

# 6 | Pollution Prevention/Good Housekeeping Debris Control BMPs Program



State of Hawaii, Department of Transportation  
Highways Division, Oahu District  
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Public Review Draft





*Service contractors are utilized to perform maintenance activities, including routine pipe cleaning.*

The Pollution Prevention/Good Housekeeping (PP/GH) Program is designed to develop and maintain a system maintenance program to reduce to the MEP the discharge of pollutants from facilities, roads, parking lots, baseyards, maintenance facilities, and the MS4.

The PP/GH Debris Control BMPs Program (Debris Control Program) is designed to reduce to the MEP the discharge of pollutants from roadways, shoulders, medians, catch basins, gutters and open ditches, and trenches to and from the MS4.

The Debris Control Program includes the following control measures:

1. Maintain a comprehensive AMS to establish priorities and to schedule and track debris removal activities.
2. Implement street sweeping with priority-based schedules.
3. Implement storm drain system inspection and maintenance with priority-based schedules.
4. Install and maintain storm drain placards at storm drain inlets for the purpose of educating the public.
5. Continue to update the *Action Plan for Retrofitting Structural BMPs*.
6. Continue to implement the *Trash Reduction Plan*.

The Debris Control Program is administered in accordance with the MS4 NPDES Permit requirements referenced in Table 6-1.

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

MS4 NPDES Permit Reference	SWMPP Section
<b>Part D.1.f</b> —The Permittee shall further develop and maintain 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 MS4. The program shall include:	
<b>Part D.1.f.(1)(i)</b> Asset Management System and Mapping – The Permittee shall maintain its comprehensive Asset Management System and map of the MS4, including structural and vegetative BMPs, 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
<p><b>Part D.1.f.(1)(ii)</b> Inspection/Maintenance Schedule – The Permittee shall include in its SWMP procedures and a schedule for inspections of:</p> <ul style="list-style-type: none"> <li>a) All state highways on Oahu to identify if sweeping of roadways, shoulders, and/or medians is needed; and</li> <li>b) All state highway storm drainage system catch basins, gutters and open ditches, trenches, and Permanent BMPs on Oahu to identify if maintenance/cleaning of such structures are needed.</li> </ul> <p>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 affect water quality. The schedule shall provide that each highway mile, storm drainage feature, and Permanent 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 Permanent 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 affect 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.</p>	Section 6.2 Section 6.3

MS4 NPDES Permit Reference	SWMPP Section
<b><i>Part D.1.f.(1)(iii)</i></b> 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. If DOT-HWYS has installed placards on all of the prioritized MS4 structures and the total placards installed that year is less than 75, DOT-HWYS shall consider its annual commitment fulfilled. 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 inspection, and if necessary, replacement of placards.	Section 6.4
<b><i>Part D.1.f.(1)(iv)</i></b> Action Plan for Retrofitting Structural BMPs – The Permittee shall continue to update the Action Plan for Retrofitting Structural BMPs 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 project's status. The Action Plan may include, but not be limited to projects in compliance with any TMDL implementation and monitoring plan.	Section 6.5
<b><i>Part D.1.f.(1)(v)</i></b> Trash Reduction Plan – The Permittee shall continue to implement its Trash Reduction Plan, dated October 2016, or any revisions to the Plan. The Trash Reduction Plan will be included in the SWMP and any revisions will be noted in the Annual Report.	Section 6.6

## 6.0 Program Organization

To fulfill the MS4 NPDES Permit requirements of the Debris Control Program, the following organizational structure has been established, as shown in Figure 6-1.

