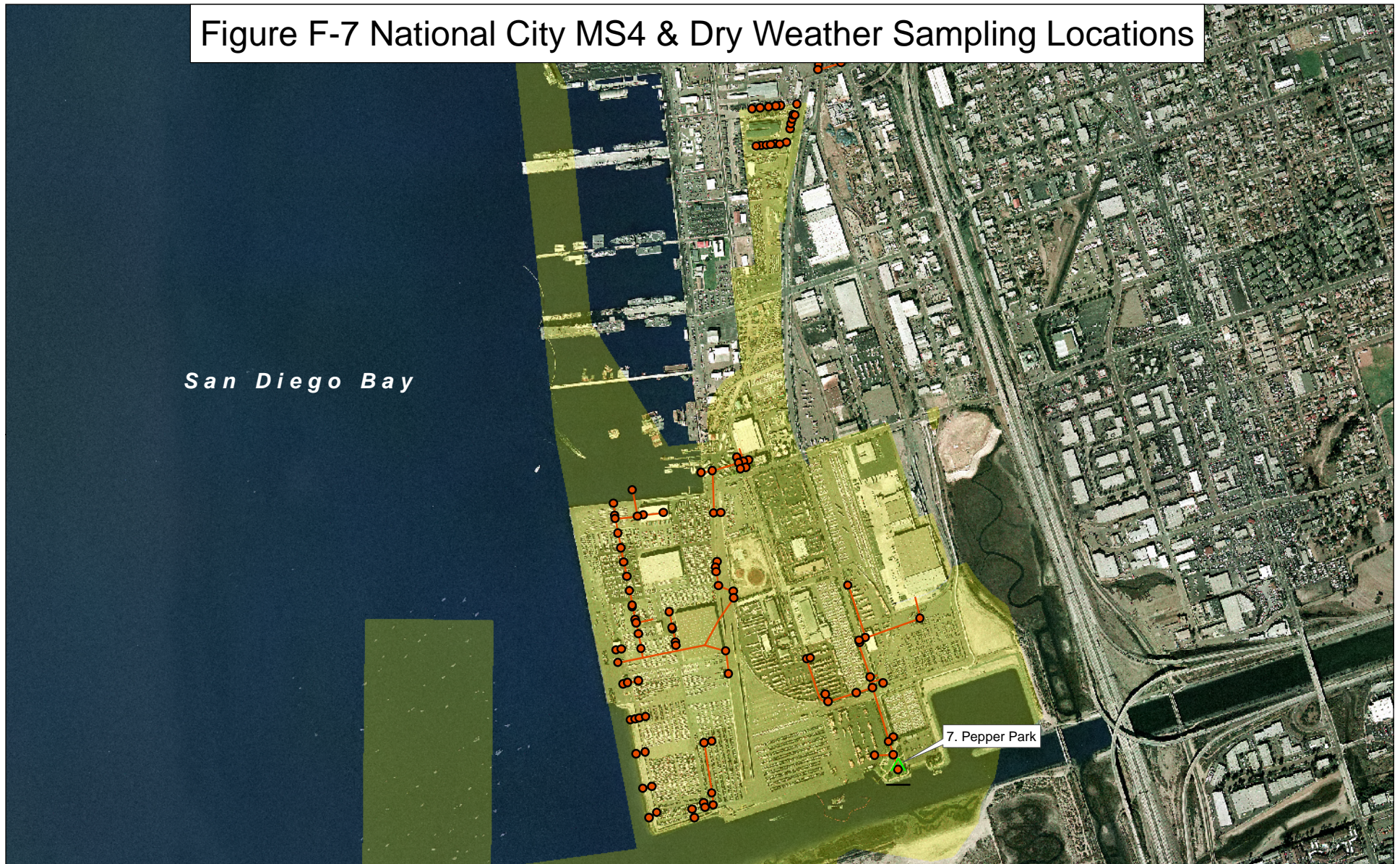


Figure F-7 National City MS4 & Dry Weather Sampling Locations



Legend

MS4

- Inlets/Outfalls
- Drain Lines
- ▲ Dry Weather Sampling Point

Jurisdictions

- Port Jurisdiction
- Not Under Port Management

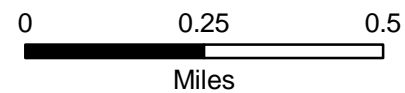
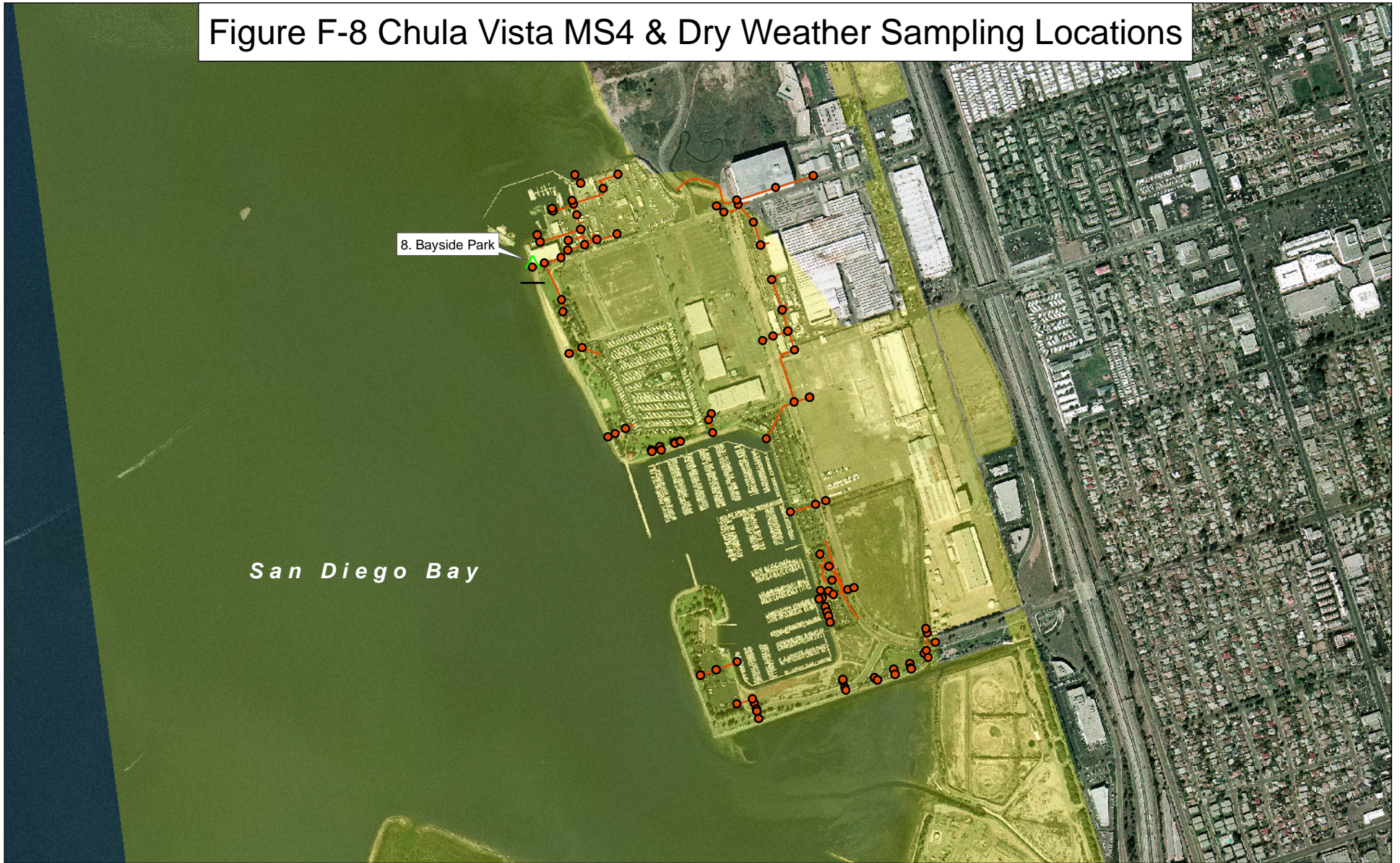


Figure F-8 Chula Vista MS4 & Dry Weather Sampling Locations



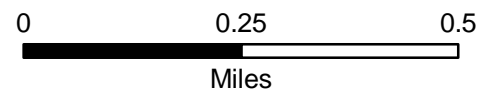
Legend

MS4

- Inlets/Outfalls
- Drain Lines
- ▲ Dry Weather Sampling Point

Jurisdictions

- Port Jurisdiction
- Not Under Port Management



APPENDIX G

FIELD SAMPLING MANUAL

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Introduction

The Port of San Diego (Port) has designed this Field Sampling Manual to provide the Recreation & Environmental Services Department field staff with adequate background knowledge of the various water quality monitoring programs conducted by the Port. This manual provides information on performing field inspections and will ensure that the field staff are well trained in monitoring protocols.

This manual shall serve as a reference for field staff through all phases of monitoring: pre-sampling preparation, sample collection and field analysis, and sample/data submission. It also provides guidance for making visual site observations and documenting sampling events. Topics such as equipment maintenance, health and safety, and quality assurance/quality control will be reviewed by staff prior to conducting fieldwork. Supplemental figures, including the forms used for each monitoring program, have been included.

Use of this Field Sampling Manual will enable the Port to maintain uniformity in sampling and documentation procedures, resulting in consistently accurate data and properly collected water samples.

