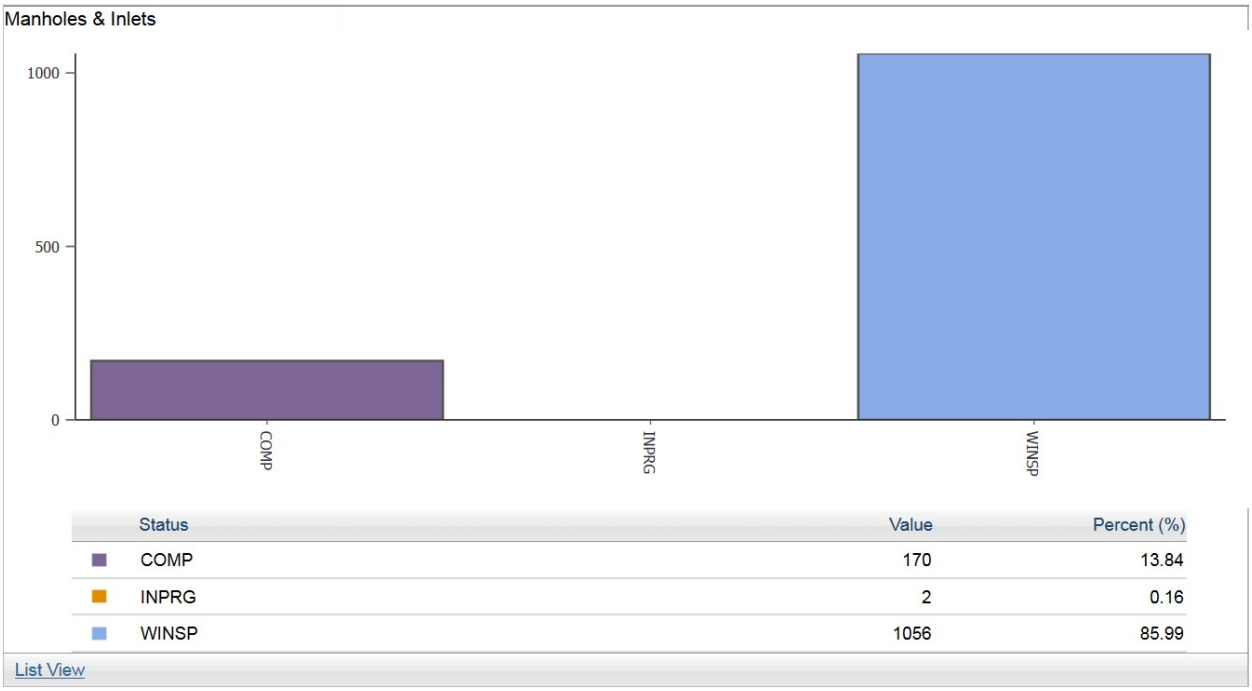

Figure 6-7. Manhole & Inlet Inspection KPI

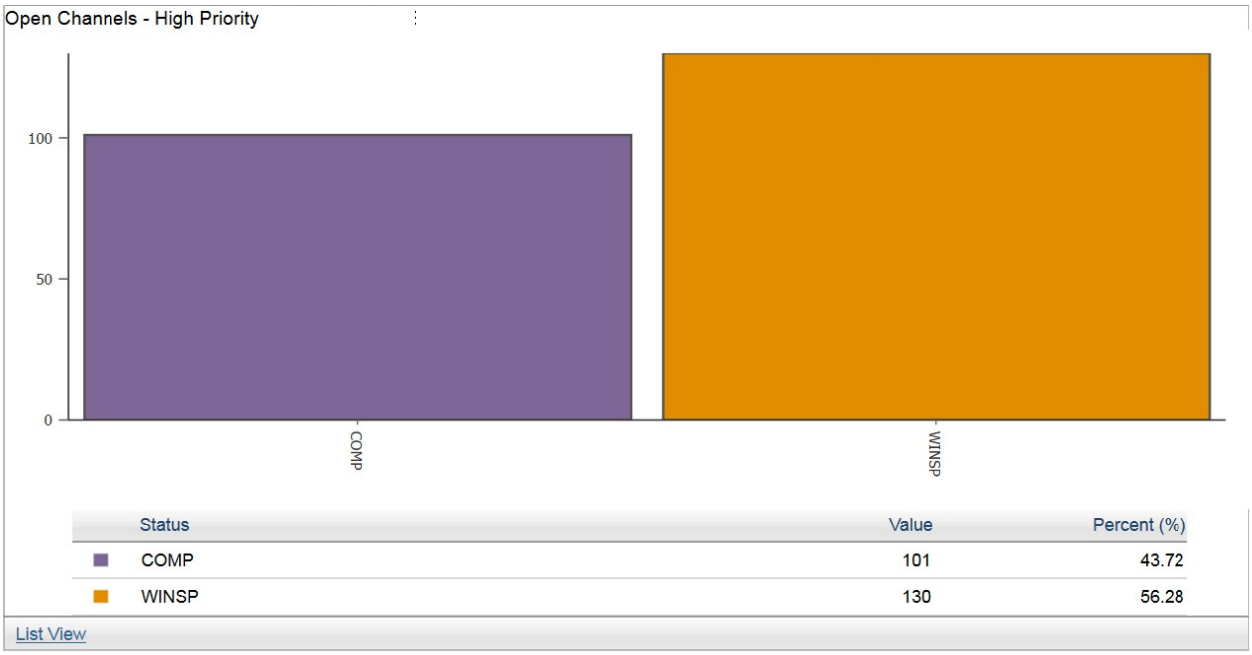

Figure 6-8. Open Channel Inspection KPI

DOT-HWYS inspects storm drain structures on a priority-based schedule and cleans structures when the accumulation threshold is reached.

The Storm Drain Inspection & Cleaning Team and the Special Services Subunit implement the Storm Drain System Inspection and Cleaning Program, as shown in Figure 6-9. The Debris Control Program Leaders manage contracts related to this program.

