

Outfall Field Screening Plan



State of Hawaii, Department of Transportation
Highways Division, Oahu District
SWMPP, February 2022

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STATE OF HAWAII, DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION, OAHU DISTRICT

STORM WATER MANAGEMENT PROGRAM OUTFALL FIELD SCREENING PLAN

MS4 NPDES Permit No. HI S000001



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LIST OF ACRONYMS

AMS	Asset Management System
BMP	Best Management Practice
DOT-HWYS	State of Hawaii Department of Transportation, Highways Division, Oahu District
GIS	Geographic Information System
IDDE	Illicit Discharge Detection and Elimination
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
PID	Point Identification Number
SWMP	Storm Water Management Program
SWMPP	Storm Water Management Program Plan
TMDL	Total Maximum Daily Load

1. INTRODUCTION

As required by Part D.1.c.(2) of the State of Hawaii, Department of Transportation, Highways Division, Oahu District (DOT-HWYS) Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit No. HI S000001 (hereinafter MS4 NPDES Permit), DOT-HWYS implements this *Outfall Field Screening Plan* for observing major and minor outfalls to screen for illicit discharges from its MS4.

The MS4 NPDES Permit Part D.1.c.(2) requirements are as follows.

“Field Screening – The Permittee shall implement its Outfall Field Screening Plan for observing major and minor outfalls to screen for illicit discharges. The plan shall designate priority areas for screening, specify the frequency for screening, and identify the procedures to be followed if an illicit discharge is observed. At a minimum, outfalls in priority areas shall be screened once per permit term.”

The *Outfall Field Screening Plan* provides guidance for the Illicit Discharge Detection and Elimination (IDDE) Program, as indicated in the *Storm Water Management Program Plan (SWMPP)* Section 3.2. The primary function of the IDDE Program is to detect and eliminate illegal connections and illicit discharges into the MS4 to protect state water quality. The IDDE Program is administered in conjunction with the Industrial and Commercial Activities Discharge Management Program (hereinafter Industrial and Commercial Program), with which it shares common objectives, policies, and personnel.

DOT-HWYS screens outfalls for illicit discharges in accordance with the priority areas, frequencies, and inspection procedures specified in the *Outfall Field Screening Plan*. Dedicated outfall inspectors are annually trained to evaluate the quality of storm water from outfalls and conveyance systems during dry weather in order to identify and eliminate illicit discharges and illegal connections to the MS4 and receiving surface waters (*SWMPP* Section 3.8).

2. OUTFALL INVENTORY AND GIS DATABASE

The outfall inventory is maintained as part of the Asset Management System (AMS) Maximo Outfall Module. DOT-HWYS implements the comprehensive Geographic Information System (GIS)-based AMS as the primary mechanism to inventory and monitor Storm Water Management Program (SWMP) activities, which includes outfall field screening.

The AMS supports the IDDE Program by providing a comprehensive MS4 map, electronic inspection and cleaning forms, and a database to monitor all MS4 assets, including outfalls. Inspection priorities are assigned to individual outfalls to capture each structure's inspection frequency requirement as further described in Section 3. A unique point identification (PID) number is assigned to each outfall to allow for real-time inspection and inventory tracking within the AMS.

There are approximately 1,400 outfalls in the outfall inventory. Outfall inspectors utilize the field application, ArcGIS Field Maps, to spatially identify outfall locations, conduct inspections, and track progress. As outfall inspections are completed in ArcGIS Field Maps, the data is synced to AMS Maximo where SWMP managers can monitor inspection compliance in real time. As a result, DOT-HWYS is able to ensure that all outfalls are inspected at the required frequencies based on the outfall's priority, as described in the next section.

3. PRIORITY AREAS FOR OUTFALL FIELD SCREENING

Outfall screening is conducted for the purpose of identifying potential polluted runoff discharging from the MS4, in order to protect state water quality. The priority areas for outfall field screening are determined based on the relative risk that a discharge might be contaminated with pollutants.

Outfalls were ranked using a point system, with each outfall receiving a final score of 0 to 22 points. Five risk criteria were used to determine an outfall's score:

- Whether or not the outfall is located within a watershed with an approved Total Maximum Daily Load (TMDL)
- Population density surrounding the outfall
- Industrial and commercial facility density surrounding the outfall
- Average debris blockage data from inspections that occurred from 2016 to 2019
- Sum of dry weather flow data from inspections that occurred from 2016 to 2019

3.1 TMDL WATERSHED

Outfalls located within a TMDL approved watershed were assigned 1 point. Outfalls not located within a TMDL approved watershed were assigned 0 points.

3.2 POPULATION DENSITY

Population density was calculated as people per square mile. Outfalls were assigned the population density of the 2010 census tract they are located within.

