

NAVAL BASE GUAM  
MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)

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# STORM WATER MANAGEMENT PROGRAM (SWMP) DOCUMENT

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NPDES MS4 PERMIT GUS040000

JUNE 2021



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## Acronyms, Abbreviations and Definitions

DISCLAIMER: The definitions provided herein do not constitute any agency's official use of terms and phrases for regulatory purposes and should not be used to alter or supplant those found in any other federal document.

### **Activity**

An independent command performing a specific mission and having its own unit identification code.

### **Acute Toxic Effect**

Any toxic effect that is produced within a short period of time, generally 96 hours or less. Although the effect most frequently considered is mortality, the end result of an acute effect could be any harmful biological effect.

### **ADP**

Available Demonstrated Practices

### **Adsorption**

The collection of a gas, liquid, or dissolved substance in a condensed form on a surface. An example would be the tendency of contaminants to collect on and adhere to sediment particles.

### **ADT**

Available Demonstrated Technology

### **AFFF**

Aqueous Film Forming Foam

### **Algae**

Aquatic, non-flowering plants that lack roots and use light energy to convert carbon dioxide and inorganic nutrients such as nitrogen and phosphorus into organic matter by photosynthesis. Common algae include dinoflagellates, diatoms, seaweeds, and kelp. An algal bloom can occur when excessive nutrient levels and other physical and chemical conditions enable the algae to reproduce rapidly.

### **AMS**

Asset Management System

### **APWO**

Assistant Public Works Officer

### **Aquifer**

The underground layer of rock or soil in which groundwater resides. Aquifers are replenished or recharged by surface water percolating through soil. Wells are drilled into aquifers to extract water for human use.

**AUL**

Authorized Use List

**Base Flow**

The flow contribution to a creek by groundwater. During dry periods, base flow constitutes the majority of stream flow.

**Baseline Load**

Quantitative estimate of the debris currently being discharged from the MS4.

**BAT**

Best Available Technology Economically Achievable

Defined at CWA Section 304(b)(2). In General, BAT represents the best available economically achievable performance of plants in the industrial subcategory or category. Factors considered in assessing BAT include:

- Cost of achieving BAT effluent reductions;
- Age of equipment and facilities involved;
- The process employed by the industry and potential process changes;
- Non-water quality environmental impacts, including energy requirements; and
- Other factors as EPA deems appropriate.

**BBL**

Barrel

**BCT**

Best Conventional Pollutant Control Technology

Defined in CWA Section 304(b)(4), addresses conventional pollutants from existing industrial point sources. In addition to considering the other factors specified in Section 304(b)(4)(B), EPA establishes BCT limitations after consideration of a two part "cost-reasonableness" test. This methodology was published in a Federal Register notice on July 9, 1986 (51 FR 24974).

**Bioaccumulation**

The process by which a contaminant accumulates in the tissue of an organism. For example, certain chemicals in food eaten by a fish tend to accumulate in its liver and other tissues.

**Bioavailable**

Available for biological uptake.

**Biodegradation**

The conversion of organic compounds into simpler compounds (such as carbon dioxide and water) through biochemical activity. Toxic compounds can be converted into non-toxic compounds through biodegradation. However, in some cases, complex compounds are first converted into intermediate substances that can be more toxic than the original substance.

**Biofiltration**

Treatment technology that uses microorganisms in the destruction of volatile organic compounds. Waste gases are purified by passage through a biologically active, porous medium. As the waste gases pass through the medium, contaminants are absorbed into a wet/biofilm layer and are aerobically degraded to carbon dioxide, water, and biomass end products.

**Biomagnification**

The process by which concentrations of contaminants increase (magnify) as they pass up the food chain such that each animal in the food chain has higher tissue concentrations than did its food. For example, concentrations of certain contaminants can increase as they are passed from plankton to herring to salmon to seals.

**BMP**

Best Management Practice

Schedules of activities, prohibition of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

**BOD**

Biochemical Oxygen Demand

The amount of oxygen in water required by bacteria to decompose organic matter under an aerobic condition. BOD is an indicator of water quality: a high BOD value indicates a high level of pollution. Although BOD is not a specific compound, it is defined as a conventional pollutant under the Clean Water Act.

**CERCLA**

Comprehensive Environmental Response Compensation and Liability Act

**CETEP**

Centralized Environmental Training and Education Program

**CFR**

Code of Federal Regulations

**CFS**

Cubic Feet per Second

**Channelization**

The process of making a channel or channels. A channel is the bed of a stream or river, or the hollow or course in which a stream flows.

**Check Dam**

A small dam designed to slow the velocity of water and sediment in a channel, used especially for grade control and channel erosion reduction.

**Chronic Toxicity**

Any toxic effect on an organism that results after exposure of long duration (often 1/10th of the life span or more). The end result of a chronic effect can be death although the usual effects are sub-lethal (e.g., inhibited reproduction or growth). These sub-lethal effects may be reflected by changes in the productivity and population structure of the community.

**CMP**

Corrugated Metal Pipe

**CO**

Commanding Officer

**COD**

Chemical Oxygen Demand

A test that measures the amount of oxygen in water required for chemical oxidation of organic matter.

**Coliform Bacteria**

Organisms residing in the intestinal tracts of human beings and other warm-blooded animals. The presence of coliform bacteria indicates the presence of fecal contamination.

**Composite Sample**

A combined sample that is formed by combining a series of individual discrete samples of specific volumes at specific intervals. Samples must be collected during the first 3 hours of the stormwater discharge or for the entire discharge if it is less than 3 hours. The composite sample must be flow-weighted using a continuous sampler, or it must be taken as a combination of a minimum of 3 sample aliquots, taken in each hour of discharge, with each aliquot being separated by a minimum of 15 minutes, and with each aliquot volume being proportional to the flow at the time of the sampling.

**Critical Area**

A source area that has a high likelihood for the release of pollutants.

**Culvert**

A drain, usually a concrete or metal pipe, crossing under a road or an embankment.

**CWA**

Clean Water Act

Formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972. Enacted by Public Law 92-500 as amended by Public Laws 95-217, 95-576, 96-483, and 97-117; 33 U.S.C. 1251 et seq. It is the primary federal law in the U.S. governing water pollution.

**Detention**

The process of collecting and holding back storm water for later release to receiving waters.

**Director**

The Regional Administrator of EPA Region 9 or an authorized representative

**Dissolved Oxygen**

Oxygen that is present (dissolved) in water and therefore available for fish and other aquatic animals to use. If the amount of dissolved oxygen in the water is too low, then aquatic animals may die. Wastewater and naturally occurring organic matter contain oxygen-demanding substances that consume dissolved oxygen.

**DOD**

Department of Defense

**DODEA**

Department of Defense Education Activity

**DON**

Department of the Navy

**Dry Weather Flow**

Flow from anything other than a storm event; non-storm runoff (e.g., air conditioning condensate, landscaping overflow, etc.).

**EDOP**

Effective Date of Permit

**EISA**

Energy Independence and Security Act (2007)

**EPA**

Environmental Protection Agency

**EPCRA**

Emergency Planning and Community Right-to-Know Act

**EQA**

Environmental Quality Assessment

**Erosion**

Wearing away of rock or soil by the gradual detachment of rock or soil fragments by water, wind, ice, and other mechanical and chemical forces.

**Eutrophication**

The process by which a body of water becomes enriched with nutrients, especially nitrogen and phosphate, stimulating the growth of aquatic plants. Excessive plant growth tends to have undesirable effects such as closing streams and reducing water clarity. Also, when large numbers of plants decay, they consume disproportionate amounts of dissolved oxygen, reducing the amount of oxygen available for use by other aquatic life.

**Facility**

An industrial operation created to serve a particular function.

**Fecal Coliform**

See Coliform Bacteria

**FWPCA**

Federal Water Pollution Control Act

**GAC**

Granular Activated Carbon

**Geometric Mean**

An arithmetic average of the logarithmic values; obtained by combining all data points, computing the logarithm (the power to which a number is raised), taking the average (mean), and transferring it back to an arithmetic number.

**GEPA**

The Guam Environmental Protection Agency

**GIS**

Geographic Information System

**GP**

General Permit

**GPD**

Gallons per Day

**GPM**

Gallons per Minute

**Grab**

“Grab” or “discrete” sample. A discrete, individual sample collected from a single location within a short period of time (less than 15 minutes).

**Grated Inlet**

A storm drain inlet structure with a grate framework opening to allow storm water runoff to enter.

**Habitat**

The specific area or environment in which a particular type of plant or animal lives. An organism's habitat must provide all of the basic requirements for life and should be free of harmful contaminants.

**HAZMIN**

Hazardous Waste Minimization

**Health Risk**

The risk or likelihood that a person's health will be adversely affected.

**Herbicide**

A chemical agent that destroys or inhibits plant growth.

**HM**

Hazardous Material

Any substance or material that the Secretary of Transportation has determined "is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and is designated as hazardous under section 5103 of Federal hazardous materials transportation law" (49 U.S.C. 5103).

**HS**

Hazardous Substance

A broad term that includes all substances that can be harmful to people or the environment; toxic substances, hazardous materials and other similar terms are subsets of hazardous substances.

**HW**

Hazardous Waste

By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. They have at least one of four characteristics -- they are ignitable, corrosive, reactive, or toxic.

**I/I**

Infiltration and Inflow

Excess water that enters a sewer system. Since a sewer system can only handle a certain amount of wastewater at one time, excess flows can trigger overflows of raw wastewater. Inflow refers to water that unnecessarily flows into the system, for example, from manhole covers. Infiltration is water that seeps into the system through cracks and gaps in the pipes. Typically, inflow and infiltration are clean water not needing treatment.

**IDDE**

Illicit Discharge Detection and Elimination



**Illegal Dumping**

The illegal act of putting something other than storm water into a storm water system.

**Illicit Connection**

An unauthorized connection of a pipe carrying something other than storm water into a storm water system.

**Illicit Discharge**

Any discharge to a separate storm sewer that is not composed entirely of storm water except discharges pursuant to an NPDES permit and discharges resulting from firefighting activities.

**Impervious**

A surface that cannot be easily penetrated; for instance, rain does not readily penetrate asphalt or concrete surfaces.

**Insecticide**

A chemical agent that destroys insects.

**IP**

Individual Permit

**IPM**

Integrated Pest Management

**IRP**

Installation Restoration Program

**Land Use**

The way land is developed and used in terms of the types of activities allowed (agriculture, residences, industries, etc.) and the size of buildings and structures permitted. Certain types of pollution problems are often associated with particular land use practices, such as sedimentation from construction activities.

**LID**

Low Impact Development

**LIDAR**

Light Detection and Ranging

In reference through the SWMP this is a year 2012 dataset of elevations throughout Guam used to determine hydrological patterns and storm water system components.

**Materials Management**

Employ proper handling and storage (inventory control and material labeling) procedures to transport and store significant materials according to Federal, state, and local regulations (i.e., (1) use barrel cart or forklift to move drums; and (2) store significant materials in proper containers and in a covered area).

**MCM**

Minimum Control Measure

An enforceable and trackable measure that is required by the Permit.

**Measurable Goal**

A quantitative measure of progress in implementing a component of a stormwater management program

**MEP**

Maximum Extent Practicable.

The technology-based discharge standard for municipal separate storm sewer systems to reduce pollutants in stormwater discharges. A discussion of MEP as it applies to small MS4s is found at 40 CFR 122.34. CWA Section 402(p)(3)(B)(iii) requires that a municipal permit “shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system design, and engineering methods, and other provisions such as the Administrator or the State determines appropriate for the control of such pollutants.

**Metals**

Metals are elements naturally found in rocks and minerals that are released to the environment by weathering and erosion. This material can also be released as pollutants by human activity, as is the case for (heavy) metals, such as mercury, lead, nickel, zinc, and cadmium. These are of environmental concern because they are generally toxic to life above ‘trace’ concentration. Since metals are elements, they do not break down in the environment over time and can be incorporated into plant and animal tissue.

**MGD**

Million Gallons per Day

**Monitor**

To systematically and repeatedly measure conditions in order to track changes. For example, dissolved oxygen in a bay might be monitored over a period of several years in order to identify any trends in its concentration.

**MPP**

Monitoring Program Plan

**MS4**

Municipal Separate Storm Sewer System

A conveyance or system of conveyances (including roads, drainage systems, municipal streets, grated inlets, curbs, gutters, ditches, man-made channels, or storm drains) owned or operated by a state, city, or other public body, designed or used for collecting or conveying storm water. MS4s are not a combined sewer and are not part of a Publicly Owned Treatment Works (POTW). MS4s discharge directly into receiving waters. *(Source: PH)*

**NAD 83**

North American Datum 83

**NAVFACSYSCOM Marianas**

Naval Facilities Engineering Systems Command Marianas

**NAVFACSYSCOM Pacific**

Naval Facilities Engineering Systems Command Pacific

**NBG**

Naval Base Guam

**NGPC**

Notice of General Permit Coverage

**NIOSH**

National Institute for Occupational Safety and Health

**NOI**

Notice of Intent (for coverage under a general NPDES Permit)

**Non-NPDES States**

See NPDES. These states administer the NPDES program in the same manner as other NPDES states, except that they do not have the EPA-delegated authority to issue general permits. NPDES states that currently do not have general permitting authority are particularly hard pressed by the regulation's deadlines.

