

# PROGRAM EFFECTIVENESS STRATEGY



HONOLULU INTERNATIONAL AIRPORT  
NPDES PERMIT No. HI S000005



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## **1.0 INTRODUCTION**

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The State of Hawaii Department of Transportation, Airports Division (DOTA) has completed this written strategy for determining the effectiveness of the Storm Water Management Program Plan (SWMPP) at the Honolulu International Airport (HNL) in accordance with the National Pollutant Discharge Elimination System (NPDES) Small Municipal Separate Storm Sewer System (MS4) permit HI S000005, Part G.1.d. The strategy includes water monitoring efforts as well as evaluation of SWMPP implementation indicators to determine which elements are most beneficial in improving water quality.

### **1.1 Reference Documents**

The DOTA utilizes several documents to evaluate the compliance status and effectiveness of its storm water program at HNL, including the SWMPP, Annual Monitoring Plan, Annual Monitoring Report, and Annual Report. This evaluation will be used to assist DOTA in future decision making so that resources are focused on the areas of greatest impact.

#### ***1.1.1 Storm Water Management Program Plan***

The HNL SWMPP includes individual sections with supporting documents which detail how the DOTA will comply with MS4 permit requirements:

- Section A: Public Education and Outreach / Public Involvement and Participation
- Section B: Illicit Discharge Detection and Elimination
- Section C: Construction Site Runoff Control
- Section D: Post-Construction Storm Water Management in new Development and Redevelopment
- Section E: Pollution Prevention and Good Housekeeping
- Section F: Industrial and Commercial Activities Discharge Management Program
- Section G: Hydrocarbon Removal and Remediation Plan
- Section H: Storm Water Monitoring Plan

The latest implemented version of the SWMPP is available online at:

<http://hidot.hawaii.gov/airports/doing-business/engineering/environmental/hnl-storm-water-program/>.

The SWMPP will be updated to comply with the April 14, 2014 revision of the MS4 permit to include a description of program requirements or best management practices (BMPs) and underlying rationale. Further, each requirement will have a measurable standard or milestone as well as a method for monitoring that measurement, which will aid in determining its effectiveness.

### ***1.1.2 Annual Storm Water Monitoring Plan***

The Storm Water Monitoring Plan is a part of the SWMPP and will be updated annually by June 1<sup>st</sup> to reflect activities planned for the fiscal year (July 1<sup>st</sup> to June 30<sup>th</sup>). The plan includes a description of selected sample locations that will adequately represent discharges from the HNL MS4. The plan also details objectives for the monitoring that will aid DOTA in determining whether their efforts have been successful in reducing and or eliminating pollutant loads from the HNL MS4.

### ***1.1.3 Annual Storm Water Monitoring Report***

By August 31<sup>st</sup> each year, the DOTA will complete a Storm Water Monitoring Report that will detail the efforts made during the fiscal year to conduct storm water sampling. Storm water monitoring results will be compared to effluent limitations identified in the MS4 permit as well as Hawaii Administrative Rules (HAR) 11-54 in order to determine whether the DOTA is in compliance and has met monitoring plan objectives. In the future, total maximum daily loads (TMDLs) may be assigned to the watersheds and results will also be compared against those limitations as appropriate.

In addition to compliance, the monitoring data will allow DOTA to determine quantitatively where program improvements should be made and also which types of pollutants and/or pollutant generating activities should be targeted. This will be particularly pertinent to the discussion of type and placement of permanent BMPs. This evaluation will be included in the annual monitoring report as well as the annual report.