Outfalls with a population density of 20,001 or more people per square mile were assigned 3 points. Outfalls with a population density of 10,001 to 20,000 people per square mile were assigned 2 points. Outfalls with a population density of 1,001 to 10,000 people per square mile were assigned 1 point. Outfalls with a population density of 1,000 or less people per square mile were assigned 0 points.

3.3 INDUSTRIAL AND COMMERCIAL FACILITY DENSITY

The Industrial and Commercial Program maintains an inventory of industrial and commercial facilities that require routine inspection. Industrial and commercial facility density was calculated as the number of industrial and commercial facilities within a half-

mile radius of each outfall, where industrial facilities were weighted twice as much as commercial facilities.

Outfalls with 21 or more industrial and commercial facilities within a half-mile radius were assigned 6 points. Outfalls with 11 to 20 industrial and commercial facilities within a half-mile radius were assigned 4 points. Outfalls with 1 to 10 industrial and commercial facilities within a half-mile radius were assigned 2 points. Outfalls with 0 industrial and commercial facilities within a half-mile radius were assigned 0 points.

3.4 AVERAGE DEBRIS BLOCKAGE

As a part of outfall screenings, inspectors assess each outfall for debris accumulation. Based on the average of all screenings from 2016 to 2019, outfalls that were more than two-thirds blocked were assigned 3 points. Outfalls that were more than one-third blocked were assigned 2 points. Outfalls that were less than one-third blocked were assigned 1 point. Outfalls that were not indicated as blocked were assigned 0 points.

3.5 SUM OF DRY WEATHER FLOW

As a part of outfall screenings, inspectors assess each outfall for dry weather flow. Outfalls where the flow condition was marked as heavy, mild, steady, or steady mild, and the weather was marked as sunny, clear, or overcast no rain, were considered to have a dry weather flow. Outfalls that did not meet that flow condition and weather criteria were not considered to have a dry weather flow.

The number of dry weather flow events for each outfall was aggregated from 2016 to 2019 and then given a weighted value for the final score. Outfalls with three or more dry weather flow events were assigned a weighted value of 9 points. Outfalls with two dry weather flow events were assigned a weighted value of 6 points. Outfalls with one dry weather flow event were assigned a weighted value of 3 points. Outfalls with no dry weather flow events were assigned 0 points.

3.6 OUTFALL RANKING RESULTS

Each outfall was assigned a final score based on the summation of their assigned points. Routes were segmented into approximately three-mile segments and each outfall was assigned to their respective route segment. Route segments were given a final score based on the average score of each outfall along that segment.

The average score of outfalls per route segment ranged from 0 to 18 points. To determine which route segments and associated outfalls were considered high priority versus non-high priority, the route segment scores were divided into five equal intervals.

Table 1. Outfall Field Screening Priority Areas.

Route Segment Score Points	Priority
0 – 3.6	Non-High
3.6 – 7.2	Non-High
7.2 – 10.8	High
10.8 – 14.4	High
14.4 – 18	High

Route segments with an average score of 7.2 or higher, are considered the high priority areas for outfall screening. There are approximately 100 outfalls located along high priority route segments. Route segments with an average score of less than 7.2 are considered non-high priority areas for outfall screening. There are approximately 1,300 outfalls located along non-high priority route segments.

A route segment’s priority determines the frequency at which DOT-HWYS screens outfalls for illegal connections and illicit discharges. Outfalls located along the high priority route segments will be inspected quarterly. Outfalls located along the non-high priority route segments will be inspected annually.

Figure 1 shows a map of the priority areas for outfall field screening.