Industrial Monitoring Program

Background

Industrial water quality monitoring is conducted to ensure that storm water discharges from tenant and Port owned facilities are in compliance with the Industrial Activities Storm Water General Permit. Additional program objectives are to evaluate pollution prevention practices, to aid in the implementation and revision of SWPPPs, and to measure the effectiveness of BMPs.

Sampling Requirements

The monitoring program involves both visual observations and sampling. Visual observations are made of all drainage areas within a facility for the presence of unauthorized and authorized non-storm water discharges and their sources. During the wet season (Oct 1 – Apr 30), visual observations are also required for storm water discharges from one rain event per month during the first hour of discharge at all discharge locations.

Storm water samples are collected during the first hour of discharge from the first storm event of the wet season, and at least one other storm during the wet season. If it is not possible to collect samples from the first storm event, samples are still required from two other storm events during the wet season.

Visual observations and sample collection are only required of storm water discharges that occur during scheduled facility operating hours and that are preceded by at least three working days without rain.

Procedure

Pre-sampling preparation:

1. Use the Equipment Checklist (Figure 1) to assemble the appropriate field sampling equipment before going into the field.
2. Assemble all bottles to ensure that there are adequate bottles for all analyses.
3. Investigators should familiarize themselves with the sample locations before sampling events. (See maps for sample locations).

Sample Collection

Find the selected storm drain location (as indicated on site maps). Ensure that water is flowing into the storm drains. Assemble all the bottles for the specific location to facilitate sample collection. Field staff will wear gloves during all sample collection methods. Sampling will be conducted using either a submersible pump or a disposable bailer.

Pump Method:

1. Rinse the pump with distilled water.
2. Attach the pre-measured, pre-cut plastic tubing to the pump and lower it into the drain.
3. Attach the pump wiring to the battery. Take care to keep the battery in a dry location. Turn on the pump.
4. Fill bottles.
5. Use new tubing at each site to avoid cross-contamination.

Bailer method:

1. Rinse the bailer with distilled water.
2. Insert the bailer into the drain, and position it so that the stream of water flows into the plastic tube.
3. Remove the bailer from the drain.
4. Fill bottles.

Filling Bottles

1. Check sample bottles to see if they contain any preservatives. Preservative types are indicated on the pre-labeled lab bottles. If a preservative is included, take care not to overfill the bottle as the preservative will be diluted. Table 1 contains a list of analytes, bottle types, and required preservatives.
2. For samples analyzed for VOCs: fill the container slowly, so that a small stream of water trickles down the inside wall of the bottle. Fill the bottle to the top, ensuring that there is no headspace left. This can be done by filling the cap with sample water before replacing it on the container. Ensure there is no trapped air by tapping the sample container and checking for bubbles.

3. Place samples in a cooler on ice for transport to the lab. Refer to Table 1 for holding times. Coordinate with the laboratory to ensure sample delivery does not exceed the holding times.
4. Fill out the chain-of-custody (COC) form.

Industrial monitoring samples may be analyzed for some, or all, of the following analytes as required per specific industrial facility location.

- Total suspended solids (TSS)
- pH
- specific conductance
- Oil and grease (O&G)
- TRPH
- TPH (gas & diesel)
- BTXE
- BTXE
- Volatile organics
- Metals (Cu, Pb, Zn, Al, Fe)
- TOC
- Glycols
- BOD and COD
- Ammonia

Documentation and Reporting

The General Industrial Stormwater Permit has specific forms that are required to be completed. Refer the RWQCB website for copies of these forms. All visual observations and sampling events will be documented on the appropriately labeled forms. All completed forms and analytical laboratory results will be submitted to the RWQCB in the annual report.

Field Equipment Checklist

	Coastal	Dry Weather	Industrial	Investigative	
Clothing					
					Latex gloves
					Port ID badge
					Protective eyeglasses or goggles
					Raingear
					Rubber boots
					Watch
Sampling Gear					
					Flow measurement equipment:
					1) measuring tape for measuring stream width
					2) folding scale for measuring stream depth
					3) current meter or wristwatch
					Multi-parameter or individual probes
					Portable field test kits, colorimeters, or spectrophotometers and all reagents for these meters
					Pump
					Sampling rod or polypropylene bucket with rope
					Sampling bottles with preservatives
					Thermometer for measuring air temperature
					Tubes
					Waste disposal bottles
Miscellaneous Supplies					
					Cell phone
					Chain of Custody forms
					Clipboard
					Cooler and ice
					De-ionized water
					Digital camera
					Emergency contact list
					Extra batteries for all equipment
					Field notebook
					Flashlight
					MS4 maps
					Paper towels
					Pens, pencils, Sharpie or other waterproof pens
					Scissors or knife
					Tape
					Thomas Guide

Figure 1. Field Sampling Checklist

Coastal Storm Drain Outfall Monitoring Program

Background

The Coastal Storm Drain Outfall Monitoring Program was initially in 2001. It has been updated to meet the Municipal Stormwater Permit 2007-0001 requirements. It is collectively implemented by all Copermittees with coastal boundaries. The purpose of this program is to monitor bacteria levels in urban runoff from coastal drains and evaluate the relationship between storm drain discharges and bacteriological water quality exceedances at local beaches.

When a water body is polluted by fecal material, disease-causing organisms may be introduced, posing a health hazard to those who come into contact with the water. Indicator organisms such as coliform bacteria and enterococcus are regularly used to assess the possibility of fecal contamination. These bacteria are living organisms that depend on specific conditions for growth. They multiply quickly when conditions are favorable and die in large numbers when conditions are not. Thus, bacteria concentrations can be highly variable.

Storm water runoff in urbanized areas has been found to be surprisingly high in fecal coliform bacteria concentrations. Runoff from roads, leaking trash bins, parking lots, and irrigation can all be potential contributors to high bacteria levels in storm drains and local receiving waters.

Sampling Requirements

The program requires the concurrent sampling of urban runoff from storm drain outfalls that are currently flowing and beach water samples. Paired samples (samples from the outfall and beach) will be analyzed for total coliform, fecal coliform, and enterococci.

Sampling will be conducted monthly. Samples are collected at the outfall and 25 yards down current in the receiving water unless unsafe conditions exist. Samples are only collected when there is flow from the outfall. If no flow is present, neither sample will be collected. Photos (digital preferred) will be required to document presence, or absence, or flow. All attempts will be made to conduct sampling during low or outgoing tides, as some outfalls may not be accessible during high tides. Additionally, samples will not be collected within 72 hours after a rain event.

Sampling Procedure

1. Use the Equipment Checklist (Figure 1) to assemble the appropriate field sampling equipment before going into the field.

2. Label the bottles with the site number, date, and time.
3. Wear gloves.
4. Remove the bottle lid prior to sampling. Avoid contact with the inside of the bottle or lid. Use another bottle if contact occurs.

Outfall Sampling

1. Position the bottle under the flow stream until it fills to the 100ml mark. The sampling pole may be used if the flow, or ponded water, is out of reach.
2. Fill in the sample identification number and collection time on the Coastal Monitoring data sheet.
3. Place samples in a cooler on ice for transport to the lab.

Beach Sampling

1. Wade carefully into the water disturbing as little bottom sediment as possible. If possible, do not collect water that is contaminated by sediment from bottom disturbance. Samples should be collected in water that is ankle to knee deep. Use the sampling pole to collect samples from deeper water.
2. Face upstream and plunge the bottle (opening downward) below the water surface. Turn the bottle underwater into the current, making a sweeping “U” turn under the water (see Figure 2). Collect the sample 8 to 12 inches beneath the surface or mid-way between the surface and the bottom in shallow water.
3. Avoid sampling the water surface because the surface film often contains greater numbers of bacteria than is represented in the rest of water. Avoid sampling the bottom sediments for the same reason.
4. Leave a one-inch air space in the bottle. Recap the bottle, carefully avoiding contact with the inside.
5. Fill in the sample identification number and collection time on the Coastal Monitoring data sheet.
6. Place samples in a cooler on ice for transport to the lab. Refer to Table 1 for holding times. Coordinate with the laboratory to ensure sample delivery does not exceed the holding times.
7. Fill out the COC form.

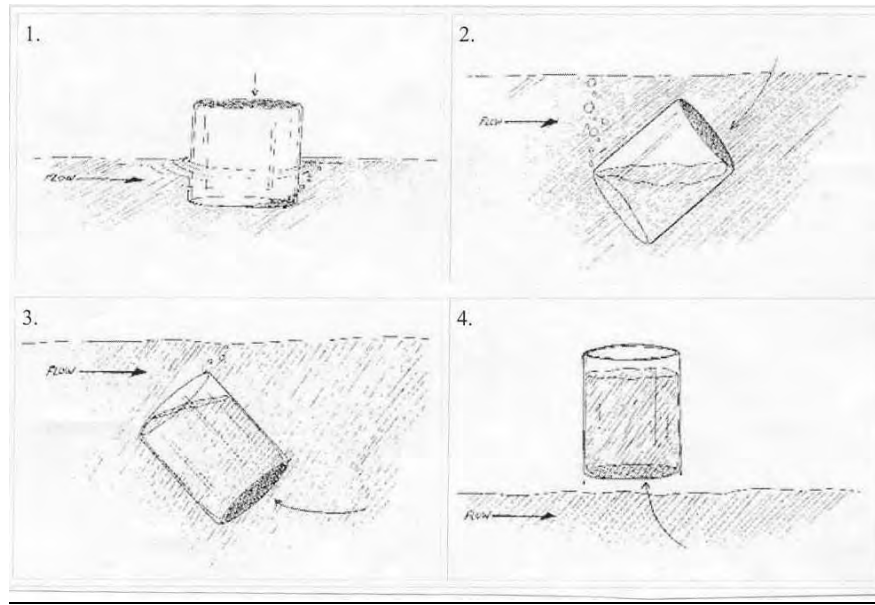


Figure 2. Sample Collection Procedure

Documentation

Field data forms document sampling information and visual observations. Sampling information such as sample I.D. and collection times will be recorded in the proper locations on the forms. Visual observations will include a characterization of storm drain outfalls, inlets, and the beaches. These observations will assess the “health” of the site. Any debris or vegetation will be documented, as these may be possible contributors to elevated bacteria levels.