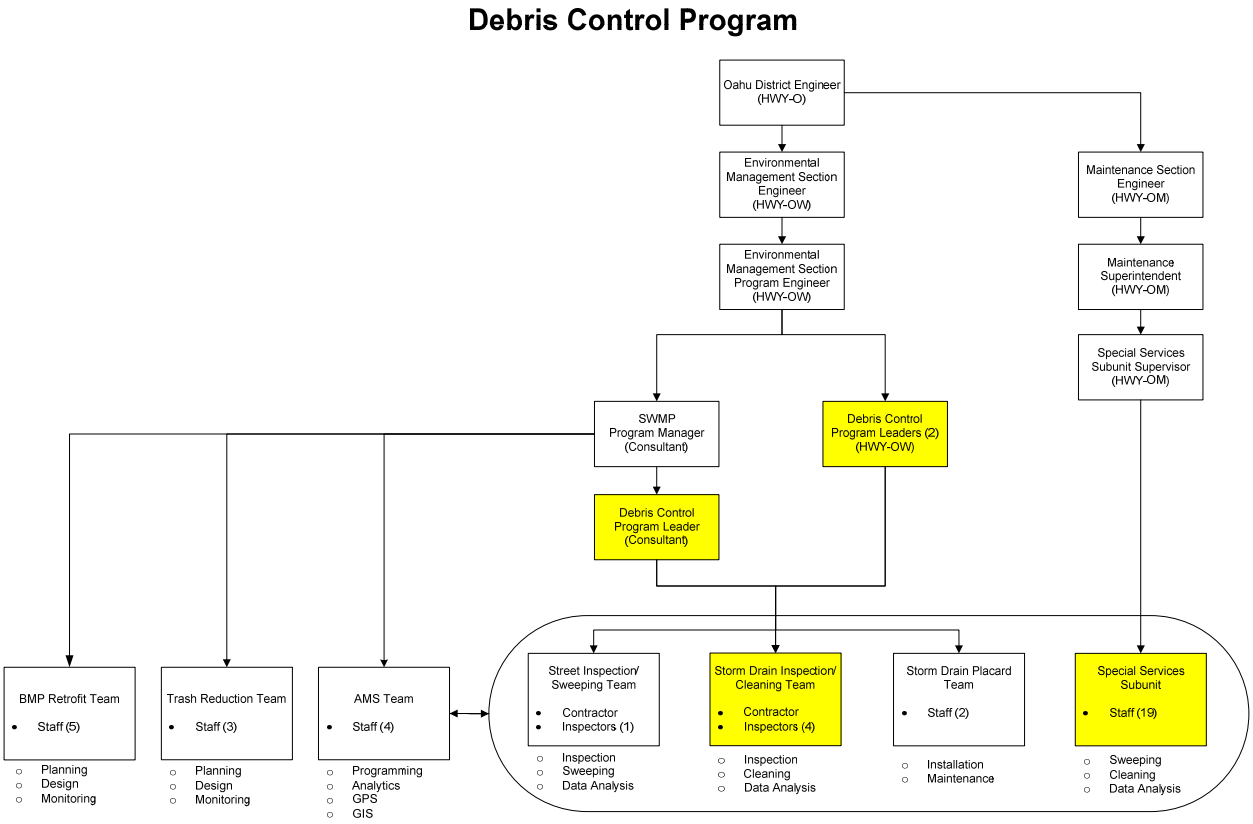

Figure 6-9. Debris Control Program Organizational Chart for Roles and Responsibilities Related to the Storm Drain System Inspection and Cleaning Program

6.4 Storm Drain Placards

In 2001, DOT-HWYS launched a program to install informational placards on storm drains on Oahu. The placards, shown in Figure 6-10, inform the public that storm drains lead directly to the ocean. The intent of the storm drain placards is to raise public awareness about this direct connection and ultimately affect public behavior by reducing the amount of pollutants that are intentionally or negligibly dumped into storm drains.

Figure 6-10. DOT-HWYS' Storm Drain Placard

The ocean has meaningful significance to the majority of people living in Hawaii. A large portion of the public directly depends on a healthy ocean for their livelihoods, immediate subsistence, and/or recreational needs. Many people also appreciate the ocean for its aesthetic beauty, economic value, and cultural significance to the community. For these reasons, establishing a mental connection between storm drains and the ocean, much like the physical connection itself, has the potential to have far reaching effects on public behavior.

DOT-HWYS installs a minimum of 75 new storm drain placards every year, primarily in areas with heavy pedestrian traffic or a high concentration of commercial and industrial facilities. Once placards are installed in all high priority areas (i.e., heavy pedestrian traffic and/or high concentration of commercial and industrial facilities) within DOT-HWYS' right-of-way, DOT-HWYS will focus its efforts on placard inspection, repair, and maintenance, in lieu of continued installation. Each placard is assigned a number, which corresponds to the PID number of the storm drain it is located on.

The AMS is used to track the placement of storm drain placards by placard number, associated storm drain PID number and GPS location (Figure 6-11). Storm drain placards are assessed for maintenance or replacement needs during routine inspections of storm drains, at the frequency established in Section 6.3.