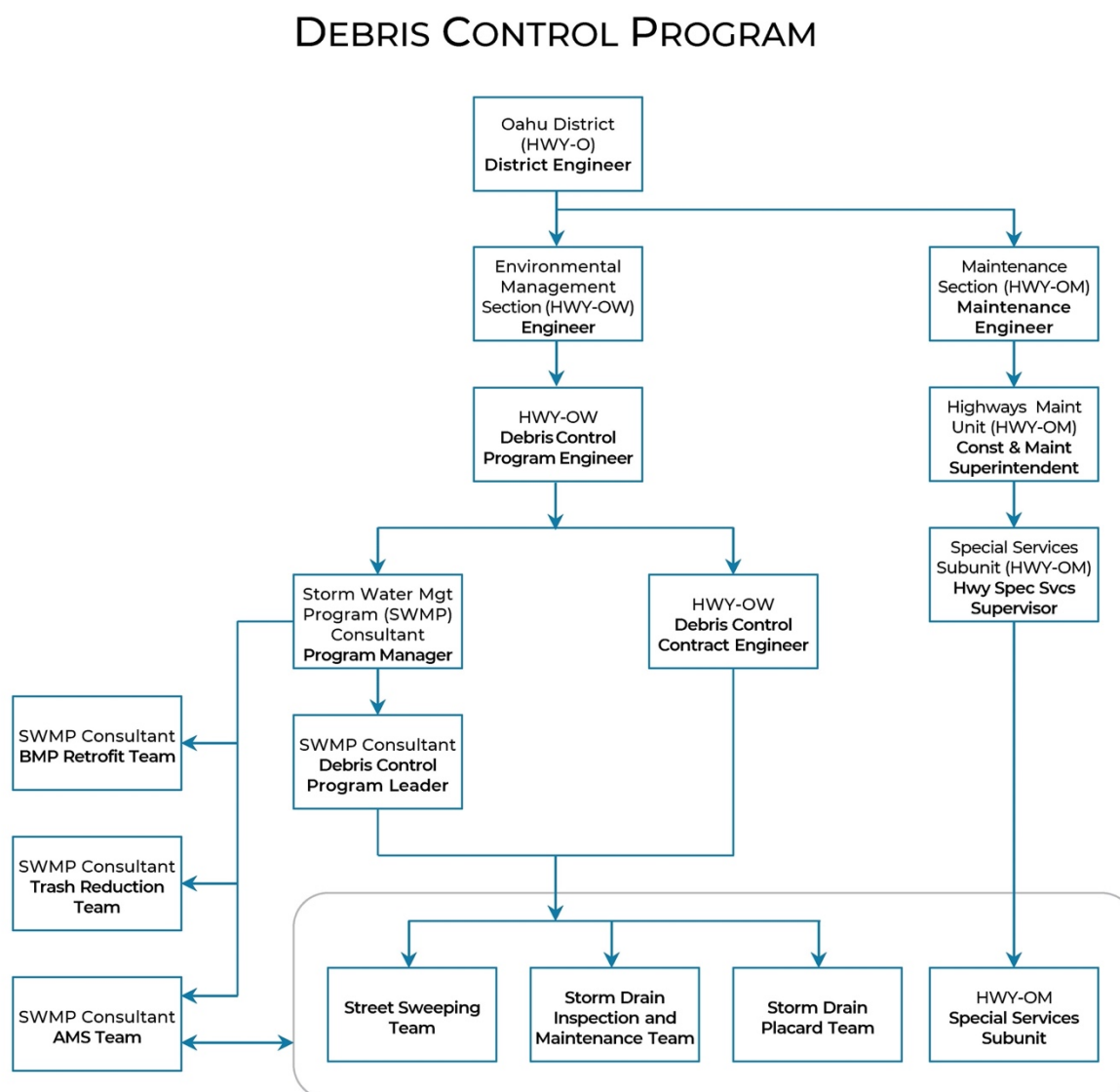


Figure 6-1. Debris Control Program Organizational Chart.



## 6.1 Asset Management System | MS4 NPDES Permit Part D.1.f.(1)(i)

Utilizing the AMS, DOT-HWYS establishes priority-based schedules and tracks system maintenance activities. The AMS provides a comprehensive Geographic Information System (GIS) map and relational database that inventories and documents debris removal activities for MS4 drainage structures, roadways, and post-construction BMPs (structural and vegetative), which allow the Debris Control Program to spatially analyze material accumulation rates and potential impacts to water quality. This information is utilized to justify the priority-based schedules further discussed in Section 6.2 and 6.3. A unique point identification (PID) number is assigned to each MS4 drainage structure (e.g., drain inlet, outfall, post-construction BMP, etc.) to facilitate data inventory and tracking. Inspection priority schedules and service contract information are captured for each MS4 drainage structure and highway segment to allow for real-time inspection compliance tracking and contract management support.

*The AMS provides a spatial inventory of MS4 drainage structures and other assets.*



Key to the function of the AMS is the incorporation of key performance indicators (KPIs), commonly depicted as gauges, charts, or tables. A KPI is the critical indicator of progress towards a targeted result, thereby providing a focus for strategic and operational improvement and an analytic basis for decision making. For the Debris Control Program, the AMS utilizes KPIs to track the progress of scheduled debris control activities, such as street sweeping and MS4 drainage structure inspections and maintenance, against the target end date for a given cycle. With the use of KPIs, inspectors and managers can quickly assess whether they are on target to complete scheduled debris removal activities on time.

The individuals and teams highlighted in Figure 6-2 are responsible for implementing the control measures described in this section.

## DEBRIS CONTROL PROGRAM

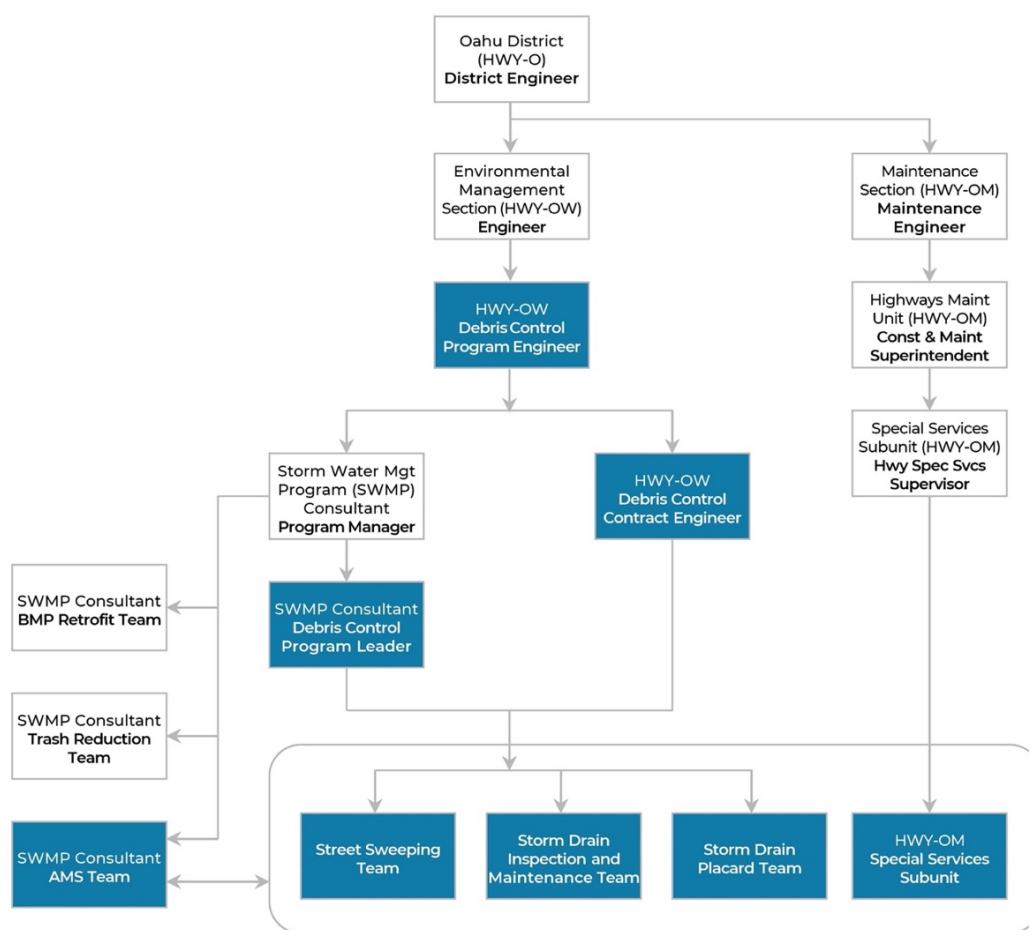


Figure 6-2. Debris Control Program Organizational Chart for Roles and Responsibilities Related to the AMS.