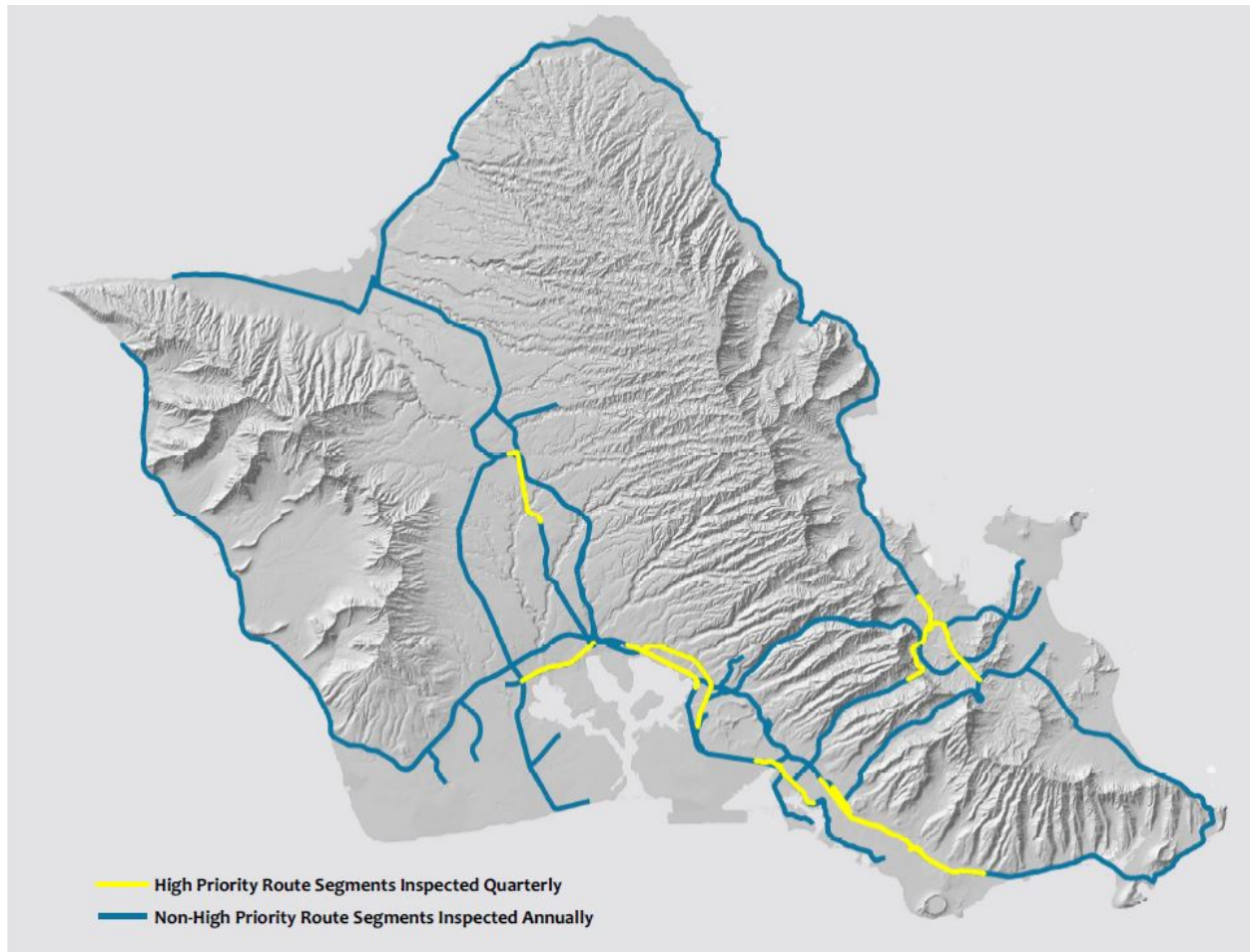


Figure 1. Priority Areas for Outfall Field Screening.

The outfall field screening schedules and priority areas are modified, as necessary, to account for inspection findings and updates to water quality impairments and risk criteria. In addition to conducting scheduled outfall screenings, inspectors may investigate potential illegal connections and illicit discharges at outfalls in response to public complaints (*SWMPP* Section 3.4).

When an outfall is deemed inaccessible due to extreme slopes, dangerous terrain, or tidal influence, the screening for illegal connections and illicit discharges is conducted at the upstream drainage structures. When an outfall is deemed inaccessible due to its location on private property, the outfall inspector will request access from the property owner. If access to the outfall location is not granted by the property owner, the inspector will screen for illegal connections and illicit discharges at the upstream drainage structures.

Additional outfall inspections may be conducted to support other SWMP goals, including outfall structural condition assessments as part of the Erosion Control Best Management Practices (BMPs) Program, or outfall debris accumulation assessments and removal as part of the Debris Control BMPs Program.

4. OUTFALL FIELD SCREENING PROCEDURES

The Outfall Field Screening Team inspects outfalls for illegal connections and illicit discharges in accordance with the frequencies and priority areas described in Section 2. Inspectors use a digital inspection form on the AMS to input observations about inspected outfalls, such as the pollution condition, and whether or not an illegal connection or dry weather flow was present.

Figure 2 shows a screenshot of the outfall inspection form and the data entry requirements that are captured during the outfall field screening process.