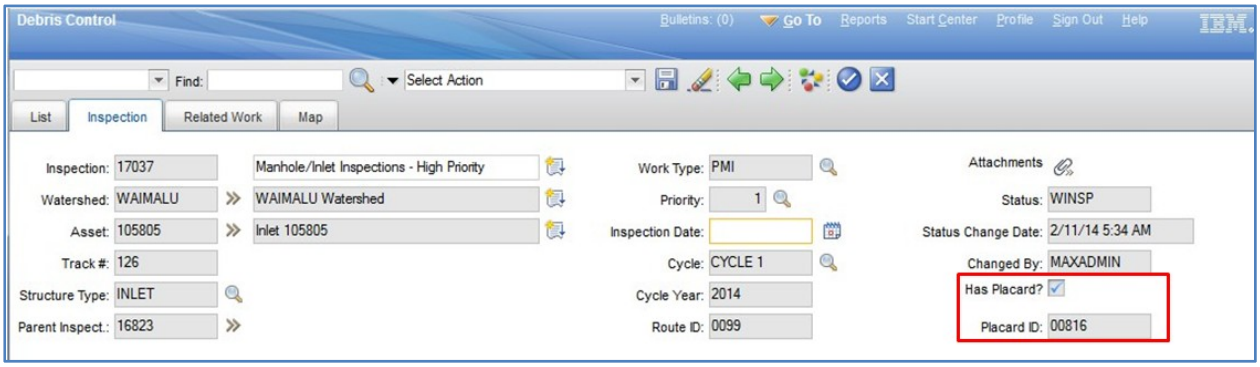

Figure 6-11. Placard Attribute Data

DOT-HWYS uses the public awareness survey to evaluate the effectiveness and recognizability of storm drain placards. In the survey, participants are asked whether or not they are familiar with the "No dumping, drains to ocean" placards at storm drains. Results are tallied, annually, and can be compared from one year to the next.

The Storm Drain Placard Team is responsible for installing, inspecting, and maintaining DOT-HWYS' storm drain placards, as shown in Figure 6-12.