## 6.2 Street Sweeping Inspection and Maintenance | MS4 NPDES Permit Parts D.1.f.(1)(i) and D.1.f.(1)(ii)

DOT-HWYS is required to inspect each roadway mile at least once during the permit term to identify whether sweeping of roadways, shoulder, and/or medians is needed. Sweeping is conducted in lieu of inspections to satisfy this requirement.

The DOT-HWYS routes are divided into highway segments and are categorized into three groups (A, B, and C).

- Group "A" segments are swept quarterly
- Group "B" segments are swept monthly
- Group "C" segments are swept semimonthly

The priority-based schedules are annually reviewed and adjusted as necessary. Any changes made to the sweeping schedule, along with explanations of the changes, are provided in the Annual Report. The Group A, B, C Street Sweeping Segments (Appendix F.1) list the group assignments for each highway segment.

Street sweeping results, including total curb miles swept and volume of debris collected, are captured in the AMS Maximo Street Sweeping Module. Additionally, the module utilizes KPIs to independently track the progress of group "A", "B", and "C" segments. An example KPI for group "A" segments is shown in Figure 6-3. The light grey needle specifies the target, or total number of street sweeping segments that are scheduled for sweeping during the given cycle. The dark grey arrow indicates the actual number of segments that have been swept since the beginning of the cycle. The yellow bar is dynamic and moves as time progresses, reflecting the number of segments that should be swept to date on average to complete the total target number of segments on schedule.

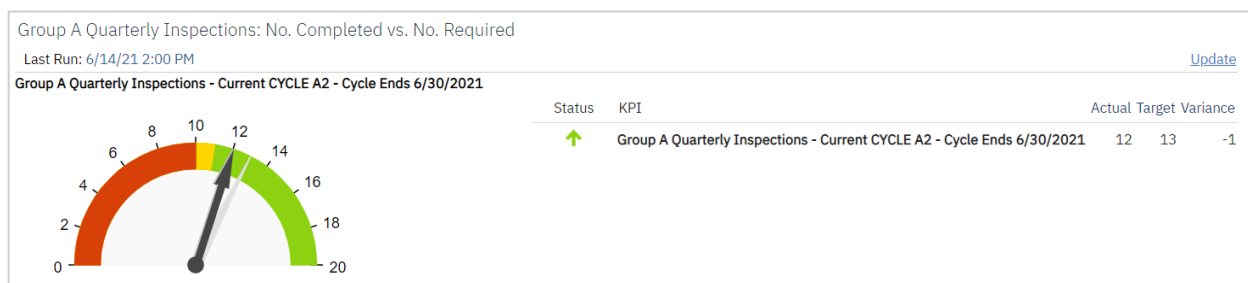


Figure 6-3. Street Sweeping Module KPI.



The AMS Maximo Street Sweeping Module integrates GIS to provide additional visual representation of the status for each highway segment, as shown in Figure 6-4.