The screenshot shows a web-based form for outfall inspection. At the top, there are navigation tabs: 'List View', 'Inspection', 'Related Work', 'Map', and 'TMDL Info'. Below the tabs, there are several input fields for general information: 'Inspection:', 'Work Type:', 'Attachments', 'Watershed:', 'Priority:', 'Status:', 'Asset:', 'Inspection Date:', 'Status Change Date:', 'Track #:', 'Cycle:', 'Changed By:', 'Structure Type:', 'Cycle Year:', 'Has Placard?', 'Parent Inspect.:', 'Route ID:', and 'Placard ID:'. Below this is a section titled 'Inspection Data' which contains a grid of fields for specific inspection details: 'Contractor:', 'Inspector:', 'Inspector2:', 'Inspection Status:', 'Weather:', 'Illicit Discharge?', 'Cleaning Required?', 'Structure Condition:', 'Debris Accumulation:', 'Flow Condition:', 'Dry Weather Flow:', 'Illicit Connection?', 'Pollution Condition:', 'Verify Pipe for Cleaning?', and 'Eroded Slope?'. To the right of these fields are 'Comments:' and 'Notes:' sections.

Figure 2. Outfall Field Screening Inspection Form.

During an inspection, the Outfall Field Screening Team screens the outfall area for signs of any discharge that is not composed entirely of storm water, with a few exceptions. The allowable non-storm water discharges are as follows:

- Water line flushing.
- Diverted stream flows.

- Rising ground waters.
- Uncontaminated ground water infiltration (defined in 40 CFR §35.2005[20]).
- Uncontaminated pumped ground water.
- Discharges from potable water sources and foundation drains.
- Air-conditioning condensate.
- Sea water.
- Springs.
- Water from crawl space pumps (including discharge from buildings with basements, and crawl space pumps used by utility companies to dewater utility manholes and other maintenance and operations of substructure facilities) and footing drains.
- Lawn watering runoff, landscape irrigation, planter box runoff, and irrigation water, excluding runoff from commercial agriculture.
- Water from individual residential car washing.
- Water from charity car washes.
- Flows from riparian habitats and wetlands.
- Dechlorinated swimming pool discharges.
- Exterior building wash water (water only).
- Residual street wash water (water only), including wash water from sidewalks, plazas, and driveways, but excluding parking lots.
- Discharges or flows from firefighting activities.

These allowable non-storm water discharges listed above must not contain pollutants in amounts that will cause or contribute to a violation of an applicable water quality standard. All discharges other than storm water and the allowable exceptions are not permitted.

The signs for non-allowable discharges may include pollutants, the presence of flowing water under dry weather conditions, or illegal connections to the MS4. Other evidence of contamination can include the following:

- Materials that will settle to form objectionable sludge or bottom deposits.
- Floating debris, oil, grease, scum, or other floating materials.

- Substances in amounts sufficient to produce taste in the water or detectable off-flavor in the flesh of fish, or in amounts sufficient to produce objectionable color, turbidity or other conditions in receiving waters.
- High or low temperatures; biocides; pathogenic organisms; toxic, radioactive, corrosive, or other deleterious substances at levels or in combinations sufficient to be toxic or harmful to human, animal, plant, or aquatic life, or in amounts sufficient to interfere with any beneficial use of the water.
- Substances or conditions or combinations thereof in concentrations which produce undesirable aquatic life.
- Soil particles resulting from erosion on land involved in earthwork, such as the construction of public works, highways, subdivisions, recreational, commercial, or industrial developments; or the cultivation and management of agricultural lands.

Outfall inspectors are annually trained to identify physical indicators of storm water contamination during their routine inspections (*SWMPP* Section 3.8). Flows and outfalls should be observed during dry periods in order to determine the presence of any stains, sludge, odors, and other abnormal conditions.

The specific physical indicators of potential storm water contamination that outfall inspectors screen for when conducting inspections may include odor, color, turbidity, floatable matter, deposits and stains, vegetation, and structural damage.

The IDDE Program's response plan for investigating observed, suspected, or reported illegal connections and illicit discharges associated with outfall field screening activities is described below. An investigation will be initiated within 24 hours of receiving a complaint or on the next business day.

When the Outfall Field Screening Team identifies evidence of an illicit discharge at an outfall, inspectors implement the following procedures:

1. Investigate receiving state waters, upstream MS4 structures, and adjacent properties to locate the source of the discharge. If the source of an illicit discharge is identified, the outfall inspector will issue a verbal order to cease the activity causing the discharge.
2. Photograph findings.
3. Fill out the outfall inspection form located in the AMS.
4. Notify the IDDE Program's Inspection Team of the discharge and findings within 24 hours of initial screening (*Note:* The IDDE Inspection Team is responsible for

conducting a follow-up investigation and ensuring the illicit discharge is addressed.)

IDDE Program inspectors implement procedures for conducting investigations of potential illegal connections and illicit discharges in accordance with *SWMPP* Section 3.4.

If the illegal connection and/or the source of the discharge are identified, inspectors initiate DOT-HWYS escalating enforcement procedures policy, which is administered by the IC Program. The Enforcement Policy is described in *SWMPP* Section 10.7.