### ***1.1.4 Annual Report***

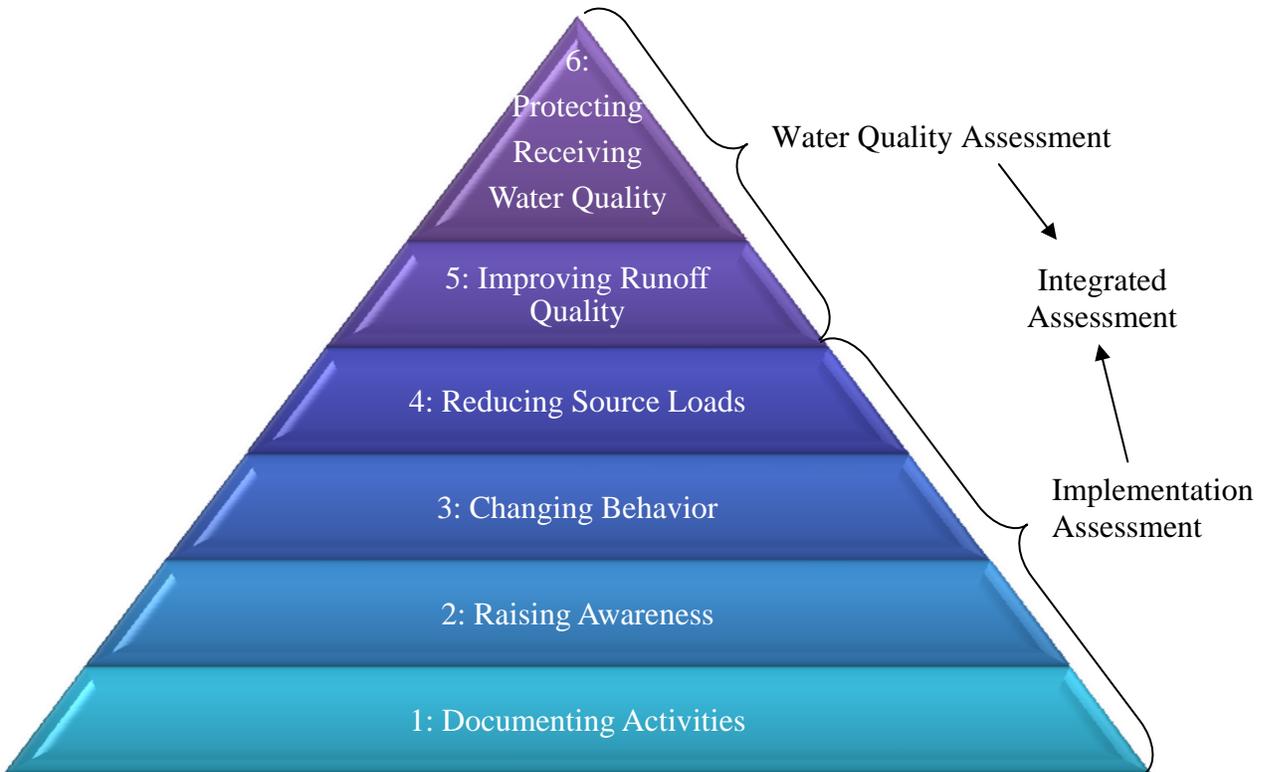
The DOTA uses the annual reports to document SWMPP implementation efforts made during the fiscal year (July 1<sup>st</sup> to June 30<sup>th</sup>) and is the primary tool to evaluate program effectiveness. The report includes both a qualitative and quantitative assessment of SWMPP elements. Each of the SWMPP requirements or BMPs listed includes a description of the applicable measurable goal, progress made toward that goal, and planned future activities. Further, quantitative data, where available, is compared to historical records so that trends can be identified.

An example of trend identification for DOTA has been tracking the number of tenant inspections and enforcement events historically and plotting them on a graph. The information can then be interpreted to determine whether the number of inspections is adequate based on the number of enforcement events. Also, the types of enforcement can be graphed to allow the DOTA to target specific activities for further public education efforts. For example, if the greatest number of enforcement actions resulted from aircraft maintenance activities, DOTA could create education materials that highlight proper maintenance BMPs and/or highlight it during training sessions.

Similar comparisons enable DOTA to identify which SWMPP program components use the most resources and which are most effective so that funds and efforts can be redistributed appropriately. This report and the evaluations are completed each year by August 31<sup>st</sup>.

## 2.0 ASSESSMENT OUTCOMES

Each of the aforementioned reference documents will include an assessment of program effectiveness to evaluate whether the desired outcomes are being achieved efficiently and cost-effectively per methods described by the California Stormwater Quality Association (CASQA). The outcomes are defined as the result of a control measure, program element, or overall program and are categorized as shown in the figure below.