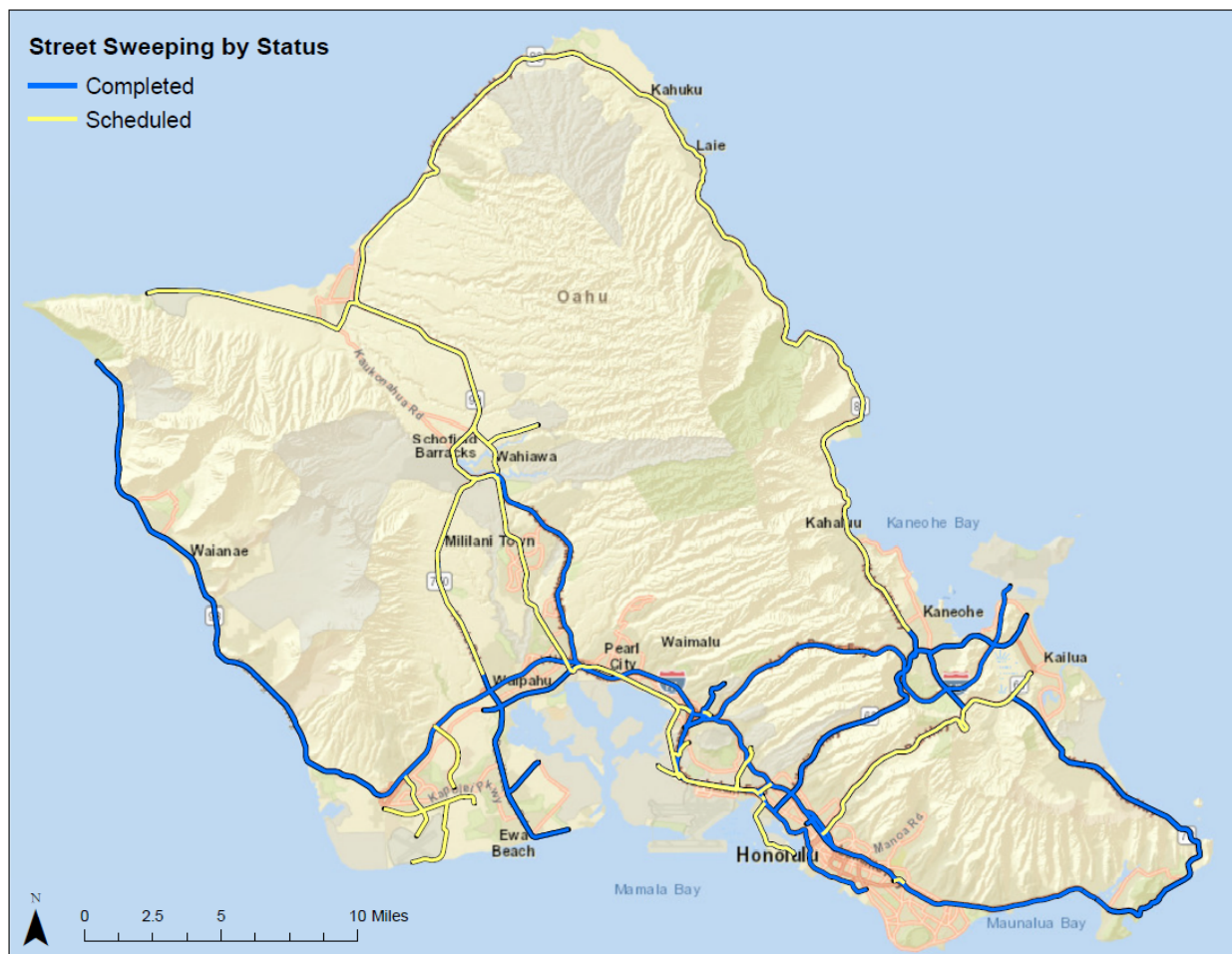


Figure 6-4. Street Sweeping by Status (Blue – Complete, Yellow – Scheduled).

The individuals and teams highlighted in Figure 6-5 are responsible for implementing the control measures described in this section.

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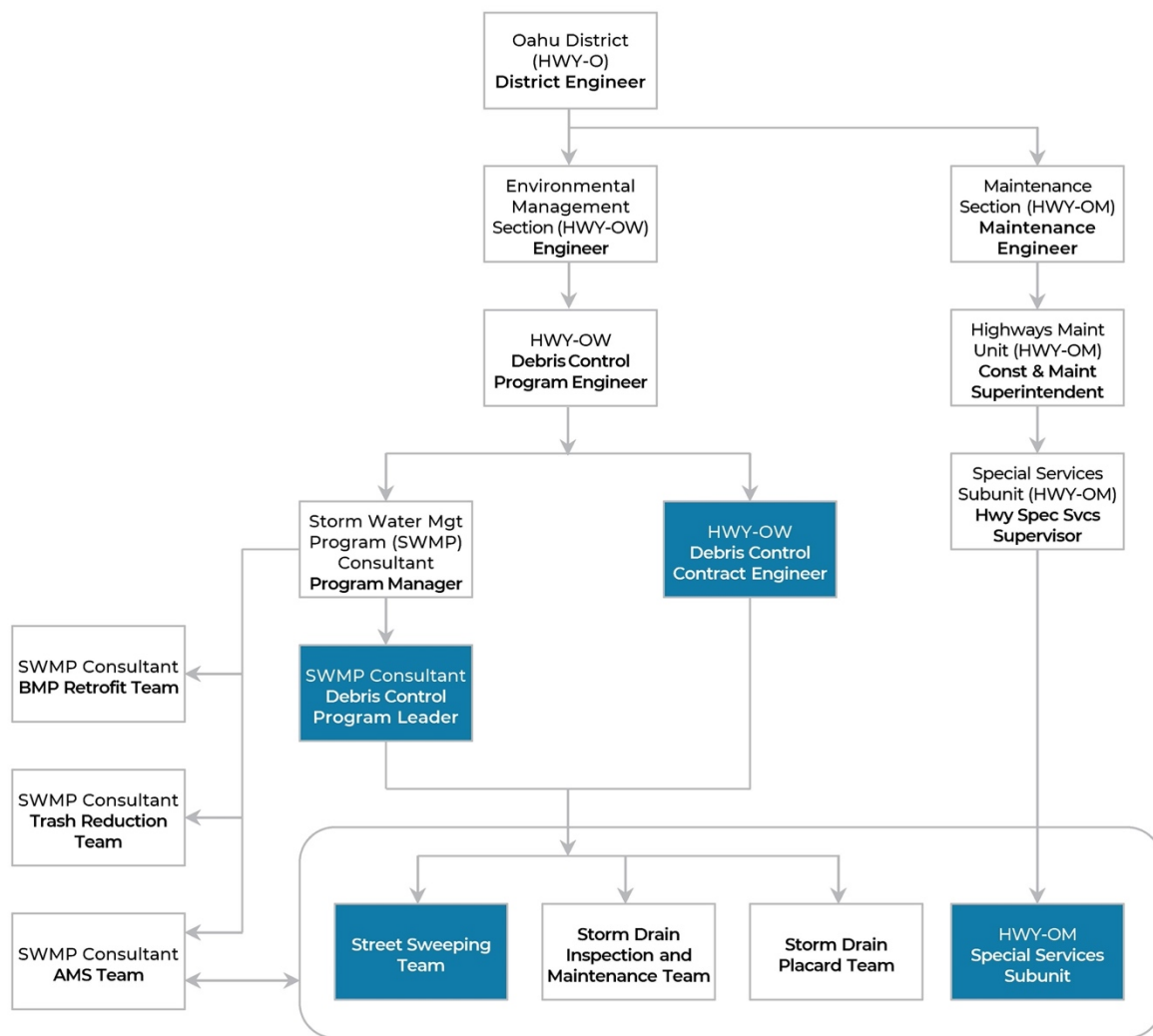


Figure 6-5. Debris Control Program Organizational Chart for Roles and Responsibilities Related to Street Sweeping Inspection and Maintenance.