**Non-Point Source Pollution**

Pollution that enters water from dispersed and uncontrolled sources such as surface runoff. Non-point sources (e.g., forest practices, agricultural practices, on-site sewage disposal, street and paved area runoff) may contribute pathogens, suspended solids, and toxicants. While individual sources may seem insignificant, the cumulative effects of non-point source pollution are significant.

**Non-Storm Water Discharge**

Any discharge to storm water systems that is not composed entirely of storm water.

**NPDES**

National Pollutant Discharge Elimination System.

The national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the Clean Water Act.

Guam is not an NPDES State. USEPA Region 9 has NPDES permitting authority over the island. See Non-NPDES States.

**NPDES States**

NPDES States have NPDES permitting authority. The state agency administers and enforces the storm water program within the state. They may issue individual and general permits for industrial dischargers, including those that are developed as a result of the group application process. Having such authority does not, however, oblige a state to issue general permits (either baseline or group). States with general permitting authority may elect to issue only individual permits. Most states with general permitting authority are expected to use it.

Under the Clean Water Act, state NPDES programs must be at least as strict as the EPA's programs but may be more stringent. Several states have indicated that their program requirements will exceed the EPA minimums. Moreover, NPDES states may choose to promulgate baseline permits but are not required to do so.

**NPS**

Non-Point Sources

Diffuse sources from which contaminants originate to accumulate in surface water or groundwater. These sources can add to a cumulative problem with serious health or environmental consequences.

**NSDEPP**

Non-Storm Water Discharge Elimination and Prevention Program

**Nutrients**

Essential chemicals needed by plants or animals for growth. If other physical and chemical conditions are optimal, excessive amounts of nutrients can lead to degradation of water quality by promoting excessive growth, accumulation, and subsequent decay of plants, especially algae. Some nutrients can be toxic to animals at high concentrations.

**O&HS SC**

Oil & Hazardous Substance Spill Contingency

**O&M**

Operation and Maintenance

**OHS**

Oil and Hazardous Substance

**OJT**

On the Job Training

**Organics**

A broad term that includes numerous compounds which are derived (naturally or by man-made processes) from animal or vegetation sources or from petroleum. Typical organic matter would include fallen leaves, grasses, pollen, animal wastes, paper, other litter, oil and grease, gasoline, pesticide, and various synthetic products.

**OSHA**

Occupational Safety and Health Administration

**Outfall (Industrial)**

The point of discharge of storm water to adjacent property, to a municipal separate storm water system, or directly to waters of the United States. The outlet can be from a storm water system or drain system.

**Outfall (Non-Industrial)**

The outlet point of storm water discharges excluded from the NPDES industrial storm water program.

**Oxygen Demanding Materials**

Materials such as food waste and dead plant or animal tissue that use up dissolved oxygen in the water when they are degraded through chemical or biological processes. BOD is a measure of how much oxygen demand a substance has.

**Parameter**

A quantifiable or measurable characteristic. For example, height, weight, sex, and hair color are all parameters that can be determined for humans. Water quality parameters include temperature, pH, salinity, dissolved oxygen concentration, and many others.

**Pathogen**

An agent such as a virus, bacterium, or fungus that can cause diseases in humans. Pathogens can be present in municipal, industrial, and non-point source discharges.

**PCB**

Polychlorinated Biphenyls

**Percolate**

To pass through a permeable substance. For instance, septic effluent percolates through soil.

**Permeable Surfaces**

Surfaces, such as soil, that allow some percolation or infiltration of water into the ground and ultimately the groundwater system. This is in contrast to impermeable surfaces, such as concrete, that allow water to run off with little or no infiltration.

**Permit**

Naval Base Guam's Municipal Separate Storm Sewer System (MS4), No. GUS40000.

**Permittee**

The Department of the Navy, Joint Marianas Region.

**Pesticide**

A general term to describe chemical substances used to destroy or control organisms. Pesticides include insecticides, algicides, fungicides, and others. Many of these substances are manufactured and are not naturally found in the environment. Others, such as pyrethrum, are natural toxins which are extracted from plants and animals.

**pH**

Hydrogen-Ion Activity

The degree of alkalinity or acidity of a solution. A pH of 7.0 indicates neutral water, while a pH of 5.5 is acidic. A reading of 8.5 is alkaline or basic. The pH of water influences many of the types of chemical reactions that will occur in it. For instance, a slight decrease in pH may greatly increase the toxicity of substances such as cyanides, sulfides, and most metals. A slight increase may greatly increase the toxicity of pollutants such as ammonia.

**PID**

Photoionization Detector

**Pluvial**

Of or having to do with rain; formed by the action of rain.

**PM**

Project Manager

**PMP**

Pest Management Plan

**Point Sources**

Any discernible, confined and discrete conveyance, including but not limited to, any pipe, ditch, channel tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged.

**Pollutant**

A contaminant that adversely alters the physical, chemical, or biological properties of the environment. The term includes pathogens, toxic metals, carcinogens, oxygen-demanding materials, and all other harmful substances. With reference to non-point sources, the term is sometimes used to apply to contaminants released in low concentrations from many activities which collectively degrade water quality. As defined in the federal CWA, pollutant means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water.

**PPM**

Parts Per Million

**Primary Treatment**

A wastewater treatment method that uses settling, skimming, and (usually) chlorination to remove solids, floating materials, and pathogens, respectively, from wastewater. Primary treatment removes about 35 percent of BOD and less than half of the metals and toxic organic substances.

**Primary Treated Sewage**

Sewage that has undergone primary treatment.

**Priority Pollutants**

Substances listed by the EPA under the CWA as toxic and having priority for regulatory controls. The list currently includes metals (13), inorganic compounds containing cyanide and arsenic, and a broad range of both natural and artificial organic compounds (111).

**PRM/ PWO**

Public Works Officer

**PRMD/ DPWO**

Deputy Public Works Officer

**PRM1/ FMD**

Facility Management Director (FMD). May refer to the person, office, or their contractor.

**PRM2/ FEAD**

Facilities Engineering and Acquisition Division (FEAD). May refer to the person, office, or their contractor.

**PRM3**

Production Officer. May refer to the person, office, or their contractor.

**PRM4/ IEPD**

Installation Environmental Program Director (IEPD). May refer to the person, office, or their contractor.

**Receptors**

When referring to water quality, receptors are users of the water body, such as fish or humans ingesting fish that are affected by the condition of the water.

**Regulatory Framework**

A particular set of laws, rules, procedure, and agencies designed to govern a particular type of activity or solve a particular program.

**Representative Storm**

A storm event of greater than 0.1" of rainfall and at least 72 hours after the previously measurable (greater than 0.1" rainfall) storm event. Where feasible, the variance in the duration of the event and the total rainfall of the event should not exceed 50 percent from the average or median rainfall event in the area.

**Riparian**

Pertaining to the banks of streams, lakes, or tidewater.

**Riprap**

A foundation, wall, or revetment made of various sizes of rock placed irregularly in water or on the soft bottom of a water body.

**SDS**

Safety Data Sheet

**Secondary Treatment**

A wastewater treatment method that usually involves the addition of biological treatment to the settling, skimming, and disinfection provided by primary treatment. Secondary treatment may remove up to 90 percent of BOD and significantly more metals and toxic organics than primary treatment.

**Sediment**

Material suspended in or settling to the bottom of a liquid, such as the sand and mud that make up much of the shorelines and bottom of the ocean. Sediment input to streams and rivers comes from natural sources, such as erosion of soils and weathering of rock; or anthropogenic sources, such as forest or agricultural practices, or construction activities. Certain contaminants tend to collect on and adhere to sediment particles.

**Separated Sewer System**

A wastewater collection and treatment system where domestic and industrial wastewater is separated from storm water runoff. A separated system consists of independent sanitary wastewater and storm water systems. The storm water is discharged directly into open water and the sanitary wastewater goes to a treatment plant.



**Significant Materials**

Includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of Title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

**Significant Quantities**

The volume, concentrations, or mass of a pollutant in storm water discharge that can cause or threaten to cause pollution, contamination, or nuisance; adversely impact human health or the environment; and cause or contribute to a violation of any applicable water quality standards for the receiving water.

**Siltation**

The process by which a river, lake, or other water body becomes clogged with sediment. Silt can clog gravel beds and prevent successful salmon spawning.

**Small Municipal Storm Sewer System**

An MS4 that is not categorized as medium or large. In general, the population within a small MS4 area is less than 100,000 and includes systems similar to separate storm sewer systems in municipalities, such as at military bases, large hospitals, and prison complexes.

**Source Control BMP**

An effort to prevent or limit the exposure of significant materials to storm water at the source.

**Storm Drain**

A system of gutters, pipes, or ditches used to carry storm water from surrounding lands to streams, lakes, or the ocean, which is vulnerable to deliberate dumping or spills, and storm water runoff pollutants that can be generated through a variety of routine human activities. This term also refers to the end of the pipe where the storm water is discharged (i.e., Storm Drain Outlet).

**Storm Water**

Storm water runoff, surface runoff and drainage.

**Storm Water Discharge Associated with Industrial Activity**

The discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters; sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water.

**Surcharge**

This refers to a condition where the hydraulic capacity of a storm water system is temporarily exceeded (e.g., during a storm event).

**Surge**

A large mass of moving water, such as a wave or swell. Also a heavy, violent swelling motion, such as a surge of water through a storm drain during a heavy rain.

**Suspended Solids**

Organic or inorganic particles that are suspended in and carried by the water. The term includes sand, mud and clay particles as well as solids in wastewater.

**Swale**

A broad, shallow, vegetated channel. A swale is essentially a vegetated drainage ditch that has been engineered to collect and transport storm water in a way that allows the vegetation to filter sediments and pollutants.

**Toxic**

Poisonous, carcinogenic, or otherwise directly harmful to life.

**Trash**

Material considered worthless or offensive that is thrown away. Generally defined as dry waste material, but in common usage it is a synonym for garbage, rubbish, or refuse.

This definition of trash is not inclusive of non-man made materials such as vegetation and soil particles that are deposited into waterbodies naturally.

**Tributary**

A stream that flows into another.

**TSS**

Total Suspended Solids

The weight of particles that are suspended in water. Suspended solids in water reduce light penetration in the water column, can clog the gills of fish and invertebrates, and are often associated with toxic contaminants because organics and metals tend to bind to particles.

**Turbidity**

A measure of the amount of material suspended in the water. Increasing the turbidity of the water decreases the amount of light that penetrates the water column. High levels of turbidity are harmful to aquatic life.

**Urban Runoff**

A substance, such as rain, that runs off of surfaces in a watershed in excess of the amount absorbed by the surfaces (usually the ground). Urban runoff can contain sediments and contaminants (non-point source pollution) that can add to water quality degradation in the watershed. Increases in impervious surface usually result in increased urban runoff.

**Volatile**

Can be readily vaporized at a relatively low temperature.

**Watershed**

The geographic region from which water drains into a particular river or body of water. A watershed includes hills, lowlands, and the body of water into which the land drains. Watershed boundaries are defined by the ridges of separating watersheds.

**Weir**

A low dam built across a stream, primarily to control water level or to divert water into another facility. Also used to measure flow.

**Wetlands**

Wetlands are transitional areas between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is saturated with water or covered by shallow water at some time during the growing seasons each year.

**Zoning**

To designate by ordinances areas of land reserved and regulated for different land uses.

# 1. Introduction

## 1.1 The Clean Water Act

The CWA (Clean Water Act) is the common title for the FWPCA (Federal Water Pollution Control Act), 33 U.S.C. 1251 et seq. The CWA establishes programs to restore and protect the quality of waters of the US by eliminating the discharge of pollutants into surface waters. The CWA has a broad range of regulatory tools to attain this objective including permitting, determining limitations to be imposed on permitted discharges, a system for spill notification and response, and enforcement mechanisms.

### 1.1.1 Prohibition or Permitting of Discharge

The CWA contains the NPDES (National Pollution Discharge Elimination Program) to authorize and regulate discharges in compliance with the CWA. The discharge of new or additional pollutants to a navigable water, or water of the United States, by any person is prohibited unless permitted.

A pollutant is virtually any material, not merely acidic and toxic materials.