Beach use will be documented to determine possible contributors to high bacteria levels found in local beaches. Field inspectors will record the number of people, pets (animals), and birds on the beach, in the water along the shoreline, and on the riprap. These numbers will be recorded appropriately on the data form.

In order to achieve consistency in visual observation documentation, consider the following descriptions when filling out the field data forms:

Weather: A description of ambient site conditions

Clear – The surrounding sky is approximately 80% free of clouds.

Partly Cloudy – The surrounding sky has patches of clouds intermittent with patches of sun and sky.

Overcast – The overhead sky is completely covered with clouds. No direct sunlight is visible.

Fog – The cloud layer is low and may reach the ground. Visibility is reduced.

Rain – Rain of any type is falling from the sky. Sampling SHOULD NOT be conducted during rain

Tides: Tide levels can be estimated by matching collection times to a tide calendar.

Ebb – Out-going tide

Flood – Incoming Tide

Ebb-Slack – Low Tide

Flood-Slack – High Tide

Storm Drain Outfall and Inlet Characteristics: A description of the site surroundings.

Clear – free of any debris

Trash – anthropogenic inputs (paper, plastics, food wastes, etc.)

Vegetation – any living plant life (for inlets: any plant life that is growing as a result of flow)

Organic debris – dead or decaying matter (leaves, etc.)

Sediment – dirt, soil, sand, gravel, mud, etc.

Reporting

Sample results will be verified against the COC forms. Any bacteria levels exceeding the State standards will be reported to the County DEH. Additionally, a compilation of all sample results will be submitted annually to the RWQCB.

The State single sample standards for indicator bacteria are as follows:

- 1000 total coliform bacteria per 100 mls, if the ratio of fecal/total coliform bacteria exceeds 0.1; or
- 10,000 total coliform bacteria per 100 mls; or
- 400 fecal coliform bacteria per 100 mls; or
- 104 enterococci bacteria per 100 mls

Table 1. Sampling Analytes, Containers, and Holding Times

Physical and Inorganic Non-Metals	Analytical Method	Container	Volume (mL)	Preservative	Holding Time
TDS	SM 2540C	P	100		7 d
TSS	SM 2540D	P	100		7 d
Turbidity	SM 2130A	P	100		48 h
Alkalinity or Hardness	SM 2320B	P	100		14 d
pH	EPA 150.1	P	10		Field
Conductivity	SM 2510B	P	20		28 d
Temperature		N/A			Field
Phosphorous, total	SM 4500PE	P	100	H ₂ SO ₄	48 h
Phosphorous, dissolved / reactive	SM 4500PE	P	100	H ₂ SO ₄	48 h
Nitrate	SM 4500 NO ₃ E	P	100		48 h
Ammonia	SM 4500 NH ₃ D	P	500	H ₂ SO ₄	28 d
BOD	EPA 405.1	P	1000		48 h
COD	EPA 410.4	P	10	H ₂ SO ₄	28 d
Organics					
*Petroleum Hydrocarbons, total (d + g)	EPA 8015	G + 2V	250 + 40 (2)	HCl	14 d
Oil and Grease	EPA 413.1	G	500	HCl	14 d
Diazinon	EPA 8140	G	1000		7 d
Chlorpyrifos	EPA 8140	G	1000		7 d
Methylene Blue Substances	SM 5540 C	P	250		48 h
*Volatile Organic Compounds	EPA 8260	2V	40 (2)	HCl	14 d
Metals / Toxics					
Cadmium	EPA 6010	P	500	HNO ₃	6 m
Copper	EPA 6010	P	500	HNO ₃	6 m
Lead	EPA 6010	P	500	HNO ₃	6 m
Zinc	EPA 6010	P	500	HNO ₃	6 m
Bacteriological (including dilutions)					
Coliform, total	SM 9221	P (sterile)	125	Na ₂ S ₂ O ₃	6 h
Coliform, fecal	SM 9221	P (sterile)	125	Na ₂ S ₂ O ₃	6 h
Enterococcus	SM 9230	P (sterile)	125	Na ₂ S ₂ O ₃	6 h
* ZHS (Zero Head Space Required)		P = plastic G = Amber Glass V = VOA			

Dry Weather Monitoring Program

Background

In accordance with the Municipal Stormwater Permit, the Port of San Diego (Port) has developed a dry weather monitoring program as part of its Jurisdictional Urban Runoff Management Program. The program will identify illicit connections and illegal discharges to the municipal separate storm sewer system (MS4) during the dry season (May 1 – September 30) by conducting visual observations, field screening monitoring, and laboratory analytical monitoring at selected stations within the Port. The Port has selected sites in which a large percentage of the possible runoff contribution will come from Port (or Port tenant) activities. The dry weather monitoring results will provide the Port with a characterization of its urban runoff flow and may identify patterns or areas where pollutant problems are concentrated.

Sampling Requirements

The monitoring program involves bi-monthly inspections of the selected locations. (Each of the sites will be inspected three times during the period between May 1 – September 30.) Alternate sites within the same drainage area will be visited if the primary sites do not have flow during the inspection. The monitoring program includes both visual observations and sampling. Field screening analysis will occur at all locations having ponded or flowing water; and laboratory analysis at a minimum of 25% of the sites where ponded or flowing water is observed. Additionally, visual observations will also be conducted at the primary sampling locations during the non-sampling months. These observations will document the presence or absence of flow and the qualitative measurements listed below. All attempts will be made to conduct sampling during low or outgoing tides, as some outfalls may not be accessible during high tides. Dry weather monitoring will not be performed during a rain event or within 72 hours after the end of a rain event.

Sample Collection

Field screening consists of flow measurement and field analyses of selected water quality parameters. At each site with ponded or flowing water, grab samples will be collected and analyzed with a field test kit. Samples will be measured using a suitable combination of field meters, test strips, colorimetric, and spectrophotometric test methods.

1. Use the Equipment Checklist (Figure 1) to assemble the appropriate field sampling equipment before going into the field.

2. Perform any equipment calibrations before each sampling event and check the viability test kit reagents.
3. Make flow measurements according to the methods outlined in on the backside of the dry weather field data sheet (Port JURMP, Appendix E).
4. Wear gloves during all sample collection.
5. At each site with ponded or flowing water, collect grab samples for analysis with the field test kit. Grab samples can be collected with the pump method, bailer method, or sampling pole depending on the site location.
6. Collect the grab sample in a large sterile bottle and use for all field-screening analyses.
7. Individual field screening analyses are performed for: specific conductance (including TDS); turbidity; pH; reactive phosphorous; nitrates; ammonia; and temperature. Detailed field test kit instructions vary for each analysis. These test-specific instructions are included in the field test kit.
8. At a minimum of 25% of the sites where ponded or flowing water is observed, collect grab samples for laboratory analysis of total hardness, surfactants (MBAS), oil and grease, diazinon and chlorpyrifos, dissolved cadmium, copper, lead, and zinc, enterococcus, total coliform, and fecal coliform bacteria.
9. Place samples in a cooler on ice for transport to the lab. Refer to Table 1 for holding times. Coordinate with the laboratory to ensure sample delivery does not exceed the holding times.
10. Fill out the COC form.

Documentation

Qualitative visual observations are made during each site visit whether or not ponded or flowing water is observed. These observations are intended to provide a general assessment of the site. Such observations will include weather conditions, a description of the stormwater conveyance, and discharge characteristics such as odor, water clarity, presence of floatables, visible deposits or stains, and the biological status of the site.

In order to achieve consistency in visual observation documentation, consider the following descriptions when filling out the field data forms:

Weather: A description of ambient site conditions

Sunny: The surrounding sky is approximately 80% free of clouds.

Partly Cloudy: The surrounding sky has patches of clouds intermittent with patches of sun and sky.

Overcast: The overhead sky is completely covered with clouds. No direct sunlight is visible.

Fog: The cloud layer is low and may reach the ground. Visibility is reduced.

Discharge Characteristics:

Odor: The odor of the discharge can directly indicate the source of contamination. For example, the smell of rotten eggs is often an indicator of food service or food packing/processing industries. Strong pungent odors should be noted. Take care to differentiate between typical outdoor odors and an odor directly connected to pollutants in the discharge.

Color: Color is an important indicator of a discharge. Dark colors such as brown, gray, and black are the most common colors found in inappropriate discharges. Other colors such as yellow and orange can be indicators of chemical manufacturing or metal finishing process waters. Colors should be indicated if the discharge shows an obvious alteration of color that is not a result of ambient weather conditions or a typical water discharge.