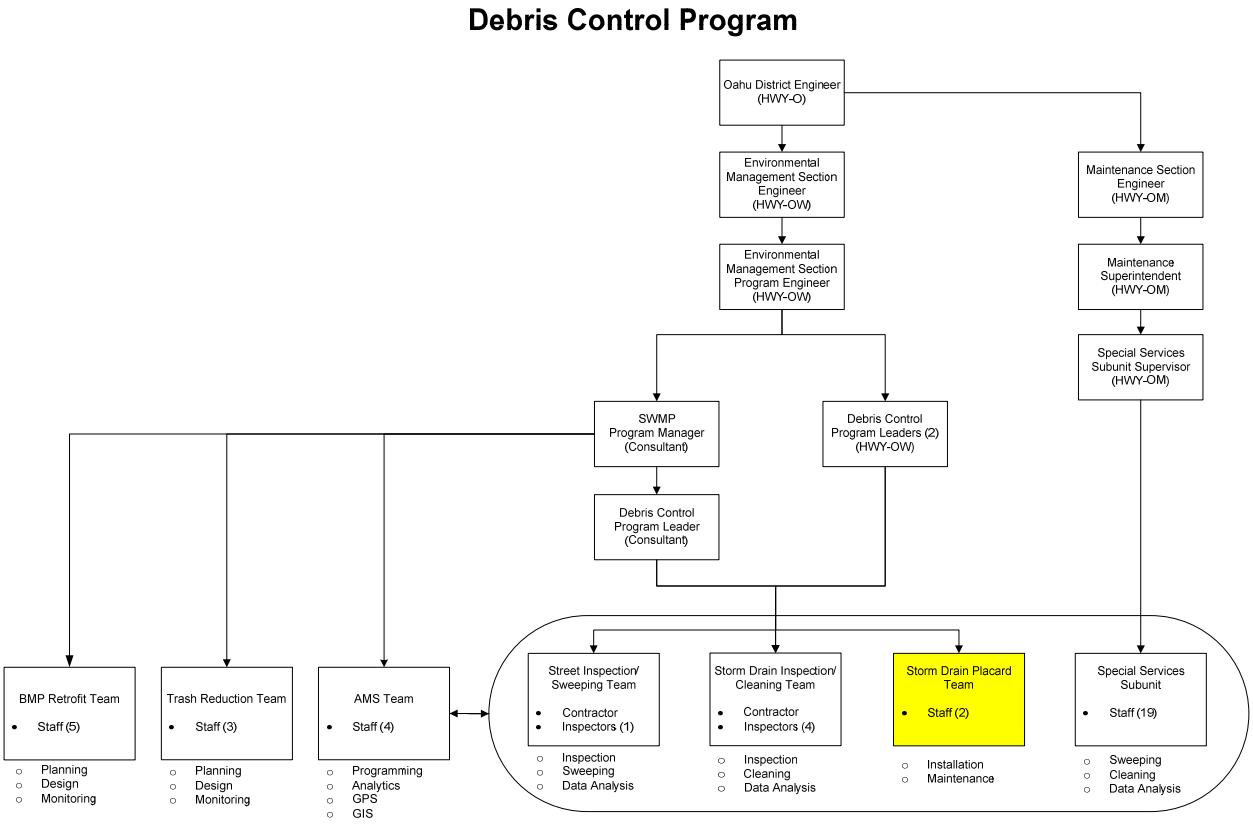

Figure 6-12. Debris Control Program Organizational Chart for Roles and Responsibilities Related to Storm Drain Placards

6.5 Action Plan for Retrofitting Structural BMPs

Part D.1.f.(1).(iv) of the MS4 Permit requires DOT-HWYS to provide DOH with an Action Plan for Retrofitting Structural BMPs (Appendix F.1), which includes identification of the retrofits to be implemented, an explanation on the basis of their selection, and a five-year implementation schedule. The purpose of the Action Plan for Retrofitting Structural BMPs is to reduce storm water pollution by designing and constructing/installing appropriate and cost-effective BMPs (retrofits) in strategic locations and structures within the existing MS4. Potential retrofit sites were selected through the review of previous MS4 studies and from data collected during routine MS4 monitoring and maintenance activities. A total of 38 sites were selected for retrofits throughout the MS4 during the five-year implementation period. The following criteria were used to determine final site selections for the five-year implementation schedule:

1. Verified as a structure or feature of the MS4;
2. Located within DOT-HWYS' right-of-way or known to have an access easement, and has readily available construction and maintenance access;
3. Located in a TMDL or CWA Section 303(d) listed watershed; and has
4. Significant catchment of runoff from DOT-HWYS' right-of-way.

The BMP Retrofit Team is responsible for the development and implementation of the Action Plan for Retrofitting Structural BMPs, as shown in Figure 6-13.