The burden of proof of compliant discharge is on the person allowing such discharge.

The term navigable water, or water of the United States, is broad and includes all territorial seas, all tributaries to these waters, and hydraulically connected waters adjacent to these waters (e.g. wetlands). In addition, waters within the 100-year floodplain and all waters located within 4,000 feet of the high tide line of navigable waters are also navigable waters if they have a significant ability to contribute flow to navigable waters.

Specific features including stormwater controls and artificial ponds are not navigable waters, but they can be a point source or outfall to such waters if they can overflow or intentionally discharge to such navigable waters. A point source is broadly defined as a discernable or discrete interface with a navigable water from which pollutants may be discharged. Point sources are not limited to pipes, culverts and similar outfalls. Point sources can include vehicles and equipment that may pollute navigable waters.

To combine local CWA regulations with the NPDES program, all wetlands, regardless of hydrological connectivity, within the MS4 area are considered navigable waters for this SWMP. Furthermore, areas that contribute to storm water controls that infiltrate or inject to ground water are subject to the same SWMP requirements as areas that contribute to controls that discharge to point sources.

### 1.1.2 NPDES Permit Program

An NPDES (National Pollution Discharge Elimination Program) permit gives the permittee the right to discharge specified pollutants from specified point sources called outfalls. This permit typically sets numerical limitations on authorized discharged pollutants as well as additional conditions.

The Territory of Guam has not received NPDES permitting authority and is a Non-NPDES State. Permits in Guam are issued by USEPA Regional Office 9. However, GEPA (The Guam Environmental Protection Agency) must certify that any discharge to be authorized by an NPDES permit will comply with the Guam Water Quality Standards and other local regulations. U.S. Naval Base Installations

also have to comply with any department wide and installation specific standards which may be more stringent than those required by an NPDES permit and local regulations.

**Example**

**Water Discharges Requiring a Permit**

- Discharges to the Fena Lake in Guam must be permitted because of the CWA as the lake outflows to the Talofofo River which in turn discharges to the territorial sea around Guam, a navigable water.
- Wetlands near NBG (Naval Base Guam) are generally navigable waters as they are adjacent to river tributaries that discharge to the Philippine Sea.
- Water holding structures used in the Apra Harbor Wastewater Treatment Plant are not navigable waters. The outfall pipe from this plant discharges to the Philippine Sea, a navigable water, and is therefore a point source.
- The interface where sheet flow runoff discharges into a navigable water, such as at a beach waterline, is generally not discernible and is not a point source. A discernible interface, such as the edge of a wharf, is a point source where discharge is not allowed unless permitted.

## 1.2 Naval Base Guam MS4 Permit

The DON (Department of the Navy) NBG (Naval Base Guam) Installation is authorized by USEPA Regional Office Number 9 to discharge water from its MS4 (Municipal Separate Storm Sewer System) through NPDES Permit No. GUS040000. The permit document is referred to as the Permit hereinafter, and may be found in Appendix A. The discharger information and permit dates are provided in Table 1 below.

Table 1: NPDES Permit No. GUS040000 Discharger Information and Permit Dates

<b>Discharger Name</b>	<b>Department of the Navy (DON)</b>
Discharger Address	Department of the Navy Naval Base Guam (NBG) PSC 455, Box 152 FPO AP, Guam 96540-1000
Facility Name	Municipal Separate Storm Sewer System (MS4)
Facility Location Address	Department of Defense Facilities on the Island of Guam
Facility Rating	Minor
This permit was issued on:	December 20, 2018; Mod April 8, 2020
This permit shall become effective on:	February 1, 2019
This permit shall expire at midnight on:	January 31, 2024

The Permit includes permitted area and facilities, prohibited non-stormwater discharges, conditions and limitations, asset management requirements, enforcement requirements, as well as the requirement for a SWMP (Stormwater Management Program) and all its modules.

This document describes the SWMP and is to be implemented upon submittal to USEPA Regional Office 9. Any revisions, additions, or modifications are enforceable components of the Permit.

### 1.2.1 SWMP Minimum Control Measures

The Permit objectives are the objectives of this SWMP. These are to reduce the discharge of pollutants from the MS4 to the MEP (maximum extent practicable), to protect water quality and to satisfy the water quality requirements of the CWA.

This SWMP document includes management practices; control techniques; system, design, and engineering methods; and other provisions required by the Permit and all overlapping local regulations.

Six MCM (Minimum Control Measures) are identified by the Permit and provide the framework for this SWMP. These MCMs provide a way to track SWMP progress and efficacy. See respective chapters for individual MCMs.

Table 2: Minimum Control Measures

MCM	Permit Section	SWMP Section
MCM 1 Public Education and Outreach	Section 3.1	Section 2
MCM 2 Public Involvement and Participation	Section 3.2	Section 2
MCM 3 Illicit Discharge Detection and Elimination (IDDE)	Section 3.3	Section 3
MCM 4 Construction Runoff Control	Section 3.4	Section 4
MCM 5 Post Construction Storm Water Management	Section 3.5	Section 5 Section 8
MCM 6 Pollution Prevention/ Good Housekeeping for Base Operation	Section 3.6	A component of many sections: Section 6 Section 7 Section 9 Section 10 Section 11

This SWMP encompasses all storm water and allowable non-storm water discharges to navigable waters within or surrounding the permitted area that are currently discharged at active and future outfalls. See Section 3 Illicit Discharge Detection and Elimination for a list of allowable non-stormwater discharges.

A portion of storm water runoff within the permitted area is also controlled by other CWA permits including the NPDES MSGP (Multi-Sector General Permit) for industrial facilities, NPDES CGP (Construction General Permit) for new construction activities over 1-acre, the GEPA (Guam Environmental Protection Agency) Clearing and Grading permits for new construction, and Class V Well UIC (Underground Injection Control) permits for stormwater. This SWMP reconciles the conditions and requirements of these permits and overlapping local regulations within the Permit's coverage area. If any applicable requirements are conflicting, the SWMP shall adopt the most

stringent requirement and activities performed in compliance with these requirements will be included in the MS4 annual report.

The SWMP is designed to be periodically reviewed for its efficacy. The SWMP is to be continuously updated to include any necessary corrections based on this review and any new or modified system assets.

### 1.2.2 Naval Base Guam Environmental Policy

All US Navy Installations implement the policy set forth by OPNAV-M 5090.1 (latest 3 September 2019) the Environmental Readiness Program. This may be accessed through <https://www.secnv.navy.mil/doni/default.aspx> under the “Manuals” tab. This program provides the legal, process, and funding mechanisms for all environmental related issues involving Navy activity (executive orders, Federal, State, Territorial regulations, strategic sustainability, etc.).

OPNAV-M 5090.1 Chapter 20 CLEAN WATER ASHORE directly overlaps with the SWMP by setting forth Navy wide policy to comply with all aspects of the CWA. While the Navy does not pay civil penalties for any non-compliance, the discharge of any pollutant that does not comply with effluent standards or procedural requirements is unlawful.

NBG Can be issued NOVs (Notice of Violation) by both GEPA and USEPA for the programs under their purview. Repeat or significant in magnitude or duration violations may result in placement as a SNC (significant non-compliance) status. The USEPA is authorized to seek monetary penalties from Federal installations for certain environmental media violations through the FFCA (Federal Facilities Compliance Act. It is therefore in the DON Navy’s best interest to maintain and improve compliance with all aspects of the CWA and this SWMP to strategically remain a good steward of the environment and limit or avoid NOVs. See Appendix B Enforcement Response Plan for the protocol to achieve this.

The NBG is committed to the development, implementation, and management of an EMS (Environmental Management System). This system includes the goal of compliancy with ISO 14001: 2015 Environmental Management Systems.

The EMS encompasses all Navy missions within the NBG fence line to assess the impact that every Sailor and civilian has on the environment while performing their daily duties. Objectives are continually developed, implemented, and revisited with the goal of ensuring compliance, preventing pollution and reducing the risk/ costs while accomplishing missions.

### 1.2.3 Appropriations

The Permit requirements are considered an Environmental Readiness Level 4 by OPNAV-M-5090.1: legal requirements derived from existing laws, regulations, etc. as applicable, and applies to Navy activities, platforms, and operations. This level is the absolute minimum requirement to achieve program compliance and therefore has the highest funding priority.

While new construction within the permitted area is regulated by this SWMP, almost all new construction is funded separately through MILCON (Military Construction) appropriations.

Management and development of this SWMP is primarily funded through O&M, N (Navy Operations and Maintenance) fund expenses. This includes Navy civilian salaries; training and education; supplies and materials; minor construction; travel; and recurring and non-recurring projects.

There is a potential for RDT&E (Research Development Test and Evaluation) appropriations to be used for CWA related information but is unlikely to be directly appropriated for an aspect of the SWMP.

“Reasonable service charges” may be paid to state or local authorities for to reimburse or pay for their efforts towards managing stormwater from NBG.

An annual fiscal analysis of the capital, operation, and maintenance expenditures needed, allocated and spent, including necessary staff resources will be developed. Each annual fiscal analysis will include the previous year’s expenditures and that resources required for the next year. Each analysis will include a description of the source of the funds proposed to meet the necessary expenditures. Each analysis will describe any circumstances that had led to a 25 percent or greater annual change for any budget line items. Each analysis will include a description of the staff resources required to meet the requirements of the Permit. These analyses will be provided in each annual report sent to USEPA.

#### 1.2.4 Local Regulatory Overlap

GEPA administers other programs of the CWA whose objectives overlap with the Permit. In general, all GEPA regulations that pertain to storm water management and water quality apply to the permitted area. GEPA must certify that all discharges from the permitted area comply with the Guam Water Quality Standards. All design, construction, and applicable maintenance work must be consistent with the 2006 CNMI and Guam Stormwater Management Manual. And new land-disturbing construction projects must obtain coverage under a Clearing, Grubbing, Grading and Stockpiling Permit.

Roadways must comply with the Guam Department of Public Works (DPW) standards regarding storm water. Design, construction, and applicable maintenance of roadways must be consistent with the 2010 Guam Transportation Stormwater Drainage Manual.

#### 1.2.5 Permitted Area Description

Several different commands and agencies may operate simultaneously anywhere within the permitted area. This SWMP provides direction for Permit compliance for every entity that may operate within this area.

##### 1.2.5.1 Overall Coverage Area

The permitted area includes the Naval Base Guam at Apra Harbor as well as the non-contiguous federally owned areas at Apra Heights, Navy Ordnance Annex, Nimitz Hill, and the Naval Hospital.

The following sections describe the general activities in these areas, their primary method of storm water disposal, and which navigable water(s) it directly or indirectly discharges to. The provided figures are for general high-level illustrations. Refer to SWMP Database for detailed information.



Various sub-areas have been divided for the purpose of presenting in this chapter. Naval Base Guam at Apra Harbor has been split into the Site III, X-Ray, Camp Covington, NEX, Victor, South Tipalao, Inner Tipalao, Uniform/ Tango, Shipyard, Marina and Orote sub-areas. The Naval Hospital area has been divided into the Hospital and Housing sub-areas. Navy Ordnance Annex has been split into four sub-areas to best describe the land use and its proximity to navigable waters.

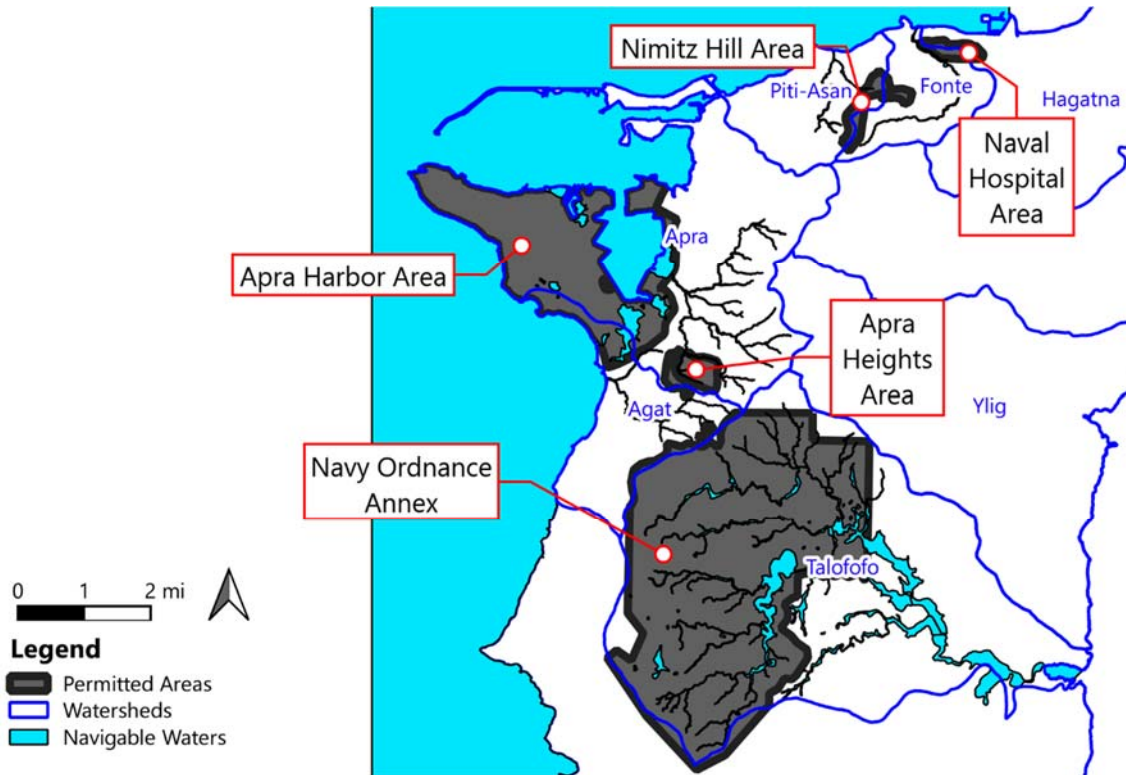


Figure 1: Overall Coverage Area

While the outfall database is thorough, it is anticipated that these will be renamed to match the Industrial NPDES permit or vice versa for convenience. However, many outfalls enumerated in the industrial NPDES permits may be a junction to the overall MS4 as opposed to a terminus directly discharging to a navigable water.