Turbidity (Cloudy): Turbidity is often an indicator of contamination concentration. Highly turbid waters suggest high concentration while water with relatively low turbidity suggests little contamination or contamination from a diluted source. Only discharges that are consistently cloudy should be documented as such. Cloudiness from sampling efforts or site disturbance should not be noted.

Floatable matter: Liquids, solids, or objects can sometimes directly identify source contamination. An oil sheen can be an indication of rinse water from automotive facilities or from places where commercial petroleum products are used. Floatables are usually obvious in the discharge and should be documented. Typical types of floatables include trash, bubbles (from detergents or other pollutants), or a rainbow sheen.

Vegetation: Vegetation can be an indicator of the effects of pollutants. Decay from organic material, fertilizer, and other chemical nutrients can promote eutrophication of dry-weather flows, outfalls, and tributaries. Inhibited growth can indicate toxins that are detrimental to flora growth. Extensive vegetation is considered thick growth or clusters of living plants. Plants that are present occasionally or spread out would be considered limited growth. Decaying organic matter such as leaves, grass, or wood should be noted as such.

Photographs of each location will also be used to provide additional site characterization information and documentation of site conditions.

Reporting

The field data sheet will be used to record visual observations, field testing, and laboratory analytical monitoring results. Additionally, visual observations during the non-sampling months will also be recorded on the field data sheets. All field data sheets along with a narrative assessment of the dry weather sites will be submitted to the RWQCB as part of the required annual Jurisdictional Urban Runoff Management Plan reporting. The assessment will document how many of the sites had dry weather flow and the number of illegal discharges that were referred to source identification investigations and consequently eliminated. The site location, specific observations, and results of the field water quality analyses will be recorded on a standard field data form regardless of whether water samples were collected.

Source Identification Investigations

Background

The Municipal Stormwater Permit requires development of an Illegal Discharge Illicit Connection (IC/ID) component to identify and eliminate IC/ID occurrences. Part of the process in identification is to work toward elimination. For this to occur, pollutant (discharge) sources must be identified so that they can be stopped.

Source identification investigations will be initiated when dry weather exceedances or responses to complaints cannot determine the origin (or source) of a discharge.

Investigation Requirements

Source identification investigations will require a thorough inspection of the MS4 and will include tracking the discharge upstream until a source can be identified. Source identification needs vary greatly for each investigation because all discharges and complaints are unique. Typically source identification can be accomplished through visual observations and sampling. Investigators should be aware of the possible contributors to the MS4 and be prepared to sample for a variety of pollutants, if needed.

Procedure

During an investigation, inspectors will visit upstream inlets or catch basins to determine the extent of the discharge. Usually, travelling upstream will lead to an obvious flow into the MS4. At this point, the investigator will be able to identify the responsible party and proceed to eliminate the discharge (Port JURMP, Chapter 9).

On the occasion that no discharge source is present, the investigator will note the extent of the discharge and investigate all businesses or possible contributors in the nearby area. The case will remain open until the source is determined or the pollutant is eliminated. Photo documentation will be required for all source investigations and will occur at each upstream site that is inspected.

Sample Collection

Samples may be collected if it is not clear what the discharge contains. Refer to Table 1 for a list of potential analytes. Samples may be either field tested or sent to a laboratory for analysis. Field-testing will provide more immediate results and should be considered as a screening tool to determine whether laboratory samples are needed.

Samples will be collected by pump method, bailer method, or with a sampling pole depending on the site characteristics. Refer to the industrial and coastal monitoring programs for description of these methods.

Documentation

All source identification investigations will be documented on the IC/ID investigation forms. These forms will provide a narrative description of the investigation as well as documenting any sampling and analytical results. All source identification reports and accompanying documentation stating how each was resolved will be submitted to the RWQCB in the annual report.

Equipment Maintenance

To substantiate the quality of field results, maintenance of equipment must be given a high priority. All equipment must be cleaned and serviced at the end of a field shift, and stored in clean areas, polyethylene bags, or storage cases. A public faucet may be used to rinse off instruments while in the field. Generally instruments should also be rinsed with deionized water. The Port will also document all calibration records and reagent expiration dates in order to maintain a high level of quality control during field operations.

Important considerations before beginning any sampling event include:

- Calibrate all water quality meters in the office before field use. Calibration solutions should remain uncontaminated and not be used after their expiration dates.
- Field meters and cameras must be in proper working order. Batteries should be charged and have sufficient voltage to power the equipment for the entire field trip. Recharge or replace them as necessary. Keep extra batteries in the instrument case.
- Rinse all pumps with distilled water before and after each use.
- Use new tubing for each sample site. Be sure that there is adequate tubing to accommodate all sites.
- All field probes and meters should be inspected, cleaned, and reconditioned regularly.
- Avoid exposing chemicals or equipment to temperature extremes or long-term direct sunshine.
- Field Test Kit: All reagents must be available in sufficient quantities to run duplicate samples or perform additional samples that may be required during an upstream investigation.

Health and Safety Guidelines

- 4 Always bring a first aid kit.
- 4 Watch for traffic when sampling or making observations.
- 4 Watch your step; the ground may be wet and slippery, steep, or unstable.
- 4 Do not attempt to climb down unsafe slopes.
- 4 Always wear clean latex rubber gloves when sampling.
- 4 Protect eyes and skin against contact with acids and other preservatives.
- 4 Use common sense when deciding whether to sample during adverse weather conditions. Do not sample during dangerous conditions such as high winds, lightning storms, or flooding conditions that may be unsafe.
- 4 Do not enter channels during periods of high flow or if the water level appears to be above the waist.
- 4 Do not enter confined spaces.
- 4 Follow all analytical procedures as prescribed in the equipment manuals. Heed all warnings and precautionary statements.
- 4 Be familiar with all chemicals used in the field and needed for instrument calibration. Know the health hazards and emergency medical treatments, and follow proper disposal instructions. Refer to Material Safety Data Sheets if additional information is needed.

Quality Assurance/Quality Control

The Port District may implement several types of field QA/QC measures to assess the accuracy and precision of field and laboratory analyses performed for the various water quality monitoring programs. These samples are optional and may be collected during sampling events.

The District uses ELAP certified labs for all analyses performed under any of the monitoring programs. Analytical methods and detection limits are included in all laboratory reports submitted to the District. This ensures consistency and accuracy in the analytical results. The laboratories are required to follow their own QA/QC protocols. The District can request to see the data from laboratory sample blanks, spikes, or duplicates, if any sampling results are questionable.

Replicates

Replicate samples are used to assess laboratory or field precision. They may be collected in the field in one container and split into two samples for analysis. Sample results should be within an accepted standard deviation.

Field Blanks

Blanks are used to identify errors or contamination in sample collection and analysis. Field blanks are prepared by filling the normal sample bottles with de-ionized water. Trip blanks are prepared by filling sample containers with de-ionized water in the office and transporting them on a routine monitoring assignment, preserving them in the field (noting the station location), and submitting them with a normal batch of samples. The blanks (field and trip blanks) should be labeled as regular samples, but with a special notation (such as “B”) that indicates they are blanks. They are then analyzed with the regular samples. Lab analysis should result in non-detection of analytes.

Laboratory Blanks

A laboratory blank is defined as an aliquot of reagent water that is treated exactly as a sample, including exposure to all glassware, equipment, solvents, reagents, internal standards, and surrogates that are used with other samples. This blank is used to determine if method contaminants or other interferences are present in the laboratory environment, the reagents, or the apparatus.

Method or equipment blanks are prepared using the same methods used to collect, process, or contain samples before submittal to the lab. An example of an equipment blank would be pouring deionized water into a sample container to test the cleanliness of the container.

Duplicates

Duplicates are used to estimate sampling and laboratory analysis precision. An internal field duplicate is an additional sample collected at the same time and place either by the same sampler or by another sampler. The duplicate is labeled as a regular sample, but with a special notation (such as “D”) that indicates it is a duplicate. It is then analyzed with the regular samples. Lab analysis should produce comparable results for duplicates and regular samples collected at the same site. An external field duplicate is a duplicate sample collected and processed by an independent (e.g. professional) sampler or team at the same time and place as the collection of regular samples.

Spiked Samples

Spiked samples are samples where a known amount of an analyte is added to the samples. Analysis will validate whether the laboratory method can accurately recover the spiked value. The volume of the added spike should be small compared to the volume of the sample to which it is added.

Glossary of Acronyms and Terms

Accuracy: Conforming closely to an exact value or a standard.

Ammonia: An inorganic form of nitrogen produced through bacteriological processes, decay of dead organisms, excretion of waste products by living animals, and fertilizer manufacturing. In water, ammonia dissociates and exists in an equilibrium of un-ionized and ionized ammonia. Determining how much of the total ammonia is in the un-ionized and ionized forms is important because organisms have different sensitivities to the different forms. The way in which ammonia is partitioned between the two forms is dependent on pH and temperature.

Beneficial Uses: The uses of water necessary for the survival or well being of man, plants, and wildlife. These uses of water serve to promote tangible and intangible economic, social, and environmental goals. “Beneficial Uses” of the waters of the State that may be protected against include, but are not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. “Beneficial Uses” are equivalent to “Designated Uses” under federal law. [California Water Code Section 13050(f)].