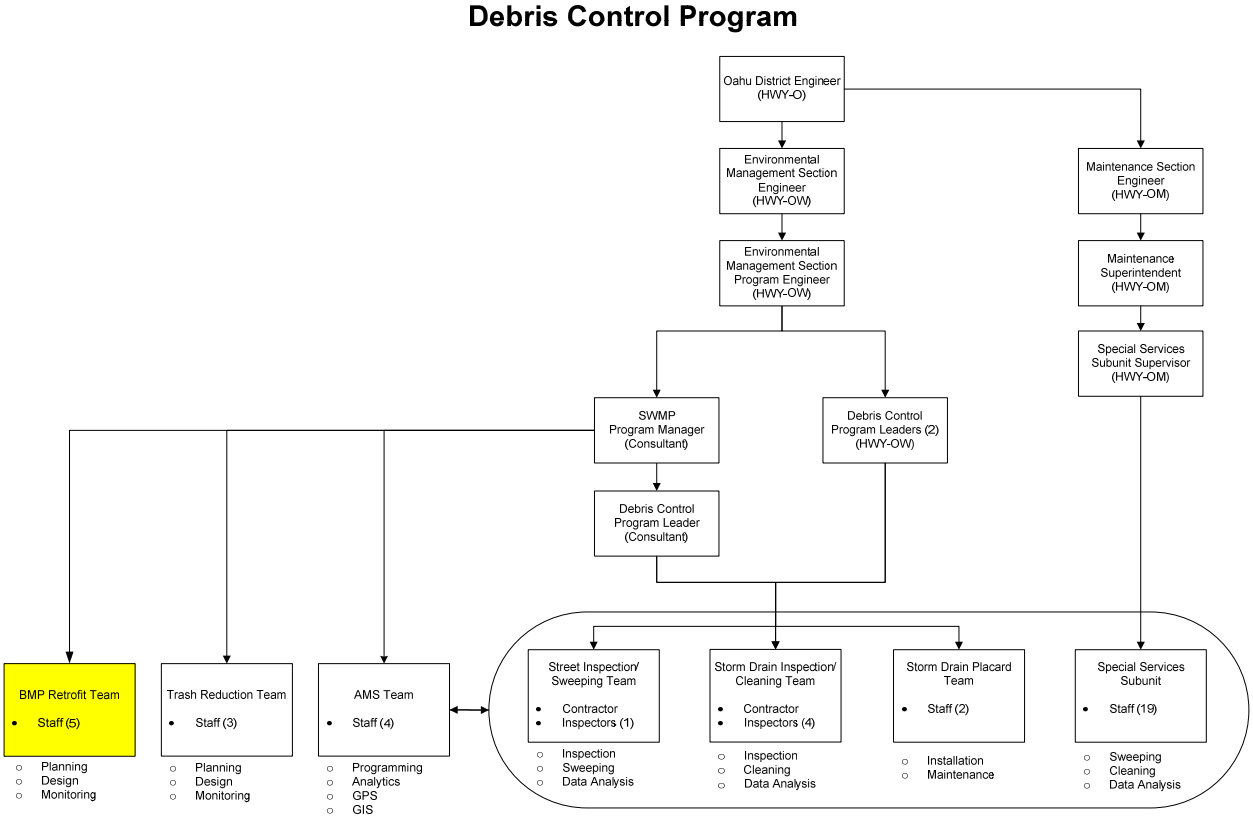

Figure 6-13. Debris Control Program Organizational Chart for Roles and Responsibilities Related to Retrofitting Structural BMPs

6.6 Trash Reduction

DOT-HWYS is developing a Trash Reduction Plan that will be submitted to DOH for review and acceptance within three years of the effective date of the MS4 Permit. The Trash Reduction Plan will be designed to assess and reduce trash loads from the MS4. The Trash Reduction Plan will contain the elements required in Part D.1.f.(1).(v) of the MS4 Permit; including a quantitative estimate of the debris currently being discharged from the MS4, a short-term plan and proposed compliance deadline for reducing debris discharges from the MS4 by 50% from the baseline load; a long-term plan and proposed compliance deadline for reducing debris discharges from the MS4 to zero, and an implementation schedule.

The Trash Reduction Team is responsible for developing and implementing the Trash Reduction Plan, as shown in Figure 6-14.