Subbasins shown in the following figures are primarily derived from 2012 1m resolution LIDAR data, and data collected on the permitted area's storm water system. These subbasins are to be redrawn if future data shows any to be in error.

1.2.5.2 Apra Harbor, Site III

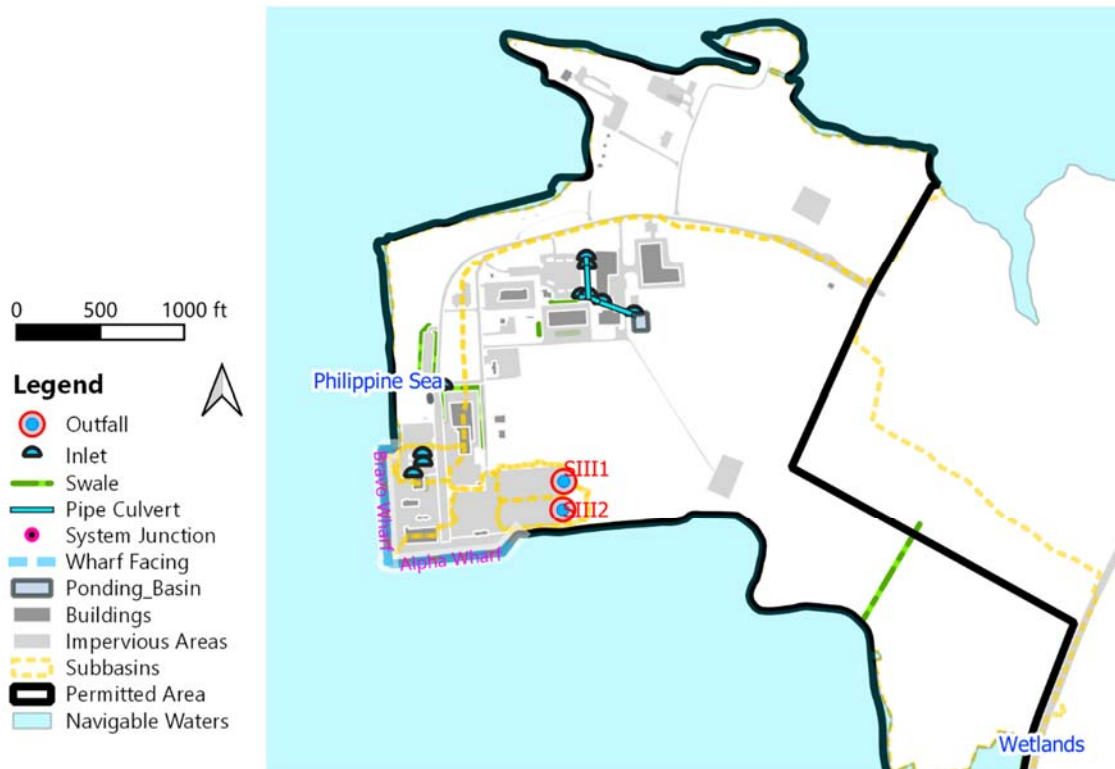


Figure 2: Apra Harbor, Site III

Site III, formerly known as Polaris Point, is a man-made peninsula protruding from the eastern shore of Apra Harbor. This is the location of the Submarine Refit Site and assigned submarine tender. This is the primary point of intermediate maintenance activity and repair support for submarines deployed in the western Pacific.

Flow from Alpha and Bravo Wharves discharge directly off the wharf facings to the Philippine Sea. The central Site III area primarily ponds and sheet flows in the mostly undeveloped area to the south-east. New construction on site comply with Navy LID policy which tends towards on-site storm water retention. The northern area of site III is primarily recreational. Storm water in this area sheet flows into the Philippine Sea.

Building 4430, Emergent Repair Facility, is covered by an industrial NPDES permit.

1.2.5.3 Apra Harbor, X-Ray

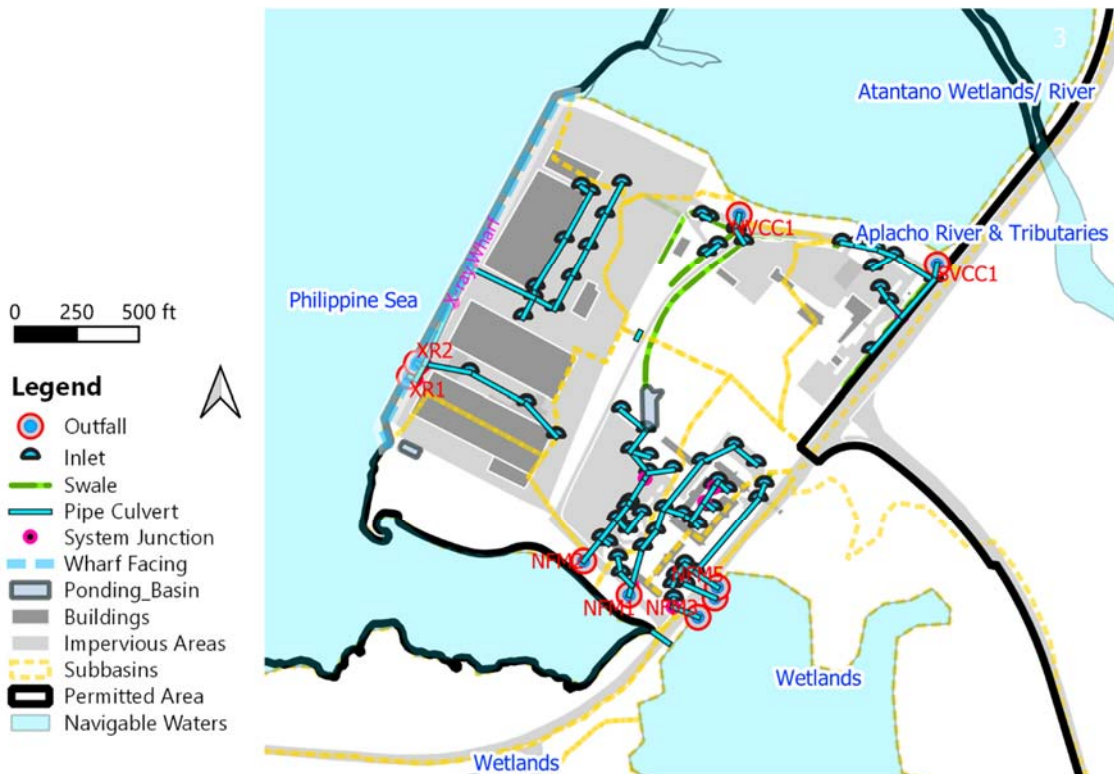


Figure 3: Apra Harbor, X-Ray

The X-Ray sub-area includes the Visitor Control Center, surrounding facilities (bank and storage structures), and parking lots which directly discharge to the Atantano Wetlands. These wetlands have a direct hydrological connection to the Philippine Sea.

NAVFACSYSCOM MARIANAS/ administration facilities are located in the southern portion of this sub-area. Stormwater in this area is generally collected through inlets and discharged to the wetlands in the south or directly to the Philippine Sea through the NFM outfall series. The southern wetlands have a direct hydrological connection to the Philippine Sea.

The X-Ray Wharf itself holds large storage facilities, and a battery recharging shop that is covered by an industrial NPDES permit. Most storm water from this area is collected in inlets and discharged to the Philippine Sea through outfalls XR1 and XR2.

X-Ray is undergoing major reconstruction to become a refueling wharf. This SWMP and its database will require updates to reflect new stormwater BMPs.

1.2.5.4 Apra Harbor, Camp Covington

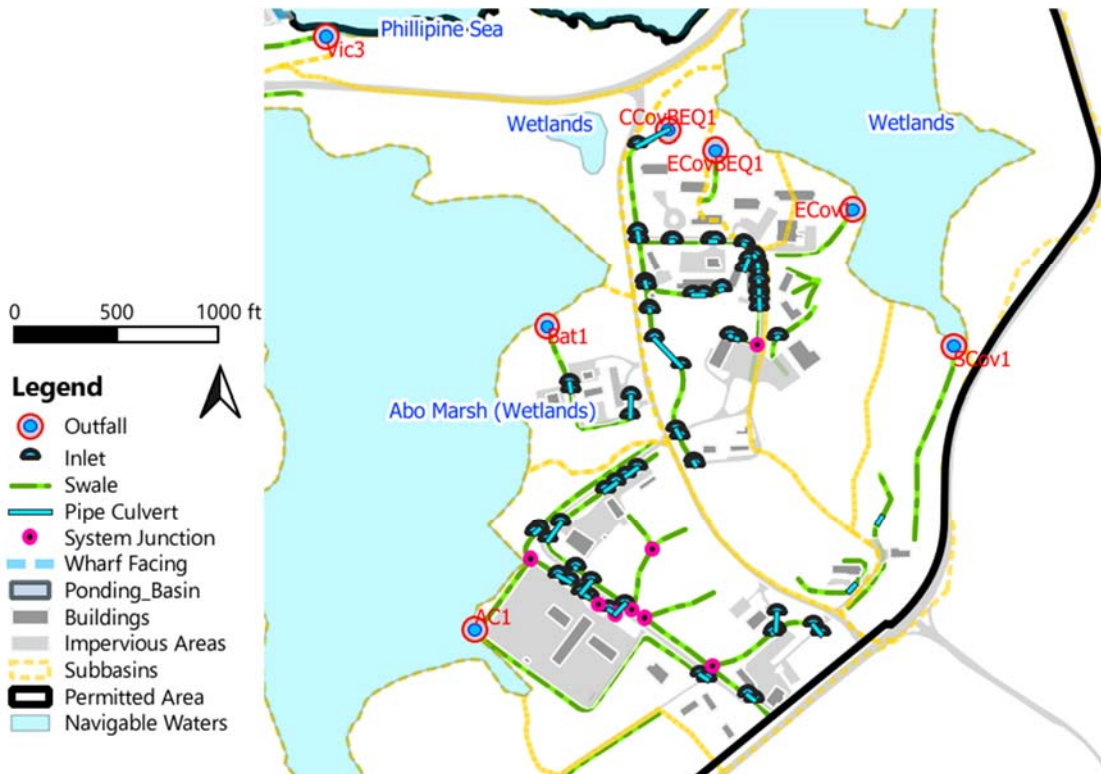


Figure 4: Apra Harbor, Camp Covington

Camp Covington contains a full range of facilities and related land uses to support a construction battalion.

This eastern portion of this sub-area includes bachelor's quarters, dining, lounge, laundry and administration facilities. Stormwater is collected through a network of swales and inlets and discharged to the wetlands to the northeast. These wetlands have a direct hydrological connection to the Phillipine Sea.

The western portion of this sub-area includes primarily industrial uses including vehicle and steel maintenance facilities and shops. Industrial facilities here are covered by an Industrial NPDES permit. Stormwater from these areas primarily enter a network of concrete and grass-lined swales and discharge to the Abo Marsh through outfalls AC1 and Bat1. Abo Marsh does not typically have a direct hydrological connection to the Phillipine Sea.