Biological Oxygen Demand (BOD): A measure of the amount of biodegradable organic matter present in an aquatic system or water sample. Low levels of BOD are always present in natural waters, but when large amounts are introduced, bacteria growth is stimulated. Because bacteria require oxygen to metabolize organic matter, the expanding bacterial populations create a large demand for dissolved oxygen, and as a result, DO levels decline.

Chain of Custody (COC): A form that documents who has had authority and control over the samples from the time of collection to the time of analysis.

Chlorpyrifos: An organophosphate used in insecticides for agricultural applications, extermination, and residential lawn treatment.

Copermittee (or Copermittee): A Permittee to an NPDES permit that is only responsible for permit conditions relating to the discharges from its area of jurisdiction. The San Diego County Municipal Stormwater permit, 2001-01, consists of 20 Copermittees including the San Diego Unified Port District.

Diazinon: An organophosphate used in agricultural applications and residential control of insects indoors and outdoors.

Enterococcus: A subgroup within the fecal streptococcus group. These bacteria are distinguished by their ability to survive in salt water, and in this respect they more closely mimic many pathogens than do other bacteriological indicators. Enterococci are typically more human-specific than the larger fecal streptococcus group, and seem to be consistently associated with warm-

blooded animals subsequent diseases. EPA recommends enterococci as the best indicator of health risk in salt water used for recreation.

Environmental Laboratory Accreditation Program (ELAP): A division of the California Department of Health Services that provides certification to qualified laboratories.

Fecal Coliform: A specific subgroup of total coliform bacteria. These organisms are separated from the total coliform group by their ability to grow at elevated temperatures, and are associated only with the fecal material of warm-blooded animals. Fecal coliform bacteria indicate the presence of sewage contamination in a waterway and the possible presence of other pathogenic organisms that can exist in fecal material. The presence of fecal coliform bacteria is an indicator that potential health risk exists for individuals exposed to contaminated water.

Heavy Metals: Copper, zinc, lead, mercury, cadmium, and chromium are all regarded as “heavy metals.” Depending on their concentrations, heavy metals can be toxic pollutants that are hazardous to aquatic biota. Dissolved metals usually occur as cations, which tend to form complexes with anions to produce different chemical “species.” This is important because the uncomplexed “free ion” is often more toxic than the complexed ion. The percentage of total metal ion that is “free” varies with the chemical properties of the water (i.e., pH).

Holding Time: Holding time is the time between sample collection and the time that sample analysis must begin. Exceedances of holding times will result in data being flagged and may contribute to inaccurate sample results.

Illegal Discharge (ID): A point source discharge of pollutants to the MS4, which is not comprised entirely of stormwater and not authorized by a NPDES permit. Wash water, sediment, spilled chemicals, and other pollutants allowed to enter the MS4 either intentionally or unintentionally contribute to the degradation of the local water quality. Illegal discharges include sewage spills. Releases from the sanitary sewer or private laterals can allow pathogens, ammonia, detergents, and other contaminants to enter the MS4.

Illicit Connections (IC): Conveyances that have been illegally connected to the MS4 system. These connections provide pathways for pollutants to enter the MS4. Improperly installed or defective rain diversion systems or devices that release pollutants into the stormwater conveyance system are also considered illicit connections.

Municipal Separate Storm Sewer System (MS4): A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, natural drainage features or channels, modified natural channels, man-made channels, or storm drains) that is owned or operated by any public body having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes. It is designated or used for collection of conveying storm water, is not a combined sewer, and is not part of the Publicly Owned Treatment Works (POTW).

Nitrates: The chemically stable form of inorganic nitrogen in natural water. Nitrates occur in almost all aquatic systems, and are not considered to be a water contaminant at low concentrations.

Non-point Source Discharge: Discharge from a diffuse pollution source (i.e., without a single point of origin or not introduced into a receiving water from a specific outlet).

Non-Storm Water Discharge: Any discharge to a storm drain system or receiving water that is not composed entirely of storm water.

Nutrients: Any substance assimilated by living things that promote growth. The term generally refers to nitrogen and phosphorus in wastewater, but is also applied to other essential and trace elements.

Orthophosphate (Ortho-P): Sometimes referred to as soluble reactive phosphorus (SRP) because phosphate in this form is a readily available nutrient and is easily metabolized by green plants. Its presence in water can contribute to water pollution problems such as algal blooms and aquatic weed growth. Waters having high levels of Ortho-P are susceptible to eutrophication problems especially in warmer seasons of the year.

Outfall: The point source where a municipal storm sewer discharges to waters of the United States.

Permit: Refers to the NPDES Municipal Storm Water Permit (Order No. 2001-01) adopted by the RWQCB on February 21, 2001.

pH: A potentially critical factor in aquatic environments that can influence the chemistry and biology of the system. It can affect the solubility of chemical substances, chemical equilibria, availability of nutrients, relative toxicity of environmental contaminants, and the leachability of trace elements (i.e., cadmium, lead, copper, and zinc) from sediments and suspended material. The normal pH of surface marine waters is 8.1.

Point Source: Any discernible, confined and discrete conveyance, including any pipe, ditch, channel, tunnel, conduit, vessel, etc., from which pollutants are or may be discharged.

Receiving waters: All surface water bodies within the permit area into which wastewater or treated effluent is discharged.

Sanitary Sewer: Underground pipes that carry only domestic or industrial wastewater, not storm water.

Sediment: Organic or inorganic material that is carried by or suspended in water and that settles out to form deposits in the storm drain system or receiving waters.

Specific Conductance (Conductivity): A measure of the ability of water to conduct electricity. Conductivity is dependent on the concentration of ions in water, and it is thus a rapid method of estimating the total dissolved solids (TDS) content of a water supply.

Storm Drain Inlet: A drainage structure that collects surface runoff and funnels it into the conveyance system.

Storm Water (or Stormwater): Urban runoff and snowmelt runoff consisting only of those discharges that originate from precipitation events. Storm water is the portion of precipitation that flows across a surface to the storm drain systems or receiving waters. In general, runoff increases as the perviousness of a surface decreases. During precipitation events in urban areas, rain water picks up and transports pollutants through storm water conveyance systems, and ultimately to a receiving water body.

Storm Water Drainage (Conveyance) System: Streets, gutters, inlets, conduits, natural or artificial drains, channels and watercourses, or other facilities that are owned, operated, maintained and used for the purpose of collecting, storing, transporting, or disposing of storm water.

Surface Runoff: Precipitation, snow-melt or irrigation water that flows off of a surface when rainfall exceeds the rate at which it can infiltrate the surface or be stored in small surface depressions.

Surfactants (MBAS): Surfactants are substances that are typically found in cleaning chemicals and detergents. These substances operate by preventing dirt and debris from adhering to items. When introduced to the environment, surfactants can negatively impact an organism's normal biological processes.

Temperature: A physical parameter of water quality that is necessary in order to assess the significance of other parameters and to calculate the values of parameters that vary with temperature. It has an important influence on water density, DO saturation, the solubility and toxicity of constituents in water, pH, specific conductance, rate of chemical reactions, biological activity, and the type of biota found in an area.

Total Coliform: A natural part of the microbiology of the intestinal tract of cold- and warm-blooded animals, including man. Because they are relatively easy to culture in the lab, the total coliform group has been selected as the primary indicator bacteria for the presence of disease causing organisms. If large numbers of coliforms are found in the water, there is a high probability that other pathogenic bacteria or organisms may be present.

Total Dissolved Solids (TDS): Inorganic salts and small amounts of organic matter that are dissolved in water. Potential sources include natural inputs, sewage, urban runoff, and industrial wastewater.

Total Hardness: A measure of the cations, most commonly calcium and magnesium that are dissolved in water. Water hardness increases with an increasing concentration of cations.

Total Organic Carbon (TOC): TOC is associated with decaying organic matter. It is generally present in elevated levels when other harmful organic compounds are present. Testing for TOC is generally an effective tool for assessing the potential for these other harmful compounds.

Total Suspended Solids (TSS): TSS consists of any particles or substances that are neither dissolved nor settled in a water sample. They can originate from silt, decaying organic matter, industrial wastes, or sewage. In high concentrations, the particles result in turbid water.

Turbidity: Turbidity is a measure of water cloudiness, or the concentration of suspended solids in the water column. High levels of turbidity can block light from reaching submerged vegetation, trap infra-red (heat) waves which subsequently increase water temperature, and can result in an overload of particulates to filter-feeding organisms.

Water Quality Standards: The water quality objectives necessary to protect the beneficial uses of a water body.

APPENDIX H

ANNUAL ASSESSMENT TABLES

Table H-1. Development Planning Component Annual Component Assessment Table.

Development Component (D.1)	Annual Report Requirements (J.3.a.(3).a)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
a. Revise General Plan	i. Description of amendments to General Plan.	1	Reporting	Task Completion (Y/N)	Description is included, if applicable.	4.2.1 & 4.2.2
b. Revise current environmental review process	i. Description of amendments to the environmental review process, development project approval process or development project requirements.	1	Reporting	Task Completion (Y/N)	Description is included, if applicable.	4.2.3 & 4.2.4
c. Approval Process Criteria and Requirements	ii. Confirmation that BMPs were approved using the approval process, and how they were tracked.	1	Inspection	Task Completion (Y/N)	Completion of task	4.3
	iii. List of development projects to which SUSMP requirements were applied.	1	Reporting	Task Completion (Y/N)	Completion of task	4.2.5, 4.2.6, & Appendix C
	iv. Confirm that all applicable SUSMP BMP requirements were applied to all priority dev projects, include description of how tracked.	1	Reporting/ Inspection	Task Completion (Y/N)	Completion of task	
	v. Minimum one example of project conditioned to meet SUSMP requirements, and list of required BMPs.	1	Reporting	Task Completion (Y/N)	Completion of task	
	vi. List of priority projects allowed to implement low removal efficiency BMPs, include feasibility analyses.	1	Reporting	Task Completion (Y/N)	Completion of task	

Table H-1. Development Planning Component Annual Component Assessment Table.