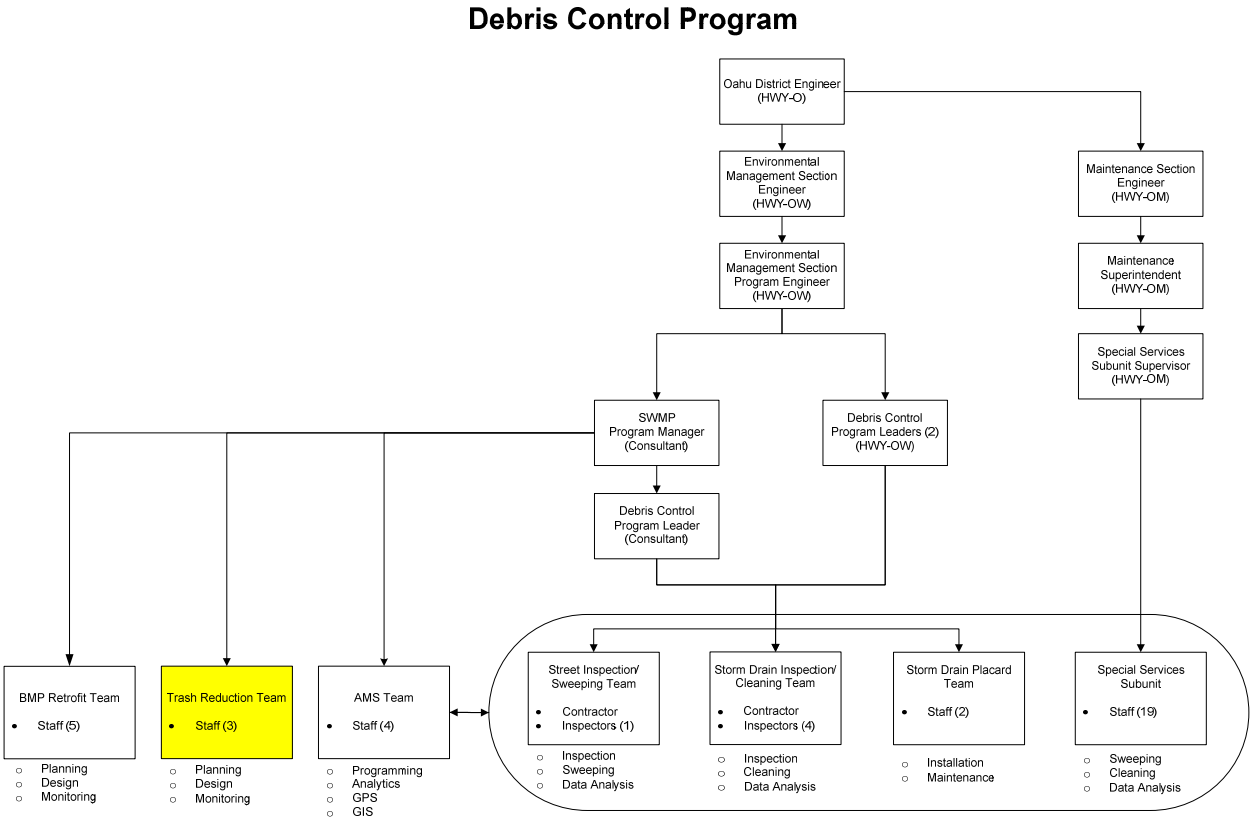

Figure 6-14. Debris Control Program Organizational Chart for Roles and Responsibilities Related to Trash Reduction

6.7 Monitoring Program Effectiveness

Table 6-5 provides measurable standards/milestones for the BMPs discussed in this chapter and DOT-HWYS' strategy for monitoring the effectiveness of their implementation.

Table 6-5. Standards/Milestones for the Debris Control Program

Section	BMP	Standard/Milestone	Monitoring Effectiveness
6.1	Asset Management System	• Utilize AMS to establish priorities and schedule and track efforts of debris removal program activities.	• Track and characterize debris removed from program activities and utilize information to revise priority-based schedules as feasible.
6.2	Street Sweeping	• Sweep 100% of segments in accordance with the priority-based schedules.	• Track the location and frequency of all street sweeping activities and compare against priority-based schedules.
6.3	Storm Drain System Inspection and Cleaning	• Inspect 100% of drainage structures in accordance with the priority-based schedules.	• Track the location, frequency, and structure type of all inspection activities and compare against priority-based schedules.
6.4	Storm Drain Placards	• Install 75 storm drain placards each year on pedestrian-accessible storm drain inlets.	• Track the location and placard number of all storm drain placards installed.
6.5	Action Plan for Retrofitting Structural BMPs	• Submit Action Plan for Retrofitting Structural BMPs within one year from the EDOP. • Construct/install 38 retrofits within the five year implementation period.	• Milestone completed on 10/27/2014. • Track and document retrofit BMP construction and installation locations.
6.6	Trash Reduction	• Submit Trash Reduction Plan within three years from the EDOP. • Comply with schedule/milestones established by Trash Reduction Plan.	• Milestone scheduled for completion on 10/27/2017. • Ensure timely completion of milestones established by Trash Reduction Plan.