1.2.5.5 Apra Harbor, NEX

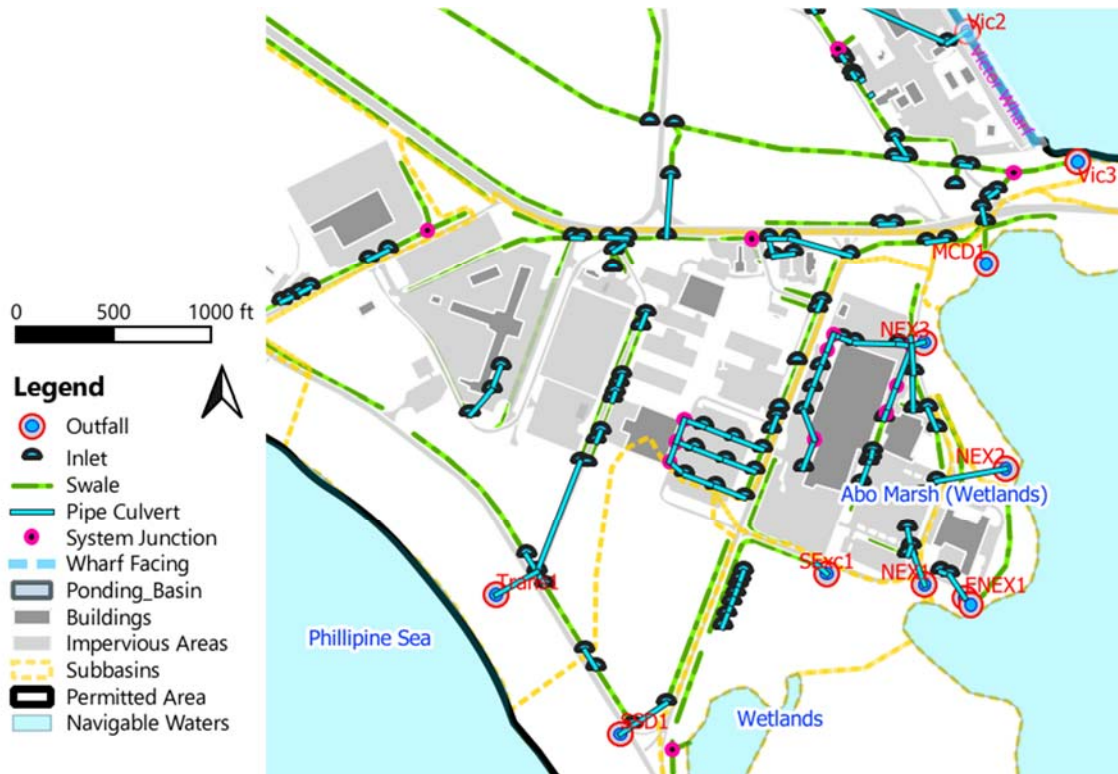


Figure 5: Apra Harbor, NEX

This eastern portion sub-area is the primary commercial area within NBG containing the main NEX stores and auto service station. Storm water in this area is collected through inlets and discharged through outfalls into the Abo Marsh. Abo Marsh does not typically have a direct hydrological connection to the Phillipine Sea.

West of this area is the Transportation Maintenance Facility which is covered by an Industrial NPDES permit. Runoff from this facility mostly flows into the swale system to the north which is connected to outfalls which discharge to Abo Marsh and the Phillipine Sea. The impervious area east of this facility is generally collected in a swale and pipe system that runs south and discharges to the Phillipine Sea.

The Naval Base Guam Landfill is located to the south of this area (not shown) runoff from the landfill primarily discharges to the Abo Marsh.



1.2.5.6 Apra Harbor, Victor



Figure 6: Apra Harbor, Victor

This sub-area contains a very large swale and culvert system that receives storm water runoff from the Apra Harbor Waste Water Treatment Plant, Hazardous Waste Conforming Storage Facility, and DLA Disposition Services Building (hosts many materials and equipment outside for auction.) All of these facilities are covered by Industrial NPDES permits. Some runoff from the MWR and barracks area far to the northwest (shown in Figure 7) warehouses to the east and most runoff from the security admin facilities to the south also enter this system. This system primarily discharges to the Phillipine Sea through outfall Vic3.

Victor Wharf contains multiple warehouses and the Coast Guard Complex, which is also subject to the requirements of this SWMP. Runoff from these areas either directly sheet flow and discharge to the Phillipine Sea or are collected in small inlet or swale systems prior to discharging to the same.

Victor Wharf is the future location for the U.S. Marine Corps Embark (Sumay Road- Harbor Drive) and FRC Homeport U.S. Coast Guard Sector Guam Facilities. Outfall locations may be altered during and after construction.

1.2.5.7 Apra Harbor, South Tupalao

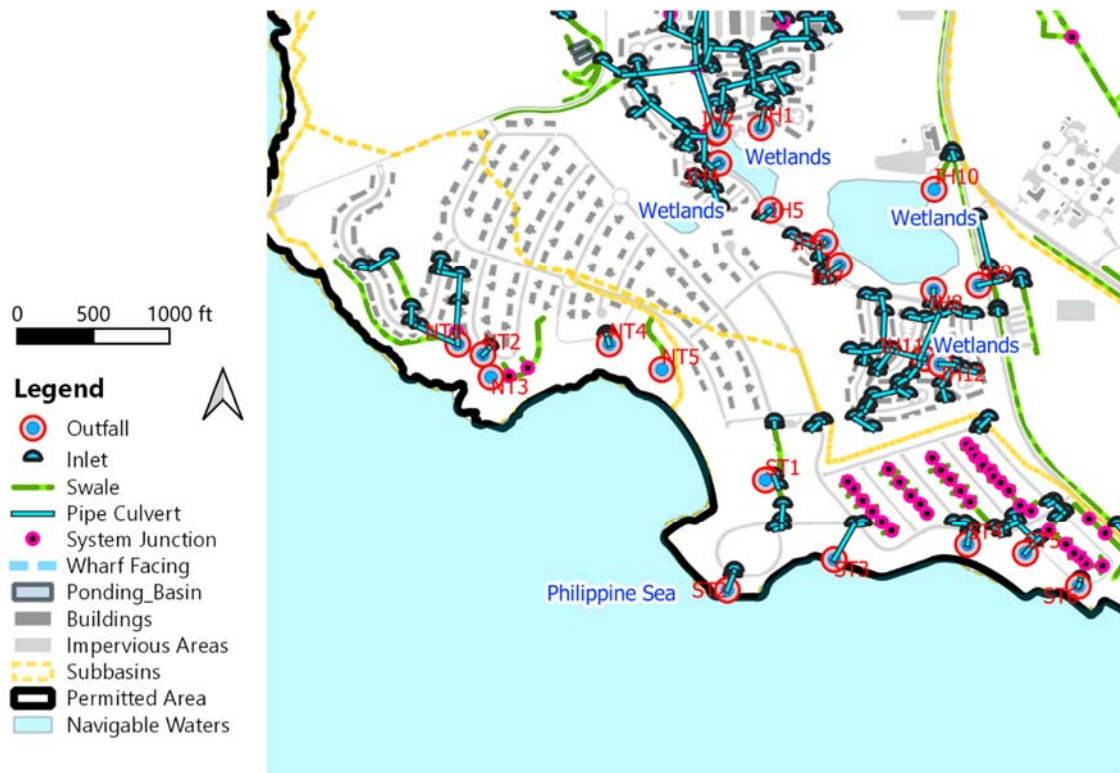


Figure 7: Apra Harbor, South Tupalao

This area is residential. Storm water collects in multiple swale and inlet systems and discharges through multiple outfalls into the Philippine Sea to the south.

The southern border of this area is generally the highest terrain within Apra Harbor and continues towards the northwest tip of Orote Peninsula.

1.2.5.8 Apra Harbor, Inner Titalao



Figure 8: Apra Harbor, Inner Titalao

This area contains housing and commercial or community complexes such as a movie theater, Child Development Center, youth center, gym, and a bowling facility. Storm water from these areas primarily collect through a swale, inlet and pipe network and discharge to land-locked wetlands through multiple outfalls. These wetlands are not typically hydrologically connected to the Philippine Sea.

Storm water from a quarry to the east of this area appears to discharge to its own network of swales and two ponding basins.



1.2.5.9 Apra Harbor, Uniform/ Tango



Figure 9: Apra Harbor, Uniform/ Tango

This sub-area contains a large swale, inlet and culvert system that collects from Lockwood housing area, a portion of McCool’s Elementary School, Operational Storage, NEX Gas Station, and most of the warehouses within the Uniform and Tango wharves area. This system discharges to the Philippine Sea through outfall UniTan1.

1.2.5.10 Apra Harbor, Shipyard

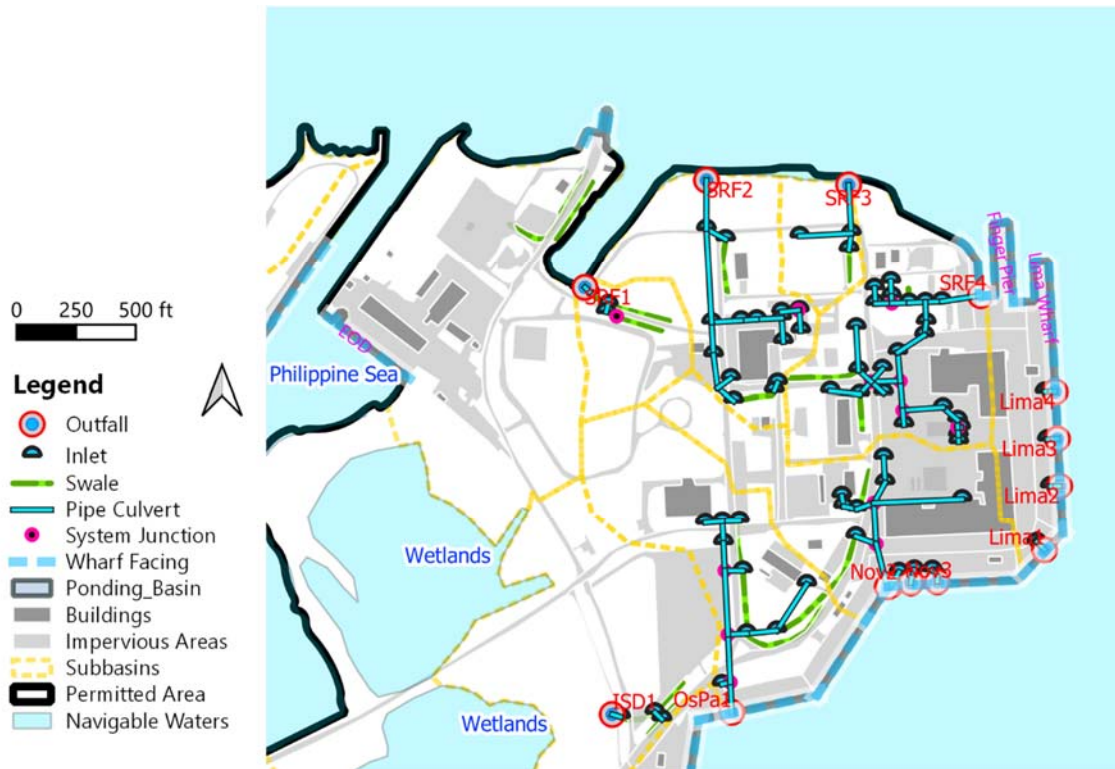


Figure 10: Apra Harbor, Shipyard

This sub area primarily contains the SRF (Ship Repair Facility) and the Navy EOD (Explosive Ordnance Disposal) Facility.

The SRF is currently inactive but remained covered under NBG’s MSGP permit. Former industrial activities in the area include welding, equipment repair, painting, and hazardous waste processing and disposal. An exposed scrapyards exists south of the northern most finger pier (Machinist Dry Dock). The SRF has a network of inlets, swales and outfalls that dispose of storm water to the Philippine Sea. However, it is noted in the facility industrial SWPPP (Storm Water Pollution Prevention Plan) that most runoff is disposed of through sheet flow over the wharves’ facings.

Lima, Mike and November Wharves are planned for modernization which may alter current outfall locations in the area.

Storm water at the EOD facility to the west entirely sheet flows to the Philippine Sea.