Development Component (D.1)	Annual Report Requirements (J.3.a.(3).a)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
11. Waiver Provision	xi. Listing of any project receiving a SUSMP waiver.	1	Reporting Port SUSMP	Task Completion (Y/N)	Completion of task	Appendix A & Appendix C
	xii. Description of implementation of SUSMP waiver mitigation program.	1	Reporting SUSMP	Task Completion (Y/N)	Completion of task	
2. Maintenance program to verify approved BMP upkeep	vii. Updated treatment control BMP inventory.	1	Reporting	Task Completion (Y/N)	Completion of task	4.4.3
	x. Confirmation that BMP verification was conducted for all priority dev projects prior to occupancy and how it was tracked.	1	Reporting	Task Completion (Y/N)	Completion of task	
3. Operation and maintenance verified prior to rainy season	ix. Description of verification of operation and maintenance of BMPs, include summary verification results and findings.	1	Reporting	Identify certifications that were received and those that are outstanding.	100% of sites are in compliance	4.4.3
4. inspections of high priority BMPs prior to each rainy season	viii. Number of BMPs inspected, including summary results and findings.	1	Reporting	Task Completion (Y/N)	Completion of task	4.4.3

Table H-1. Development Planning Component Annual Component Assessment Table.

Development Component (D.1)	Annual Report Requirements (J.3.a.(3).a)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
4. Inspections of high priority BMPs prior to each rainy season	viii. Number of BMPs inspected, including summary results and findings.	3	Inspection	Number of projects constructed SUSMP BMPs according to requirements.	100% of sites properly implemented SUSMP BMPs	4.4.3
		3	Inspection	Number of priority projects with treatment control BMPs inspected that were in compliance	100% of sites properly maintain SUSMP BMPs	
1.a Identify standard channel segments	xiii. Description of HMP collaboration and participation.	1	Reporting	Task Completion (Y/N)	Completion of task	4.2.6. & Appendix C
	xiv. Listing of development projects required to meet HMP requirements.	1	Reporting	Task Completion (Y/N)	Completion of task	
	xv. List of priority development projects not required to meet HMP.	1	Reporting	Task Completion (Y/N)	Completion of task	
	xvi. List of development projects disturbing 50 acres or more.	1	Reporting	Task Completion (Y/N)	Completion of task	
Copermittees enforce storm water ordinance for all development projects	xvii. Number of violations and enforcement actions taken.	1	Reporting	Task Completion (Y/N)	Completion of task	4.4.1
	xviii. Description of notable activities conducted to manage urban stormwater runoff.	1	Reporting	Task Completion (Y/N)	Completion of task	4.5

Table H-2. Construction Component Annual Component Assessment Table.

Construction Component (D.2)	Annual Report Requirements (J.3.a.(3).b)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
a. Ordinance Update and Approval	i. Confirmation that all construction sites underwent urban runoff review process, met construction requirements, and how the information was tracked.	1	Reporting	Number of construction sites reviewed, number of sites in compliance, tracking mechanism discussion	100% of sites were reviewed, in compliance and tracked	5.2 & 5.5.1
	iii. Description of modifications made to the construction / grading ordinances and approval process.	1	Reporting	Task completion (Y/N)	Completion of task	5.2
b. Source Identification	ii. Confirmation that regularly updated construction site inventory was maintained, and how it was maintained.	1	Reporting	Task completion (Y/N)	Completion of task	5.3.1 & 5.3.2
c. BMP implementation	iv. Confirmation that designated BMPs were required / implemented for all construction sites.	1	Reporting/ Inspection	Task completion (Y/N)	Completion of task	5.2, 5.4 & 5.5.2
		3	Inspection	Inspection results that indicate proper installation/ implementation of BMPs	100% of sites implemented BMPs	
	v. Confirmation that maximum disturbed area BMP was applied to applicable construction sites.	1	Reporting	Task completion (Y/N)	Completion of task	5.4.3
d. Inspection of construction sites	vi. An inventory of construction sites with conditions requiring advanced treatment and that advanced treatments were implemented.	1	Reporting	Task completion (Y/N)	Completion of task	5.3.2 & 5.5.7

Table H-2. Construction Component Annual Component Assessment Table.

Construction Component (D.2)	Annual Report Requirements (J.3.a.(3).b)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
d. Inspection of construction sites	vii. By category (high, medium, low) a listing of the duration a project was active and number of inspections conducted during the wet season. Also, the number of inspections during the dry season and total number of inspections.	1	Reporting/ Quantification	Task completion (Y/N)	Completion of task	5.5.7
	viii. A description of the general results of inspections. ix. Confirmation that inspection conducted addressed all required inspection steps to determine full compliance.	1	Reporting	Task completion (Y/N)	Completion of task	
		3	Review inspection results	Inspection results that indicate proper installation/ implementation of BMPs	100% of sites implemented BMPs	
e. Enforcement of construction sites	x. Inventory of the number of violation and types of enforcement actions, including follow-up actions. Include notation of compliance with violations / enforcement actions, or if pending describe the actions currently being taken.	1	Inspection, number of enforcement actions	Task completion (Y/N)	Completion of task	5.5.5 & 5.5.6
f. Reporting of non-compliant sites.		3	Review inspection and enforcement results	Number of enforcement actions that exceed a verbal warning	Sites require enforcement beyond a verbal warning	
		4	Review inspection and enforcement results	Enforcement records that indicate responses to unauthorized discharges	100% of unauthorized discharges from construction sites were immediately abated	
Annual Component Assessment	x.i. Describe notable activities conducted to manage urban runoff from construction sites.	1	Reporting	Task completion	Completion of task	5.6

Table H-3. Municipal Component Annual Component Assessment Table.

Municipal Program (D.3.a)	Annual Report Requirements (J.3.a.(3).c)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
(1) Source Identification	i. Any updates to municipal inventory and prioritization.	1	Confirmation	Task completion (Y/N)	Inventory and prioritize 100% of municipal facilities and areas	6.2
(2) BMP Implementation	ii. Confirm that designated BMPs were implemented, or required to be implemented, for municipal areas and activities, as well as special events.	1	Inspection	Task completion (Y/N)	100% of required minimum BMPs were evaluated	6.4, 6.6, & 6.7.2
		2	Pre/Post Test	Change over time (%)	Increase in knowledge of required minimum BMPs for stormwater presentations / training conducted by ESD staff for Port municipal staff	6.6
		3	Inspection	# of BMPs implemented / # of BMPs requiring corrective action	Increase in the proper implementation of required minimum BMPs*	6.5
		3	Inspection	# of BMPs requiring corrective action during previous inspection / # of BMPs requiring corrective action during current inspection	Reduction in the amount of BMPs that require corrective actions*	6.5
(3) O&M MS4	iv. Identification of the total number of catch basins and inlets, the number of catch basins and inlets inspected, the number of catch basins and inlets found with accumulated waste exceeding cleaning criteria, and the number of catch basins and inlets cleaned.	1	Confirmation	Task completion (Y/N)	Identification of total number of catch basins and inlets	6.2.2
		1	Inspection	# of catch basins and inlets identified / # of catch basins and inlets inspected	At a minimum inspect 100% of catch basins and inlets that collect high volumes of trash/debris	6.5.2

Table H-3. Municipal Component Annual Component Assessment Table.

Municipal Program (D.3.a)	Annual Report Requirements (J.3.a.(3).c)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
(3) O&M MS4		3	Inspection	# of catch basins and inlet with trash greater than 33% of designed capacity / # of catch basins and inlets cleaned	Clean 100% of MS4 facilities that have an accumulation of trash or debris greater than 33% of designed capacity	6.6.12
	Minimum yearly inspection between May 1 st and Sept 30 th for all MS4 facilities that receive or collect high volumes of trash. All other MS4 facilities minimum once/year.	1	Confirmation	Task completion (Y/N)	Inspect 100% of MS4 that receives high volumes of trash and debris between May 1 and Sept. 30	6.2.2
		1	Confirmation	Task completion (Y/N)	Inspect 100% MS4 facilities annually	6.2.2
	v. Identification of total distance (miles) of the MS4, the distance of the MS4 inspected, the distance of MS4 found with accumulated waste exceeding cleaning criteria, and the distance of the MS4 cleaned.	1	Confirmation	Task completion (Y/N)	Identify total distance (miles) of MS4	6.2.2
		1	Inspection	# of miles of MS4 / # of miles of MS4 inspected	Inspect 100% of MS4	6.5.2
		3	Inspection	# of miles of MS4 inspected found with accumulated trash exceeding cleaning criteria / # of miles of MS4 cleaned	Clean 100% of MS4 inspected found with accumulated trash exceeding cleaning criteria	6.6.12
	Verification of maintenance and cleaning records for MS4.	1	Verification	Task completion (Y/N)	Documentation of all MS4 maintenance and cleaning activities	6.5.2
	vii. Amount of waste and litter (tons) removed from catch basins, inlets, the MS4, and open channels, <u>by category</u> .	4	Quantification	Amount of waste and litter removed in tons.	Establish a baseline for future targets	6.8

Table H-3. Municipal Component Annual Component Assessment Table.