## 6.3 Storm Drainage System Inspection and Maintenance

### | MS4 NPDES Permit Parts D.1.f.(1)(i) and D.1.f.(1)(ii)

DOT-HWYS inspects each MS4 drainage structure (e.g., catch basins, open ditches, trenches, and post-construction BMPs) to identify if maintenance of such structures is needed. The inspection and maintenance activities for post-construction BMPs are discussed in Section 5.3.

Inspection and maintenance frequencies are based on the assessment of material accumulation rates and/or potential threat of discharge to state waters that may affect water quality. Non-high priority MS4 drainage structures are inspected annually and high priority MS4 drainage structures are inspected biannually. The priority-based schedules are reviewed annually and updated as necessary. Any changes made to the inspection and maintenance schedules, along with an explanation of the changes, are provided in the Annual Report. The Priority Schedules for Storm Drain Structure Inspections (Appendix F.2) list the priority-based schedules for storm drain inspections.

MS4 drainage structures require cleaning when the accumulation of sediment and debris reaches 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. Linear features are cleaned at the discretion of DOT-HWYS.

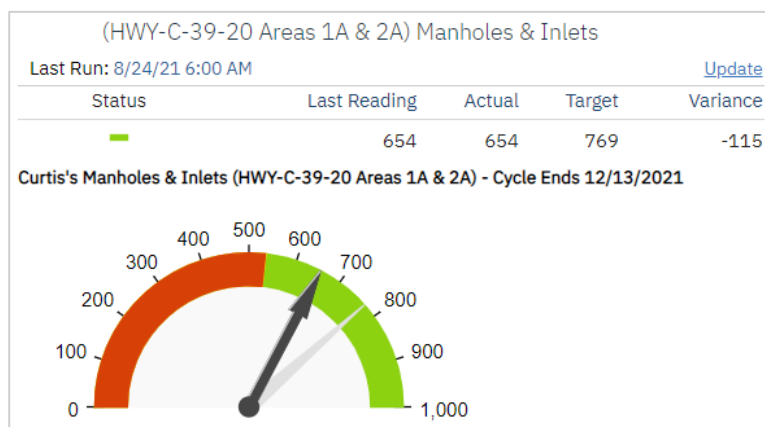


Figure 6-6. Manhole and Inlet Inspection KPI.

The AMS Maximo Debris Control Module documents the inspection and maintenance data and KPIs are used to monitor the progress of MS4 drainage structure inspections and maintenance. An example KPI for an inspection area is shown in Figure 6-6. The light grey needle specifies the target, or total number of

inspections that are scheduled for the given cycle. The dark grey arrow indicates the actual number of inspections that have been completed since the beginning of the cycle.



The individuals and teams highlighted in Figure 6-7 are responsible for implementing the control measures described in this section.

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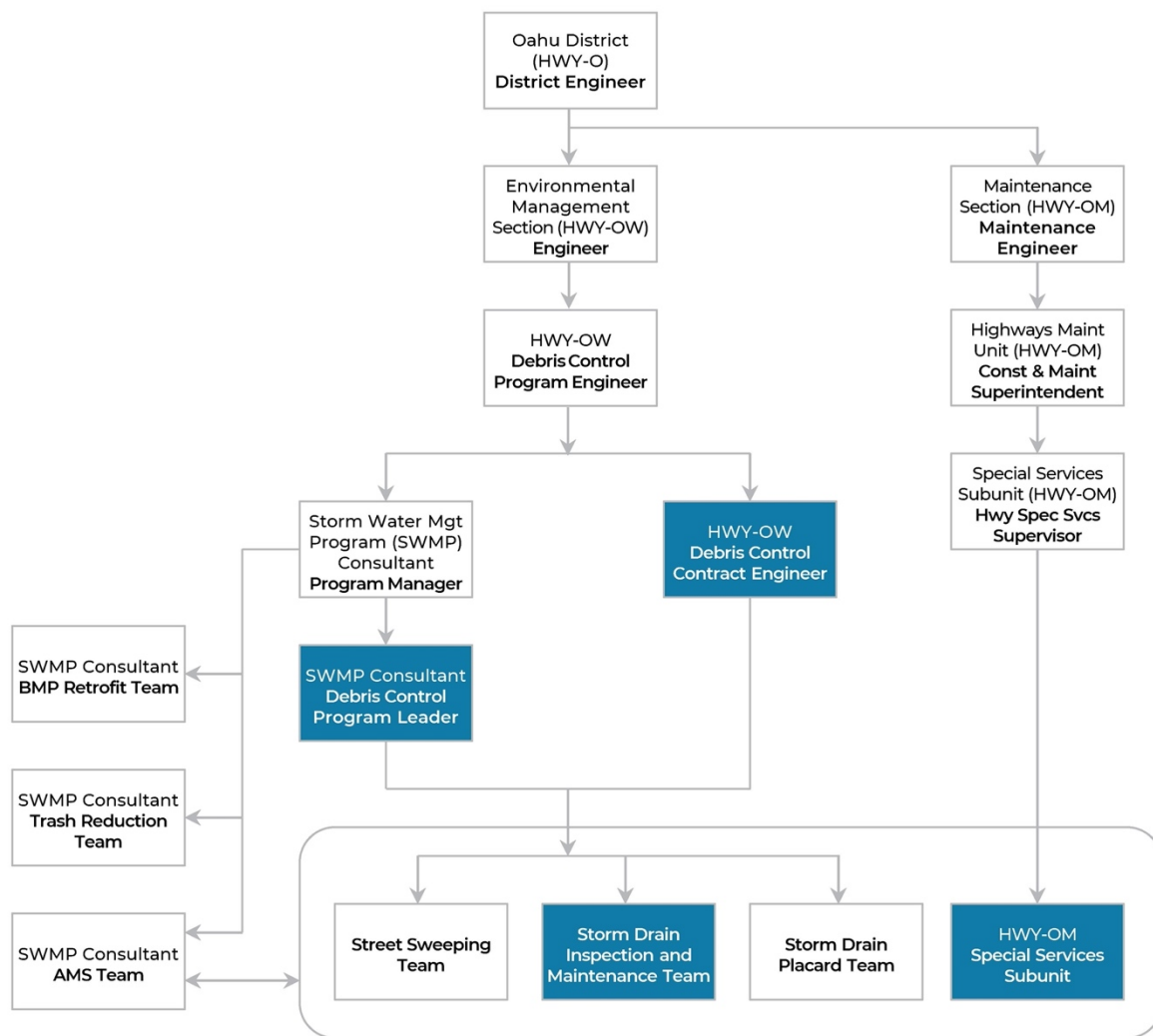