1.2.5.11 Apra Harbor, Marina

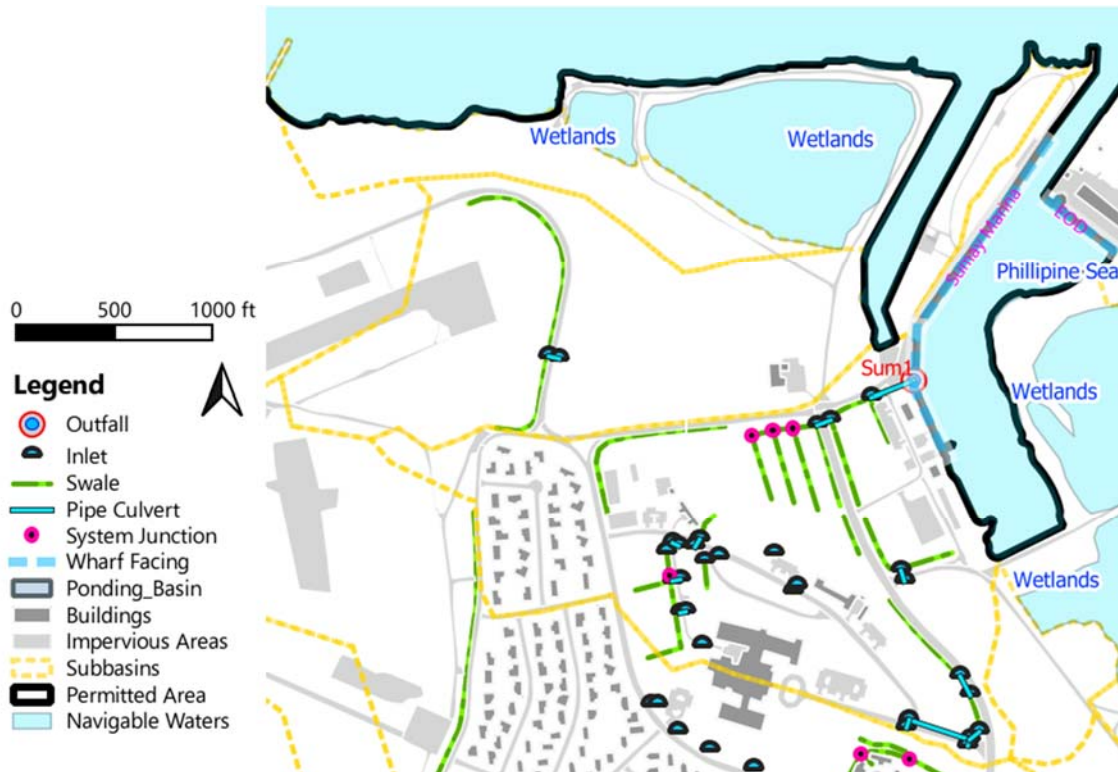


Figure 11: Apra Harbor, Marina

Storm water from the northern tip of the Lockwood housing area and a portion of McCool's Elementary School flows to the outfall Sum1 and discharges to the Philippine Sea. This is primarily done through a large drop in elevation and a network of swales.

The Sumay Marina has industrial facilities for the support of Marina patrons and is covered by an Industrial NPDES permit. Storm water in this area generally sheet flows to the Philippine Sea.

San Luis Beach is located north of the two wetlands at the top of this figure. Storm water in this area sheet flows to either the wetlands or the Philippine Sea. These wetlands are considered hydrologically linked to the Philippine Sea via its proximity.

1.2.5.12 Apra Harbor, Orote

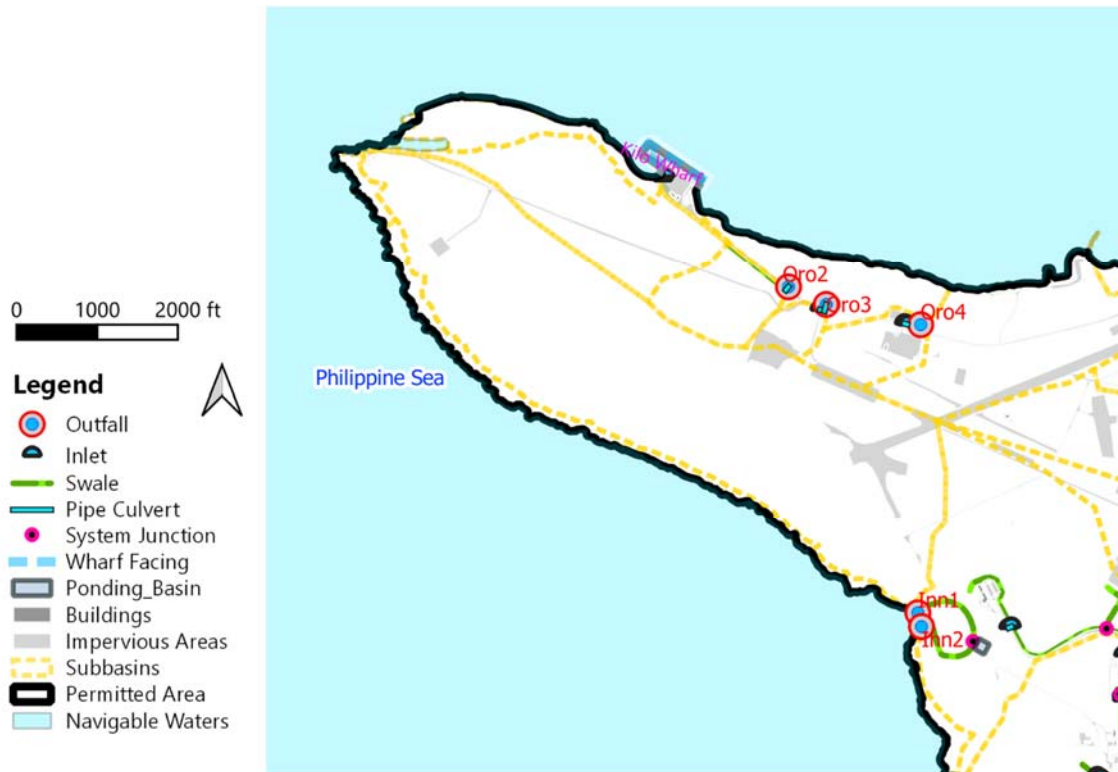


Figure 12: Apra Harbor, Orote

This sub-area is primarily undeveloped and storm water generally flows from south to north, discharging at the Philippine Sea.

Kilo/ Ammunition Wharf is located to the north. The facilities at this wharf support the administration, fire protection, and loading of ammunition onto ships that berth at the wharf. These facilities are covered by an Industrial NPDES permit. Storm water in this area sheet flows to the Philippine Sea.

1.2.5.13 Navy Hospital

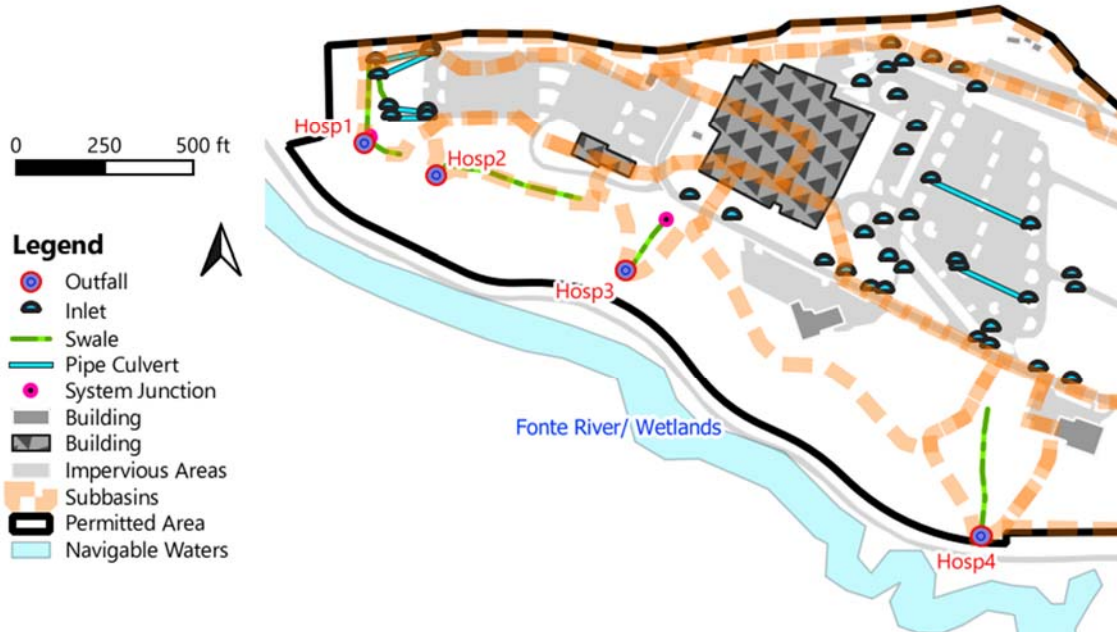


Figure 13: Navy Hospital

The Navy Hospital and support facilities are covered by an Industrial NPDES permit. The hospital has been reconstructed in 2015 and includes a system of inlets and pipes leading a retention basins and collected into a holding tank. The stormwater is then recycled as landscape irrigation. A series of inlets are located along the southern road of this sub-area that drain downhill into the Fonte River. The small, northern end of the sub-area sheet flows to the Hagatña subbasin.

Outfalls to the Fonte River could not be physically located on top of the plateau. Outfalls shown are assumed through channels apparent in LIDAR.



1.2.5.14 Navy Hospital Housing

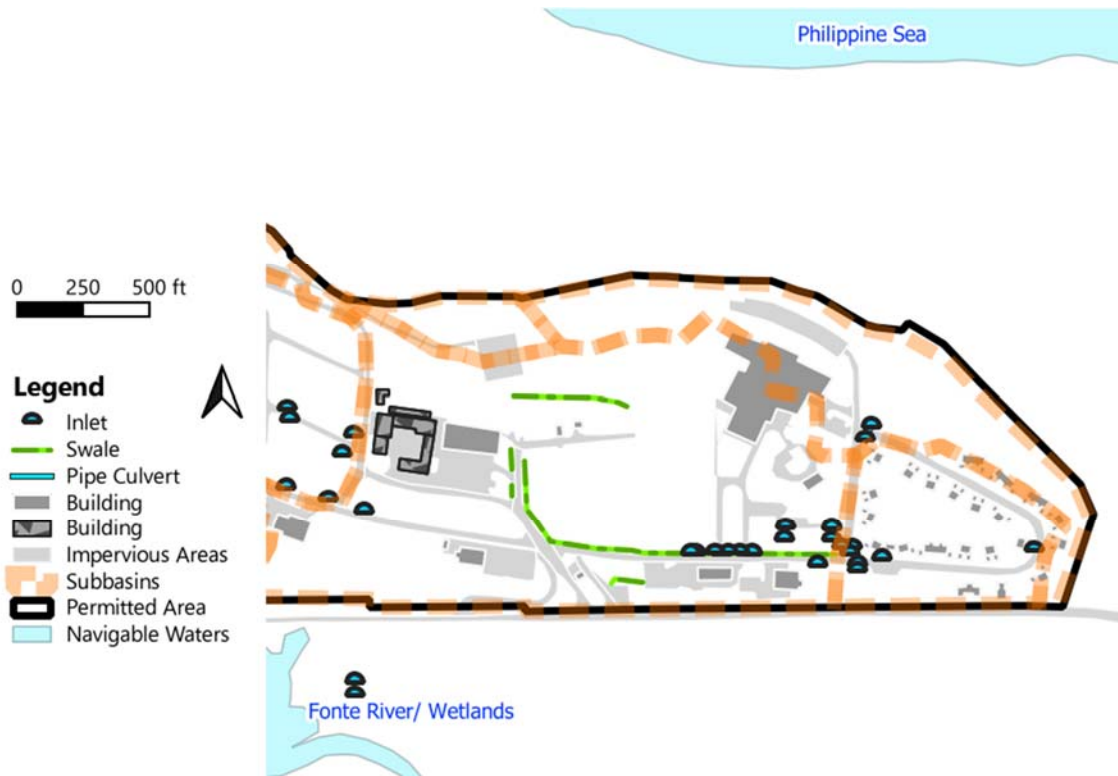


Figure 14: Navy Hospital Housing

The west of this sub-area includes a small industrial complex with a fire station and auto repair shop and a NEX store. The largest structure in this area is the Guam High School. The east of this area includes housing.

Storm water runoff around the school is primarily disposed of through UIC wells. A portion of runoff in other areas will sheet flow to the Non-DOD lands surrounding this area.