A particular assessment may not include every outcome category, while in some cases, several outcomes may occur simultaneously. The following outcome categories and examples provided are not necessarily measurable milestones that DOTA will implement, but are meant to serve as guidance when selecting appropriate outcomes. Specific measurable milestones for the DOTA program at HNL will be included in the SWMPP and annual report.

### 2.1 Category 1: Documenting Activities

Outcomes from this category will provide direct feedback to DOTA on whether the program is in compliance with NPDES MS4 requirements. Some examples of category 1 outcomes include:

- Number of trainings conducted.
- Number of inspections conducted.
- Inspection form developed.

## **2.2 Category 2: Raising Awareness**

DOTA places an emphasis on increasing the level of environmental knowledge among personnel, tenants, and users of the airport. Category 2 outcomes will allow the DOTA to determine how effective their programs are at raising awareness in the target audience. Category 2 outcomes are generally garnered from surveys and quizzes, examples include:

- Percentage change in the number of tenants who know the difference between a sewer and a storm drain system.
- Percentage change in the number of tenants who know what types of BMPs to implement.
- Percentage change in the number of DOTA inspectors who understood concepts presented in training courses.
- Number of tenants receiving storm water awareness training.

## **2.3 Category 3: Changing Behavior**

Category 3 outcomes provide feedback on how effective the program has been in motivating the target audience to change their behaviors. Category 2 and 3 outcomes may occur simultaneously or Category 2 efforts for raising awareness may over time develop Category 3 outcomes for behavior change. This category can be measured both quantitatively using statistics and qualitatively based on direct observations. Examples of category 3 outcomes include:

- Percentage change in construction sites with implemented BMPs.
- Reduction in the number of repeated BMP deficiencies at construction sites.
- Percentage change in tenants implementing BMPs for their activities.
- Amount of waste collected from recycling events.

## **2.4 Category 4: Reduction Source Loads**

Category 4 outcomes provide feedback on how effective the program has been in preventing particular pollutants from impacting storm water runoff and the MS4. This is accomplished from either reducing the use of potential pollutants or providing enough barriers to prevent them from impacting the drainage system (e.g. cover, berms, etc.). Data obtained from category 4 outcomes generally should be compared to a baseline load to evaluate changes. Examples of category 4 outcomes include:

- Amount of material removed from street sweeping.
- Quantity of used oil collected at the T-Hangar collection sites.
- Amount of pesticides purchased and used.

## **2.5 Category 5: Improving Runoff Quality**

The primary focus of the DOTA SWMPP is to reduce pollutants in storm water to the maximum extent practicable, and to ensure that these discharges do not cause or contribute to violations of water quality standards in receiving waters. Category 5 outcomes enable a measurement in the reductions of specific pollutants from the MS4 and generally require timeframes of a year or more. Examples of category 5 outcomes include:

- No instances of exceeding water quality limits set in HAR 11-54.
- Downward trend in oil and grease concentrations from DOTA baseyard sampling point over the term of the permit.

## **2.6 Category 6: Protecting Receiving Water Quality**

The ultimate goal of the storm water program is to ensure the protection of the State's water bodies. Category 6 outcomes focus on compliance with water quality standards. Note that a watershed approach will be necessary to evaluate all impacts to a particular receiving water. However, the DOTA will use category 6 outcomes to ensure that receiving waters are protected from adverse impacts by the HNL MS4. Examples of category 6 outcomes include:

- Compliance with Hawaii Administrative Rules, 11-54 receiving water criteria.
- Healthy aquatic wildlife visible in nearshore waters.

## **2.7 Integrated Assessment**

Outcome categories 1 through 4 describe the program implementation, which is a measure of whether the DOTA has met their programmatic and compliance goals. Categories 5 and 6 describe water quality assessment, which uses sampling and other environmental data to characterize the storm water discharges and receiving waters. An integrated assessment of both program implementation and water quality assessment allows DOTA to use the information garnered to make program changes and redirect resources where they will provide the greatest impact.

### 3.0 ASSESSMENT TOOLS

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In order to complete the integrated assessment, DOTA will utilize various tools to identify and measure program outcomes. Selecting the appropriate tool or method will depend upon the particular program element, the target audience, and the outcome category being addressed.