Figure 6-7. Debris Control Program Organizational Chart for Roles and Responsibilities Related to Storm Drainage System Inspection and Maintenance.

## 6.4 Storm Drain Placards | MS4 NPDES Permit Part D.1.f.(1)(iii)

DOT-HWYS installs a minimum of 75 new storm drain placards every year, primarily in high priority areas with heavy pedestrian traffic or a high concentration of commercial and industrial facilities. After placards are installed in all high priority areas within the DOT-HWYS ROW, DOT-HWYS will focus efforts on placard inspection, repair, and maintenance, in lieu of continued installation.

The AMS Maximo Debris Control Module tracks the placement of storm drain placards by placard number, related storm drain PID number, and GPS location, as shown in Figure 6-8. Storm drain placard maintenance or replacement needs are assessed during routine inspections of storm drains, at the frequency established in Section 6.3.



*Placards inform the public that storm drains lead directly to the ocean.*

The purpose of the storm drain placards is to increase public knowledge and awareness about the direct connection from storm drain to ocean. DOT-HWYS uses the public awareness survey to evaluate the effectiveness and recognition of storm drain placards. In the survey, participants are asked whether they are familiar with the “No dumping, drains to ocean” placards at storm drains. Awareness of the storm drain placards are annually evaluated as a part of the *Storm Water Awareness Survey Report*.

Inspection: 448209	Manhole/Inlet Inspections - High Priority	Work Type: PMI	Attachments
Watershed: KALIHI	KALIHI Watershed	Priority: 1	Status: COMP
Asset: 113316	Inlet 113316	Inspection Date: 9/17/20	Status Change Date: 9/17/20 7:38 PM
Track #: 120		Cycle: CYCLE 2	Changed By: MXINTADM
Structure Type: INLET		Cycle Year: 2020	Has Placard? <input checked="" type="checkbox"/>
Parent Inspect.: 447848		Route ID: 0064	Placard ID: 000261

Figure 6-8. Storm Drain Placard Attribute Data.

The team highlighted in Figure 6-9 is responsible for implementing the control measures described in this section.

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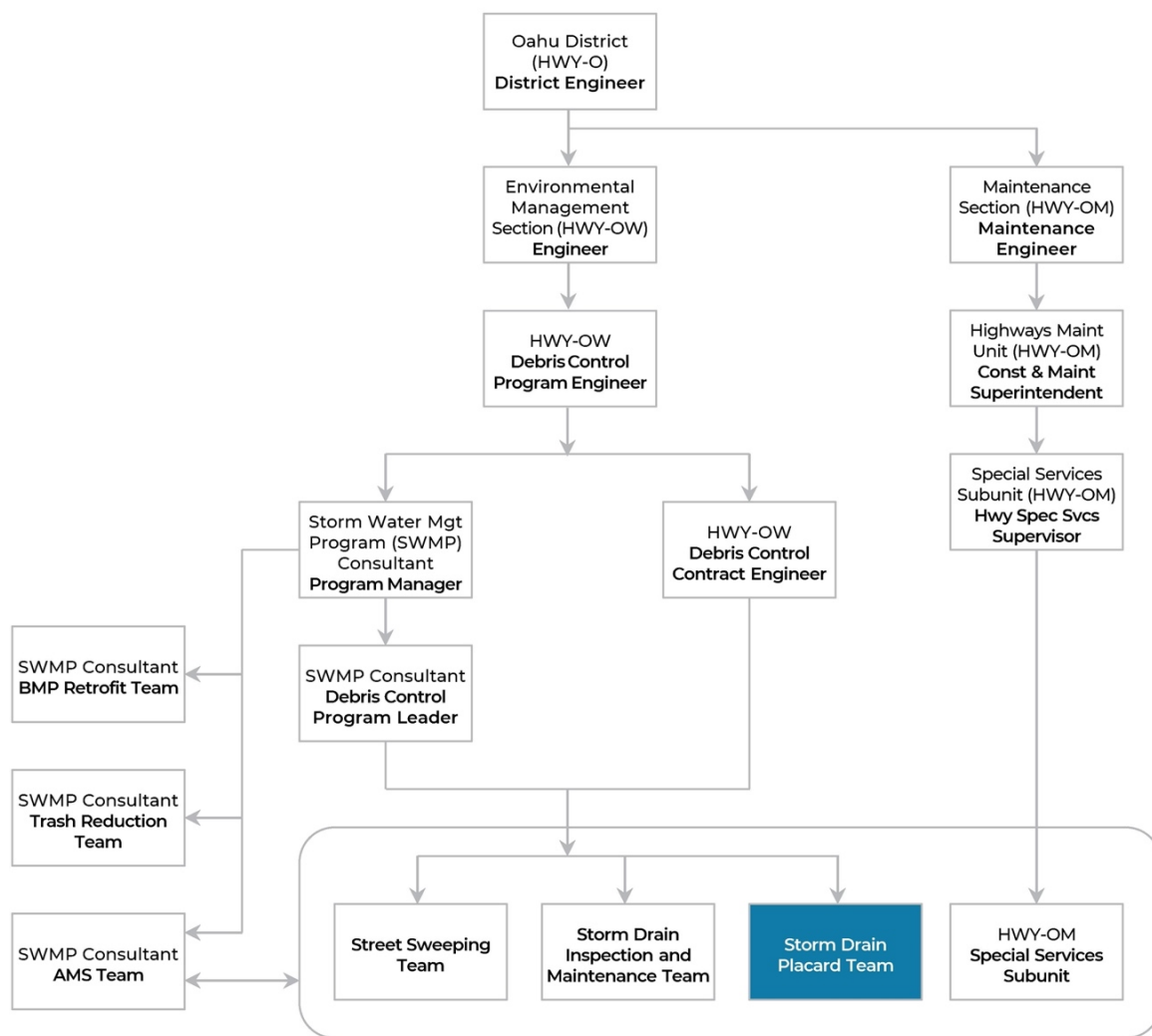