Municipal Program (D.3.a)	Annual Report Requirements (J.3.a.(3).c)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
(4) Management of Pesticides / Herbicides / Fertilizers	ix. Confirmation that the designated BMPs for pesticides, herbicides, and fertilizers were implemented, or required to be implemented, for municipal areas and activities.	1	Confirmation	Task completion (Y/N)	Properly implement 100% of required minimum BMPs	6.7.2 & 6.7.2.1
(5) Sweeping of Municipal Areas	x. Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating the highest volumes of trash and/or debris, as well as the frequency of sweeping conducted for such roads, streets, and highways.	1	Tabulation	Total curb-miles generating high volumes of trash cleaned / # of times curb-miles generating high volumes of trash are cleaned	100% of roads, streets, and parking lots that receive high volumes of trash are swept at least twice monthly	6.2
	xi. Identification of total distance of curb-miles of improved roads, streets, and highways identified as consistently generating moderate volumes of trash and/or debris, as well as the frequency of sweeping for such roads, streets, and highways.	1	Tabulation	Total curb-miles generating moderate volumes of trash cleaned / # of times curb-miles generating moderate volumes of trash are cleaned	100% of roads, streets, and parking lots that receive moderate volumes of trash are swept at least monthly	6.2
	xii. Identification of the total distance of curb-miles of improved roads, streets, and highways identified as consistently generating low volumes of trash and/or debris, as well as frequency of sweeping associated with such roads, streets, and highways.	1	Tabulation	Total curb-miles generating low volumes of trash cleaned / # of times curb-miles generating low volumes of trash are cleaned	100% of roads, streets, and parking lots that receive low volumes of trash are swept at least annually	6.2
	xiii. Identification of the total distance of curb-miles swept.	1	Tabulation	Task completion (Y/N)	Total curb-miles swept	6.6.10
	xiv. Identification of number of municipal parking lots, number of municipal parking lots swept, and frequency of sweeping.	1	Confirmation	Task completion (Y/N)	Inventory 100% of parking lots	6.2.2
		1	Tabulation	# of parking lots inventoried / # of parking lots swept	100% of parking lots inventoried are swept in a timely manner	6.6.10
xv. Amount of material (tons) collected from street and parking lot sweeping.	4	Quantification	Amount of waste and litter removed in tons.	Establish baseline for future target outcome	6.8	

Table H-3. Municipal Component Annual Component Assessment Table.

Municipal Program (D.3.a)	Annual Report Requirements (J.3.a.(3).c)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
(6) Infiltration Sanitary Sewer to MS4 / preventative maintenance of both	xvi. Description of efforts implemented to prevent and eliminate infiltration from the sanitary sewer to the MS4.	1	Inspection	# of MS4 facilities inspected	100% of MS4 is inspected to prevent and eliminate seepage from sanitary sewer	6.5.2
(7) Inspection of Municipal Ares and Activities	iii. Description of inspections and maintenance conducted for municipal treatment controls.	1	Inspection	# of treatment controls implemented / # of treatment controls inspected	100% of treatment controls are implemented and inspected	6.5.1
		4	Inspection	# of treatment controls inspected / # of treatment controls maintained	100% of treatment controls are maintained	6.5.2
	xviii. Description of general results of the inspections.	1	Inspection	Task completion (Y/N)	100% of inspection are documented	6.5.1 & 6.5.2
	xix. Confirmation that the inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Task completion (Y/N)	Review of inspection form and verification that all Permit elements are addressed	6.5.1 & 6.5.2
	xvii. Identification of the number of sites requiring inspections, the number of sites inspected, and the frequency of inspection.	1	Inspection	# municipal areas and activities identified / # of municipal areas and activities inspected	At a minimum all high priority municipal areas and activities shall be inspected annually	6.2
	xxi. Description of notable activities conducted to manage urban runoff from municipal areas and activities.	1	Reporting	Narrative		6.7
(8) Enforcement of Municipal Areas and Activities	xx. Number of violations and enforcement actions (including types) taken for municipal areas and activities, including information on any necessary follow-up actions taken.	1	Reporting	# and type of violations and enforcement action	Identify 100% of violations	6.8
		4	Inspection	# enforcement actions / # of enforcement actions resolved immediately	100% resolution with proper enforcement	6.8

Table H-3. Municipal Component Annual Component Assessment Table.

Municipal Program (D.3.a)	Annual Report Requirements (J.3.a.(3).c)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
(8) Enforcement of Municipal Areas and Activities	xx. Number of violations and enforcement actions (including types) taken for municipal areas and activities, including information on any necessary follow-up actions taken.	3	Inspection	# of violations and enforcement actions taken / # of follow-up inspections required or further enforcement	Reduction in follow-up inspections or further enforcement*	6.8
		4	Inspection	# of violations and enforcement action requiring follow-up / # of violations resolved	100% of violations and enforcement action are brought into compliance	6.8
		1	Reporting	# violations, types, follow-ups, narrative	100% of infractions are brought into compliance	6.9

* The initial inspection of this permit shall be used to establish a baseline for future comparisons.

Table H-4. Industrial/Commercial Component Annual Assessment Table.

Industrial and Commercial Program (D.3.b)	Annual Report Requirements (J.3.a.(3).d)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
(1) Source Identification	i. Any updates to industrial and commercial inventory and prioritization.	1	Confirmation	Task Completed (Y/N)	Inventory and prioritize 100% of industrial and commercial facilities	7.2.2 & 7.2.3
(2) BMP Implementation	ii. Confirm that designated BMPs were implemented, or required to be implemented, for industrial and commercial sites/sources.	1	Inspection	Task Completed (Y/N)	100% of required minimum BMPs were evaluated	7.4.3
		3	Inspection	# of BMPs implemented / # of BMPs requiring corrective action	Increase in the proper implementation of required minimum BMPs ¹	7.4.3
		3	Inspection	# of BMPs requiring corrective action during previous inspection / # of BMPs requiring corrective action during current inspection	Reduction in the amount of BMPs that require corrective actions ¹	7.4.3
		1	Confirmation	# of facilities requiring notification/# of facilities receiving notifications	At a minimum all high priority industrial and commercial facilities shall receive notifications	7.4.2
		2	Pre and post testing	Change over time (%)	Increase in knowledge of required minimum BMPs for stormwater presentations / training conducted by Port staff for industrial and commercial facilities	7.4.1 & 10.3.2
(3) Inspection	iv. Identification of the total number of industrial and commercial sites/sources inventoried and the total number inspected.	1	Reporting	# of industrial and commercial facilities inventoried/# of facilities inspected	100% of high priority industrial and commercial facilities are inspected, with a minimum of 25% of total inventory being inspected ²	7.2.2 & 7.2.3
(3) Inspection	v. Justification and rationale for why the industrial and commercial sites/source inspected were chosen for inspection.	1	Confirmation	Task Completed (Y/N)	100% of industrial and commercial facilities are inventoried and receive prioritization	7.2.1

Table H-4. Industrial/Commercial Component Annual Assessment Table.

Industrial and Commercial Program (D.3.b)	Annual Report Requirements (J.3.a.(3).d)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
	vi. Confirmation that all inspections conducted addressed all the required inspection steps to determine full compliance.	1	Confirmation	Task Completed (Y/N)	Review of inspection form and verification that all Permit elements are addressed	7.4.3
(4) Mobile Business	ix. A description of efforts implemented to address mobile businesses.	1	Reporting	# of Mobile Businesses identified	100% of mobile businesses conducting activities on Port tidelands are identified	7.3
(5) Enforcement	x. The number of violations and enforcement actions (including types) taken for industrial and commercial sites/source, including information on any necessary follow-up actions taken.	1	Reporting	# and type of violations and enforcement action for industrial and commercial facilities	Identify all violations at industrial and commercial facilities	7.4.3
		3	Inspection	# of violations and enforcement actions taken / # of follow-up inspections required or further enforcement	Reduction in follow-up inspections or further enforcement ¹	7.4.3
		4	Inspection	# of violations and enforcement action requiring follow-up actions / # of violations resolved	100% of violations and enforcement action are brought into compliance	7.4.3
(6) Reporting of industrial Non-Filers	xvi. Description of steps taken to identify non-filers and a list of non-filers (under the General Industrial Permit) identified by the Copermittees.	1	Reporting	# non-filers	100% of non-filers are brought into compliance	7.4.4

Table H-4. Industrial/Commercial Component Annual Assessment Table.

Industrial and Commercial Program (D.3.b)	Annual Report Requirements (J.3.a.(3).d)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
N/A	An assessment of the effectiveness of the JURMP which meets the requirements of Permit Section I.	5 ³	Water quality monitoring and sampling	# of samples collected / # of samples exceeding water quality objectives or action levels	Sample results below water quality objectives or action levels	7 & 13
N/A	An assessment of the effectiveness of the JURMP which meets the requirements of Permit Section I.	6 ³	Water quality monitoring and sampling	# of samples collected / # of samples exceeding water quality objectives or action levels	Sample results below water quality objectives or action levels	7 & 13

1 – The initial inspection of this permit shall be used to establish a baseline for future comparisons.