1.2.5.15 Nimitz Hill

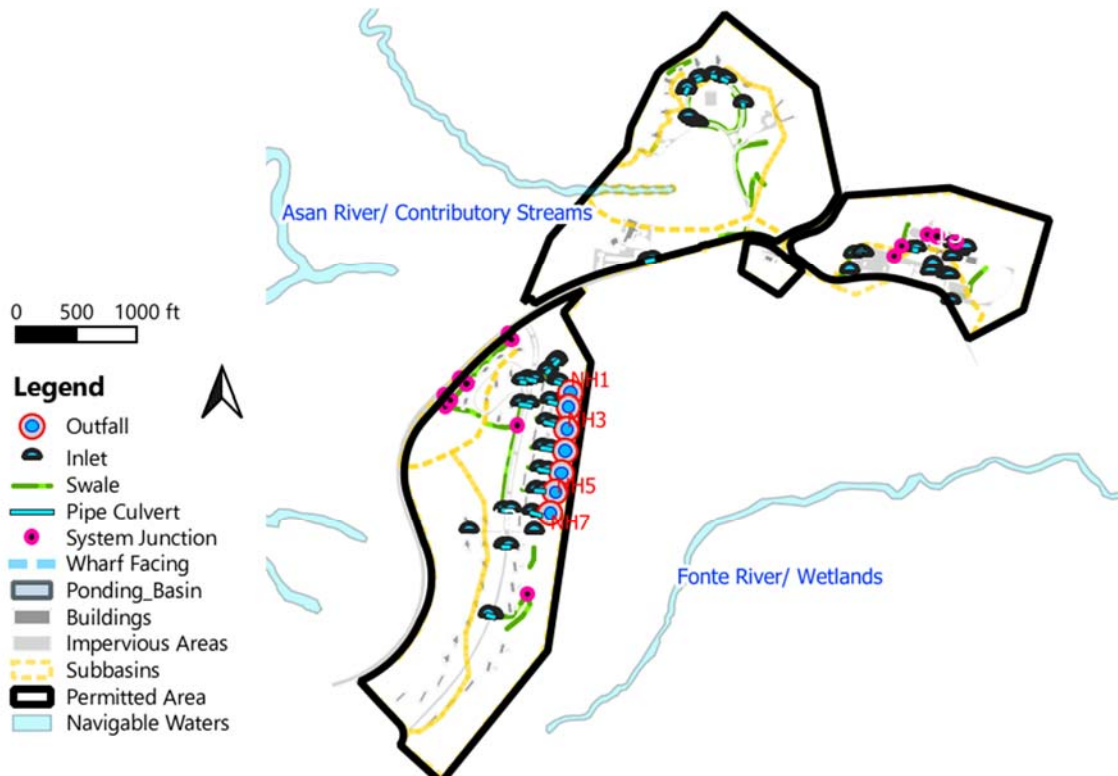


Figure 15: Nimitz Hill

The eastern most permitted area in this figure are administrative complexes used by NFM. A collection of swales, inlets, culverts are located here – as well as a ponding basin. Storm water in this area is expected to pond and percolate or sheet flow into surrounding Non-DOD lands and towards the Fonte River.

The northern most permitted area is Flag Circle (north) and Top-of-the-Mar (south). This is primarily an officer’s housing area. Stormwater in Flag Circle is expected to pond and percolate through its system of swales and surround pervious areas. Top of the Mar partially drains to the Asan River through sheet flow.

The southern-most permitted area is the old, currently inactive, Y-Puntan housing area. The eastern section of this area contains a system of swales, culverts and outfalls which contribute storm water to the Fonte River. Housing structures in this area have been demolished. The western section of this area may sheet flow towards the Asan River.

1.2.5.16 Apra Palms and Apra View

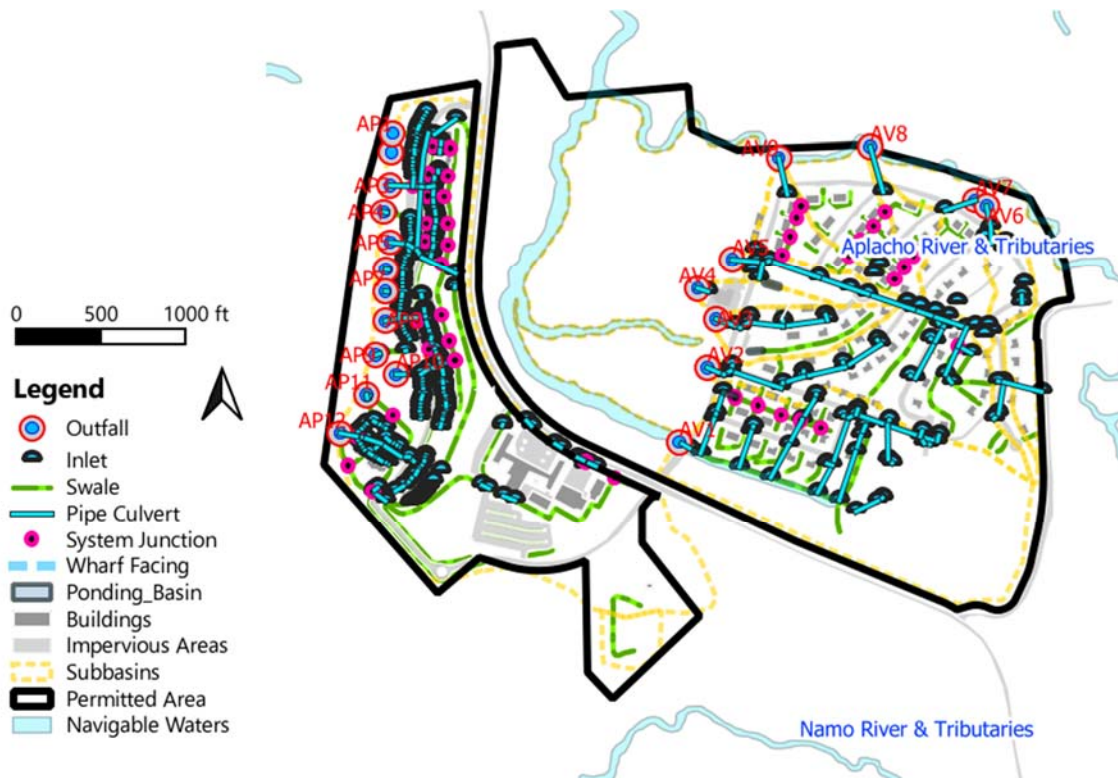


Figure 16: Apra Palms and Apra View

The western permitted area is the Apra View housing area. This area consists of a network of inlets, pipes, swales, and outfalls that all contribute to the Aplacho River.

The eastern permitted area is the Apra Palms Navy Gateway Inns and Suites area and an administrative complex (previously a school and now used by NFM and the BOS contractor). Storm water here generally collects in a network of inlets, pipes, swales and outfalls that discharge at the eastern border of this area. Approximately 2000-feet of vegetated Non-DOD land is between these outfalls and the Namu River.



1.2.5.17 Navy Ordnance Annex 1

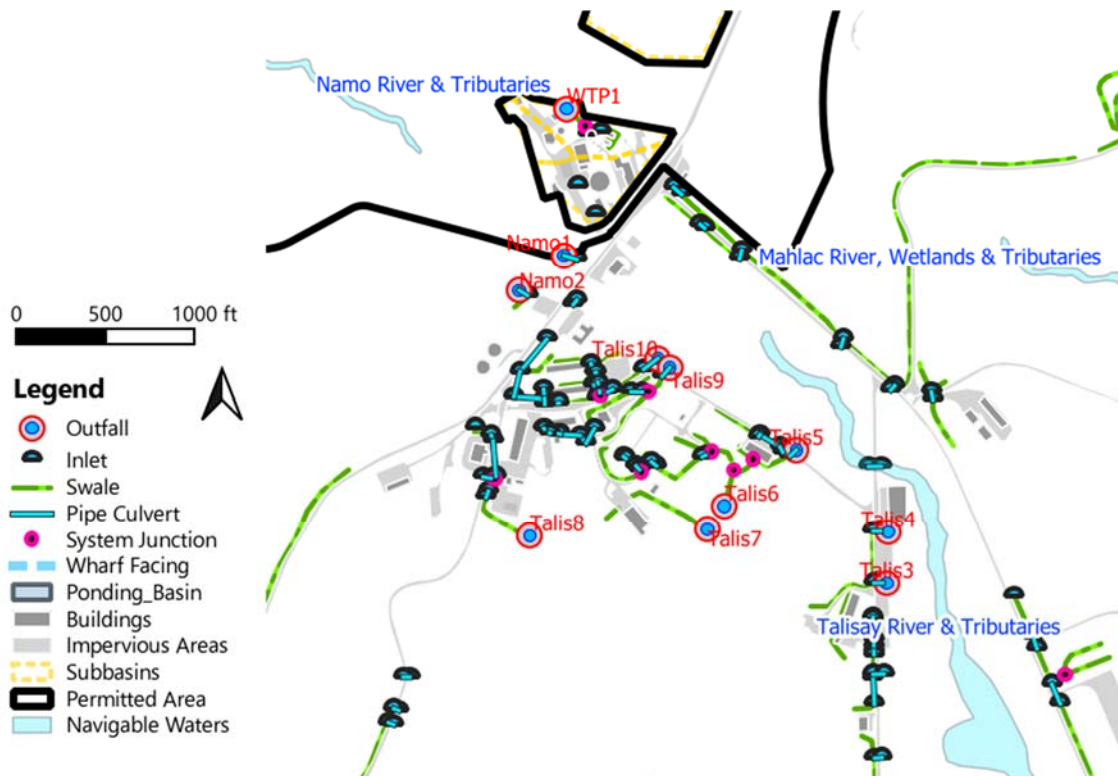


Figure 17: Navy Ordnance Annex 1

The small permitted area to the north is the Fena Water Treatment Plant which is covered by an Industrial NPDES permit. Storm water in this area sheet flows northwest towards the Namo River (approximately 500 to 2000-feet away).

The remainder of the permitted area shown is the entrance to Navy Ordnance Annex/ Naval Magazine. All industrial facilities within the annex are covered by an Industrial NPDES permit. Facilities in this permitted area include hazardous waste storage, battery maintenance and charging, various ammunition and weaponry support magazines and facilities, firing ranges, and barracks and their support facilities.

The storm water system in the area shown is typical throughout the annex, which is primarily a system of swales around roads and facilities, and culverts at any road and river crossing. Swales terminate at low points which drain to the nearest down-gradient river.

1.2.5.18 Navy Ordnance Annex 2

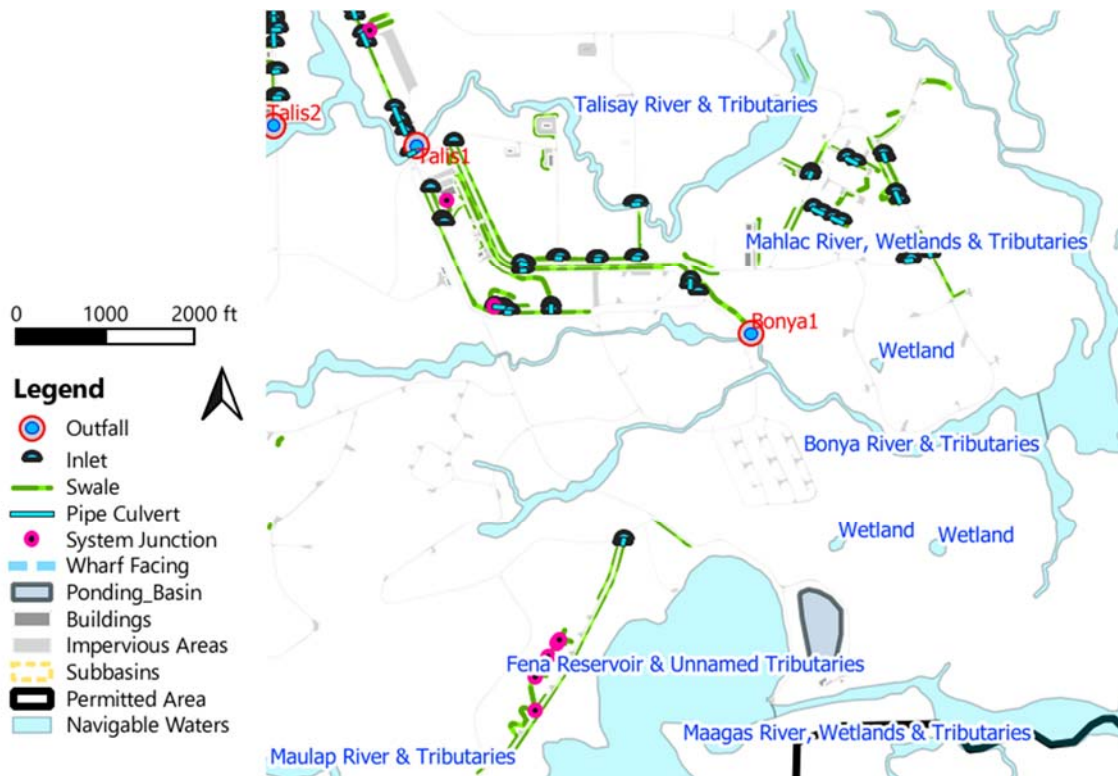


Figure 18: Navy Ordnance Annex 2

This is a southwestern continuation of Figure 17. The Fena Reservoir is shown to the south. Water from this reservoir is collected and pumped to the water treatment plant for processing to potable water. Most facilities within the annex do not contribute to reservoir, instead contributing to Talisay, Bonya, and Mahlac rivers.