Figure 6-9. Debris Control Program Organizational Chart for Roles and Responsibilities Related to Storm Drain Placards.



## 6.5 Action Plan for Retrofitting Structural BMPs | MS4 NPDES Permit Part D.1.f.(1)(iv)

DOT-HWYS has developed an *Action Plan for Retrofitting Structural BMPs* (Appendix F.3) which identifies retrofits to be implemented, an explanation on the basis for their selection, and an implementation schedule. DOT-HWYS continues to annually update the *Action Plan for Retrofitting Structural BMPs* to include additional retrofit projects with water quality benefits and a description of project status. The annual updates to the implementation schedule are included in the Annual Report.

*A retractable screen guard retrofit installed at an existing curb inlet prevents debris from entering the storm drain along Kaneohe Bay Drive in Kaneohe, Hawaii.*



The individual and team highlighted in Figure 6-10 are responsible for implementing the control measures described in this section.

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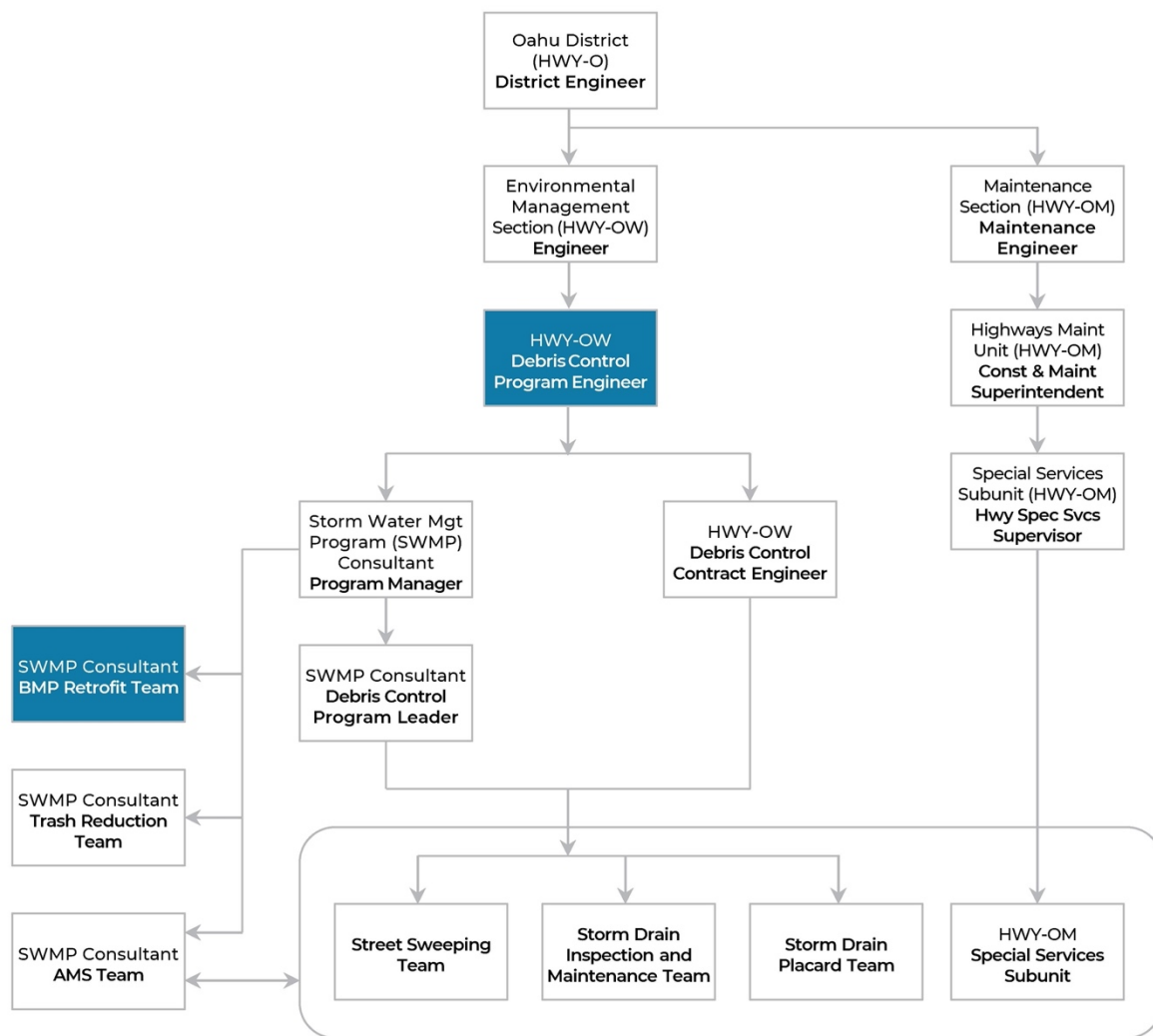


Figure 6-10. Debris Control Program Organizational Chart for Roles and Responsibilities Related to the *Action Plan for Retrofitting Structural BMPs*.