2 – The Permit requires 50% of high priority facilities and 20% of total inventory in first year of program implementation.

3 – In cases where level 5 and 6 outcomes are achieved, assessments shall be presented in the Port's Annual Report.

Table H-5. IC/ID Component Annual Component Assessment Table.

IC/ID Program (D.4)	Annual Report Requirements (J.3.a.(3).f.)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
(b)Develop/Maintain MS4 Map	i. Correct inaccuracies in either MS4 map or the Dry Weather Field Screening and Analytical Stations Map.	1	Verification/ Inspection	Task Completion (Y/N)	Verify accuracy of MS4 and Dry Weather Site Location map	9.5.1
(c)Dry Weather Field Screening and Analytical Monitoring	ii. Report all dry weather results. iii. Include consultant reports on dry weather field screening and analytical monitoring as appendix.	1	Confirmation	Task Completion (Y/N)	All results of dry weather field screening and analytical monitoring will be reported in the Annual Report	Appendix E
		1	Investigation	Task Completion (Y/N)	100% of dry weather field screening and analytical monitoring results which exceed action levels will be responded to within 2 business to either conduct a source investigation or provide rational as to why the IC/ID does not pose a threat to water quality	
		5	Quantification/ Comparison	# of sites visited compared to # of sites where ponded or flowing water is present	Reduction of sites where flows or ponded water is present	9.7.5
			Monitoring	Field Screening/ Analytical Monitoring	Reduction in exceedances annually	
(d)Investigation/ Inspection and Follow-up	iv. Brief description of investigations and follow-up activities. vii. Identification and description of all spills to the MS4 and response to spills.	1	Investigation/ Reporting	Task Completion (Y/N)	100% of IC/IDs will be responded to and described in the Annual Report	9.5

Table H-5. IC/ID Component Annual Component Assessment Table.

IC/ID Program (D.4)	Annual Report Requirements (J.3.a.(3).f.)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
	v. Number of illicit discharges and connections.	1	Investigation/Tabulation	# of incoming complaints/# of justified IC/IDs	The number of justified IC/IDs will be reported in the Annual Report	9.3.2.
(e)Elimination of IC/IDs and (f)Enforce Ordinance	vi. Number of illicit discharges and connections eliminated.	1	Tabulation	# of IC/IDs eliminated	100% elimination of IC/IDs	9.5
	xiii. Description of notable activities conducted to manage illicit discharges and connections.	3	Investigation	# of IC/IDs in which BMPs were implemented	Adequate implementation of BMPs required to eliminate or resolve an IC/ID	
	xii. Number of violations and enforcement actions (including types) taken for illicit discharges and connections, including information on any necessary follow-up actions taken. The discussion should exhibit that compliance has been achieved, or describe actions that are being taken to achieve compliance.	1	Confirmation	Task Completion (Y/N)	All enforcement actions taken to eliminate IC/IDs will be reported in the Annual Report	9.6
		4	Quantification	# of IC/IDs eliminated	100% elimination of IC/ID	
		4	Quantification	# enforcement actions / # requiring follow-up	100% resolution with proper enforcement	
4	Quantification	# enforcement actions / # resolved immediately	100% resolution with proper enforcement			
(g)Prevent and Respond to Sewage Spills and Other Spills	viii. Description of activities implemented to prevent sewage and other spills from entering the MS4.	1	Confirmation	Task Completion (Y/N)	100% of sewage spills and other spills determined to be a threat to health and the environment will be reported to the RWQCP within 24 hour	9.3.3
		6	Monitoring	Change in water quality	Improvements to water quality if outstanding IC/IDs are identified	

Table H-5. IC/ID Component Annual Component Assessment Table.

IC/ID Program (D.4)	Annual Report Requirements (J.3.a.(3).f.)	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
(h)Facilitate Public Reporting of IC/ID Public Hotline	ix. Description of mechanism whereby notification of sewage spills from private laterals and septic systems is received.	1	Confirmation	Task Completion (Y/N)	Efforts to receive notification of sewage spills will be described in the Annual Report	9.2
	x. Number of times hotline was called, as compared to previous reporting periods, and a summary of the calls.	1	Tabulation	# of calls recorded	100% of calls will be recorded and described in the Annual Report	
	xi. Description of efforts to publicize and facilitate public reporting of illicit discharges.	1	Confirmation	Task Completion (Y/N)	Efforts to publicize public reporting of IC/IDs will be presented in the Annual Report	
		2	Tabulation	# of educational events/ presentations/ brochures distributed during IC/ID investigations	# of educational materials and presentations will be tabulated	

Table H-6. Education Component Annual Component Assessment Table.

Education Program (D.5)	Annual Report Requirements (J.3.a.(g))	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
(a) General Requirements	1. A description of education efforts conducted for each target community.	1	Confirmation	Task completion (Y/N)	At least one education effort is conducted annually for each target community	10.1(c)
		1	Confirmation	Task completion (Y/N)	All education efforts conducted met 100% of the required topics	
		2	Refer to available activities in Tables 10-3 to 10-12	Refer to measure associated with activity type in Table 10-16	When applicable, refer to Level 2 target associated with activity type in Table 10-16	10.2, 10.3 & 10.4.
		3	Refer to available activities in Tables 10-3 to 10-12	Refer to measure associated with activity type in Table 10-16	When applicable, refer to Level 3 target associated with activity type in Table 10-16	
(a) General Requirements	2. A description of how education efforts targeted underserved target audiences, high-risk behaviors, and “allowable” behaviors and discharges.	1	Confirmation	Task completion (Y/N)	At least one education effort conducted annually for underserved audiences, high-risk behaviors, and “allowable” behaviors and discharges	10.3(e)
(2) Specific Requirements	3. A description of the education efforts conducted for municipal departments and personnel.	1	Confirmation	Task completion (Y/N)	At least one education effort is conducted annually for municipal departments and personnel	10.2

Table H-6. Education Component Annual Component Assessment Table.

Education Program (D.5)	Annual Report Requirements (J.3.a.(g))	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
			Confirmation	Task completion (Y/N)	All education efforts for municipal departments and personnel conducted met 100% of the required topics	10.2 & 10.4
		2	Refer to available activities in Tables 10-3 to 10-8	Refer to measure associated with activity type in Table 10-16	When applicable, refer to Level 2 target associated with activity type in Table 10-16	
		3	Refer to available activities in Tables 10-3 to 10-8	Refer to measure associated with activity type in Table 10-16	When applicable, refer to Level 3 target associated with activity type in Table 10-16	
(2) Specific Requirements	4. A description of education efforts conducted for the new development and construction communities.	1	Confirmation	Task completion (Y/N)	At least one education effort is conducted annually for new development and construction communities	10.3(a)
(2) Specific Requirements	4. A description of education efforts conducted for the new development and construction communities.	1	Confirmation	Task completion (Y/N)	All education efforts conducted for new development and construction communities met 100% of the required topics	
		2	Refer to available activities in Table 10-9	Refer to measure associated with activity type in Table 10-16	When applicable, refer to Level 2 target associated with activity type in Table 10-16	10.3(a) & 10.4

Table H-6. Education Component Annual Component Assessment Table.

Education Program (D.5)	Annual Report Requirements (J.3.a.(g))	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
		3	Refer to available activities in Table 10-9	Refer to measure associated with activity type in Table 10-16	When applicable, refer to Level 3 target associated with activity type in Table 10-16	
(2) Specific Requirements	5. A description of the education efforts conducted for residents, general public, and school children.	1	Confirmation	Task completion (Y/N)	At least one education effort is conducted annually for residents, general public, and school children	10.3(c) & 10.3(d)
		1	Confirmation	Task completion (Y/N)	All education efforts conducted for residents, general public, and school children met 100% of the required topics	
(2) Specific Requirements	5. A description of the education efforts conducted for residents, general public, and school children.	2	Refer to available activities in Tables 10-11 to 10-12	Refer to measure associated with activity type in Table 10-16	When applicable, refer to Level 2 target associated with activity type in Table 10-16	10.3(c), 10.3(d), & 10.4
		3	Refer to available activities in Tables 10-11 to 10-12	Refer to measure associated with activity type in Table 10-16	When applicable, refer to Level 3 target associated with activity type in Table 10-16	
(1) General Requirements	Additional: A description of the education efforts conducted for industrial and commercial owners and operators.	1	Confirmation	Task completion (Y/N)	At least one education efforts conducted annually for industrial and commercial owners and operators	10.3(b)

Table H-6. Education Component Annual Component Assessment Table.

Education Program (D.5)	Annual Report Requirements (J.3.a.(g))	Target Outcome Level	Assessment Method	Assessment Measure	Anticipated Target	JURMP Section
		1	Confirmation	Task completion (Y/N)	All education efforts conducted for industrial and commercial owners and operators met 100% of the required topics.	
		2	Refer to available activities in Table 10-10.	Refer to measure associated with activity type in Table 10-16	When applicable, refer to Level 2 target associated with activity type in Table 10-16	Sections 10.3(b) & 10.4
		3	Refer to available activities in Tables 10-10.	Refer to measure associated with activity type in Table 10-16	When applicable, refer to Level 3 target associated with activity type in Table 10-16	