Assessment Tool	Outcome Category	Target Audience	SWMPP Sections
<b>Confirmation</b>	1	DOTA Personnel	All
<b>Tabulation</b>	1 – 3	All	All
<b>Surveys / Quizzes</b>	2 – 3	All	Section A and Training Events
<b>Inspections</b>	1 – 4	DOTA Personnel, Tenants, Contractors	Sections C, D, and F
<b>Quantification</b>	4 – 6	All	All
<b>Monitoring</b>	4 – 6	All	Section H and Overall Program

#### 3.1 Confirmation

The confirmation assessment tool consists of documenting whether an activity or task has been completed and is usually expressed as “yes” or “no” outcome. Examples of outcomes include:

- Construction plan reviews conducted.
- Complaint hotline established.
- Post-construction standards developed.

#### 3.2 Tabulation

The tabulation assessment tool is a quantitative measure that can be expressed in absolute terms (e.g. the number of people participating in a training event) or in relative terms (e.g. percentage increase in the amount of debris removed from the shoreline). DOTA will rely on good record keeping practices for this information and totals will generally be obtained from the Enviance web-based database or other electronic database. Examples of outcome tabulations include:

- Number of illicit discharges investigated.
- Number of calls made to the hotline.
- Percentage of tenants in compliance.

#### 3.3 Surveys / Quizzes

Surveys and quizzes are an assessment tool that gathers data from a representative population regarding their views or knowledge on a particular subject. There may be a variety of collection methods such as quizzes conducted during training events, surveys mailed to DOTA tenants, or information question and answer sessions conducted by inspectors.

### **3.4 Inspections or Site Visits**

The inspection assessment tool involves direct observation of a target audience to determine if the desired actions are being taken. These inspections may be formal, scheduled events to determine compliance with regulations or policies or they may be informal to gather information or provide educational outreach. Examples of direct observations that can be made include:

- Outreach materials displayed in tenant facilities.
- Waste disposal manifests available for review.
- Construction site SWPPPs are on-site and implemented.

### **3.5 Quantification**

The quantification tool refers to efforts to quantify reductions in loading or improvements in environmental quality. The two main approaches for this method are quantity tracking and pollutant load estimation. Quantity tracking may involve quantifying the amount of wastes removed from the storm drain system during cleaning or amount of wastes collected from recycling events. While not all wastes would have impacted the MS4, it provides an estimate of the amount of wastes that have been diverted. The other approach to quantification is to project the load reduction that may be achieved through implementation of BMPs or program activities. This is most frequently utilized when considering the implementation of permanent BMPs since many treatment devices have been studied and can provide specific performance ratings for pollutant removal. Examples of quantification in outcome categories include:

- Reduction in runoff volume due to permanent BMPs.
- Reduction in quantity of debris on shoreline.
- Reduction in quantity of pesticides used.

### **3.6 Monitoring**

The monitoring tool involves either laboratory analysis of media samples to measure pollutant concentrations or visual observations to assess environmental conditions such as vegetation cover of imperviousness. Examples of monitoring outcomes include:

- Reduction in nutrient concentration in the storm water discharge.
- Reduction in sediment concentrations from construction sites.

#### **4.0 EFFECTIVENESS STRATEGY**

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The DOTA's assessment strategy includes these steps:

1. Determine the purpose or focus of the assessment (e.g. desired outcome identified in SWMPP).
2. Establish a baseline or reference conditions.
3. Identify tools or methods that can be used to determine if or when the outcome is achieved.
4. Use the information to make decisions.

The DOTA utilizes these steps to develop and update the measurable milestones for their program plans described in Section 1.1. Further, the annual report includes an assessment using the previously described outcomes and tools as a method to provide a detailed summary of the program's effectiveness.

## 5.0 REFERENCES

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- California Stormwater Quality Association (CASQA). May 2007. *Municipal Stormwater Program Effectiveness Assessment Guide*.
- City & County of Honolulu, Department of Environmental Services. June 2012. *Storm Water Management Program Plan, Program Effectiveness Assessment Plan*.
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