## 6.6 Trash Reduction Plan | MS4 NPDES Permit Part D.1.f.(1)(v)

DOT-HWYS will continue to implement the *Trash Reduction Plan* (Appendix F.4) which identifies control measures and establishes a process to monitor these activities to reduce trash loads from the MS4 to the MEP.

The *Trash Reduction Plan* includes the following six elements:

- Quantification of the trash baseline load.
- Description of existing trash reduction control measures.
- Presentation of trash load reduction calculation method.
- Delineation of trash management areas and identification of key geographical targets for future enhanced control measures.
- Presentation of an Implementation Schedule, which includes a Short-Term Plan and Long-Term Plan, to reduce trash load from the MS4 by 50% and 100% from the baseline, respectively.
- Description of a monitoring plan to quantify trash load reductions.

The baseline load was quantified using trash loading rates for eight key land use types and derived from a literature review and a trash characterization study. This information yielded a trash baseline load of 297 cubic yards per year. Trash load reduction targets are set at 50% by 2023 and at 100% by 2036. Progress towards the trash load reduction goals, along with any revisions to the *Trash Reduction Plan*, are included in the Annual Report.



The individuals and team highlighted in Figure 6-11 are responsible for implementing the control measures described in this section.

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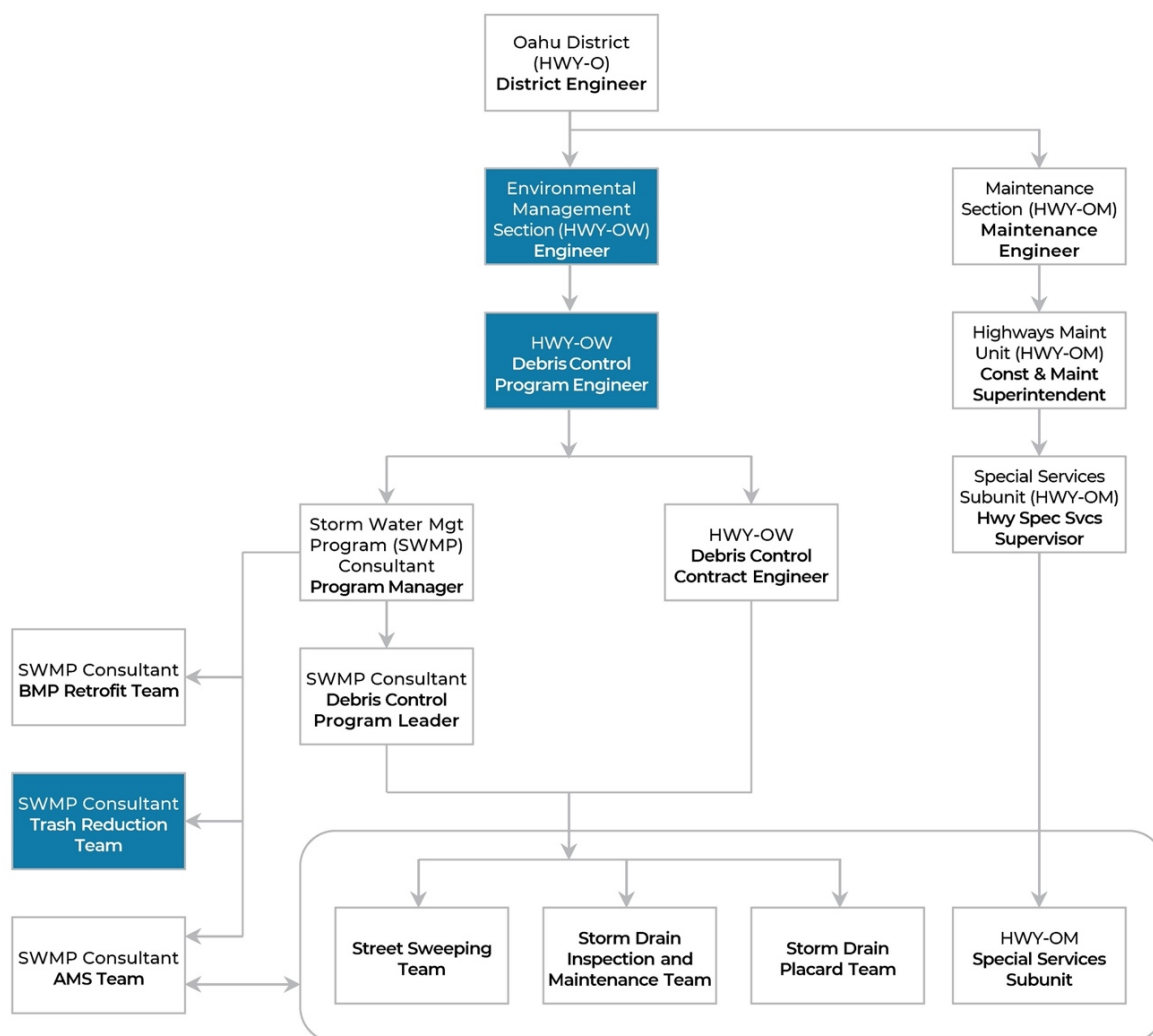


Figure 6-11. Debris Control Program Organizational Chart for Roles and Responsibilities Related to the *Trash Reduction Plan*.

## 6.7 Monitoring Program Effectiveness

The *Program Effectiveness Strategy* (Appendix A.3, Table 9) provides the measurable standards and/or milestones for each Program BMP, including the outcome level, data collection method, and assessment parameter.