1.2.5.19 Navy Ordnance Annex 3

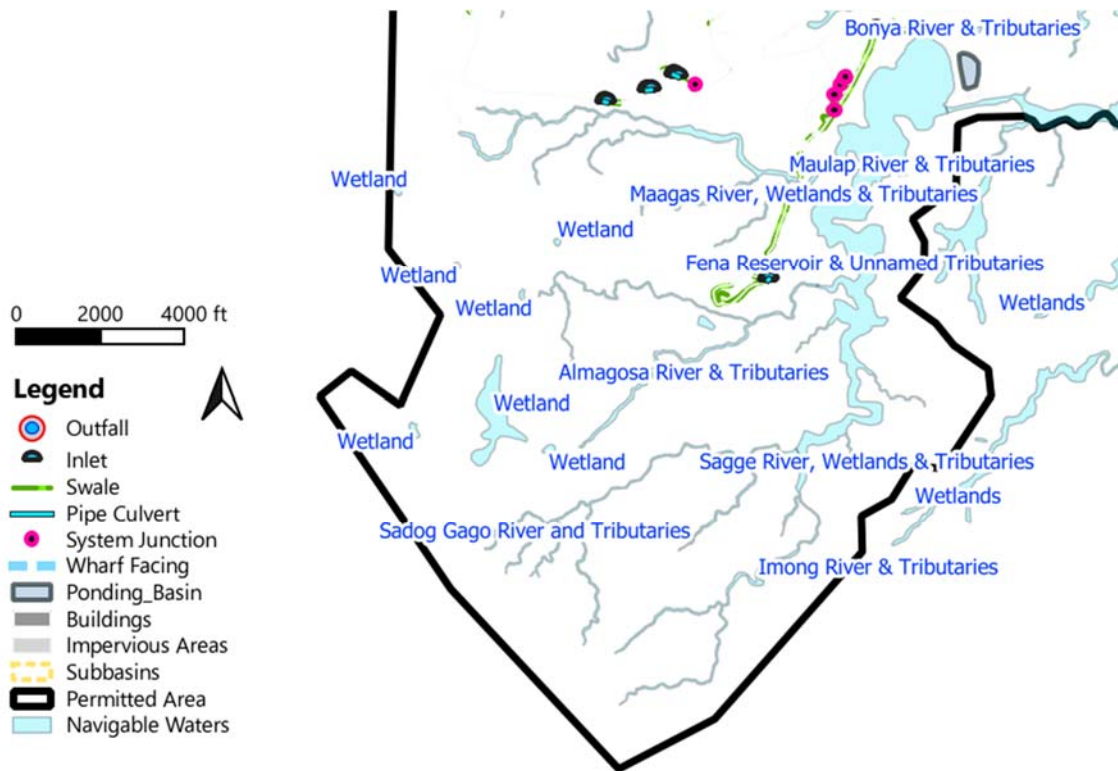


Figure 19: Navy Ordnance Annex 3

The southern half of the annex is nearly entirely undeveloped. The river systems in this area contribute to the Fena Reservoir.

1.2.5.20 Navy Ordnance Annex 4

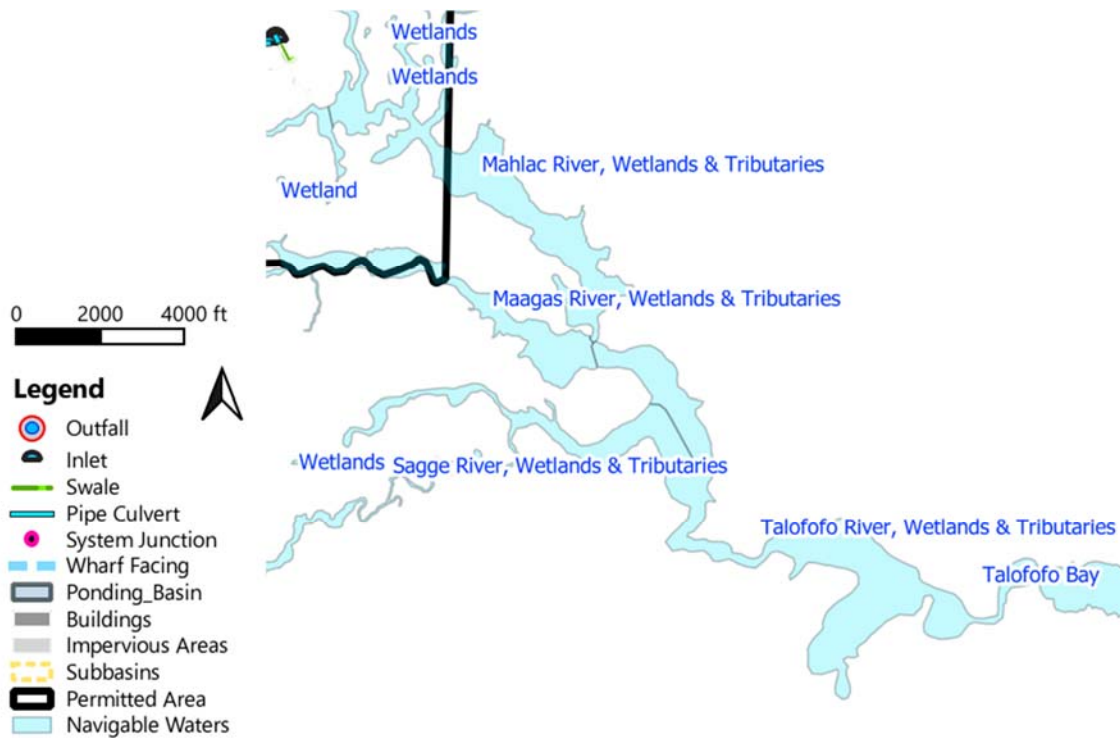


Figure 20: Navy Ordnance Annex 4

This figure shows the eastern most border of the annex. The Fena Reservoir discharges to the Maagas River, whereas the more developed northern part of the annex ultimate discharges to the Mahlac River. Both rivers join at the Talofofo River which discharges to Talofofo Bay and ultimately the Pacific Ocean.

1.2.6 Allowable Discharges

Stormwater discharge in compliance with the Permit is authorized until the Permit's expiration.

Non-stormwater discharges (e.g. irrigation water, air condition condensate) listed in Section 1.3 of the Permit are only prohibited if they are identified as significant sources of pollution to or from the MS4. Refer to Section 3.1.1 of the SWMP for allowable non-storm water discharges and their conditions.

1.2.7 Permittee

The DON NBG is the permittee under the Permit. Refer to Figure 21 for a general overview of the SWMP organization. All tenants of the permitted area are subject to the rules and regulations of this SWMP. The following subsections describe the general roles and responsibilities within DON NBG.

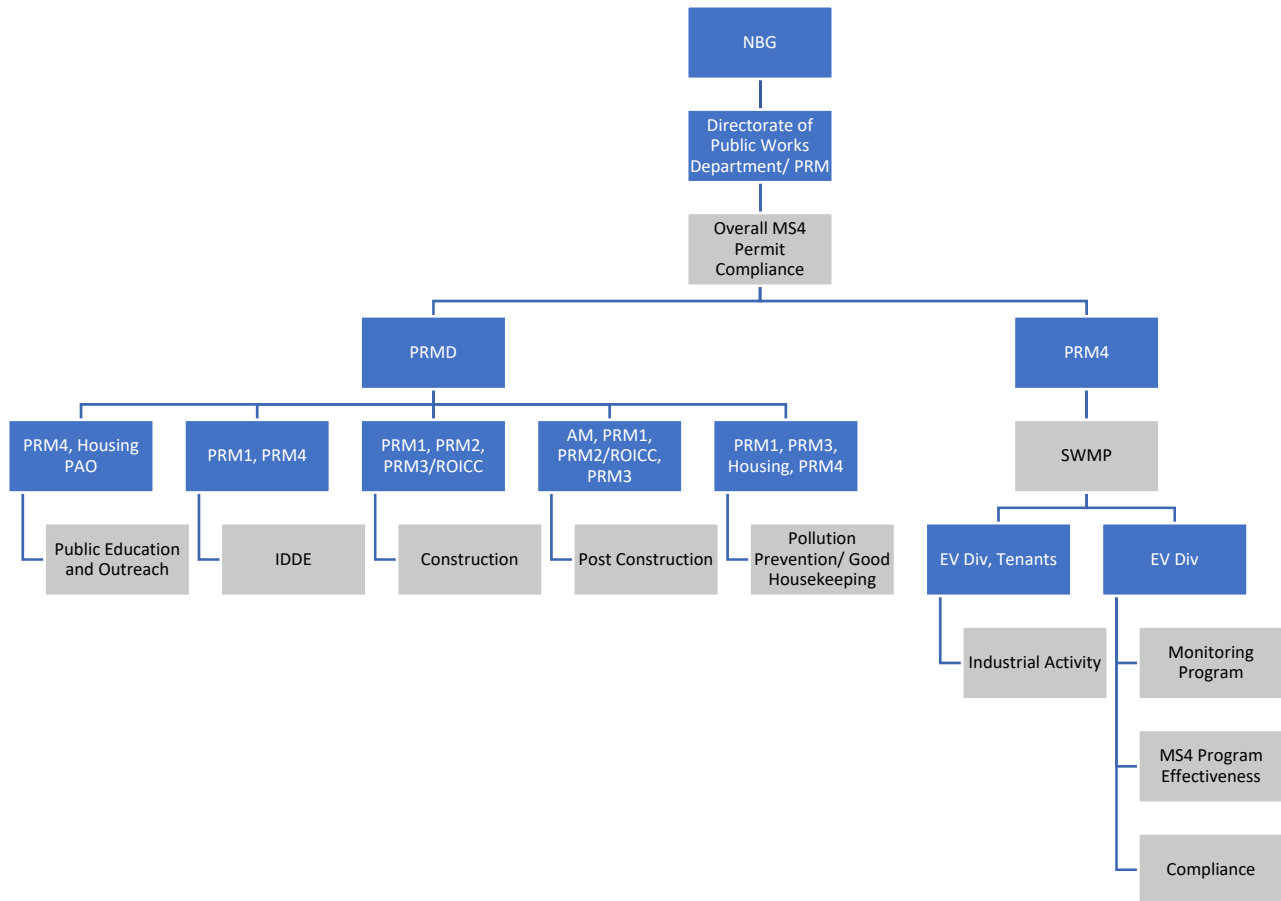


Figure 21: Overall Organizational Chart

1.2.7.1 PRM -Public Works Office

- Provides legislative review of environmental regulations and impacts to the DON organizations.
- Develops environmental policies pertaining to the clean water act, including stormwater management, for the DON organizations.
- Provides funding and legal support on stormwater compliance and other related issues
- Represents DOD actions and acts as liaison to other federal agencies and local government
- Approves of incentives or disincentives to permit violators to reduce violation recidivism.

1.2.7.2 PRMD - Deputy Publics Works Office

- Oversee PRM1, PRM2, and PRM3 Operations
- Assist PRM and PRM4 in overall MS4 Permit Compliance and implementation of the Stormwater Management Program.

1.2.7.3 PRM 1 - Facilities Management Director

- Reviews new construction plans for consistency with the SWMP.
- Manages stormwater asset database and maintenance.

1.2.7.4 PRM 2 -Facilities Engineering and Acquisition Division (FEAD/ ROICC)

- Oversees and manages construction and construction contractors. Has primary responsibility of enforcing contract requirements, including CGP (Construction General Permit), Comprehensive SWPPP and SWMP requirements.
- Inspects active construction sites and issues NOVs (Notice of Violation) as necessary.
- Maintains MS4 stormwater database for active construction sites. Relays information to EV Div.

1.2.7.5 PRM 3 -Production Office

- Provides support, response, and planning for specific stormwater features when triggered/ flagged by various reporting events that may be required through the SWMP.

1.2.7.6 PRM 4 – EV Div, Specific Facility Manager, et al.

- PRM4, may refer to the person, office, or their qualified contractor, and are responsible for all components of this SWMP. This includes inspections, asset management, monitoring and sampling, and public outreach.

1.2.7.7 EV Div – NBG EV Division or Contractor

- Supports PRM4 in the implementation of the SWMP.
- Compiles data and reports (generated in-house or by a contractor) and submits to regulatory agencies

1.2.7.8 Housing

- Provide support in the distribution of educational materials, survey questionnaires and implementation of the enforcement response plan.

## 1.2.8 Revisions and Updates

US EPA may notify NBG of the need to modify this SWMP document. NGB must make changes to the SWMP and this document within 90 days of notification. This document must remain up to date during the term of the permit.

This SWMP document may be modified to address any procedural, protocol, or programmatic change at the behest of NBG, particularly to address outcomes of measurable goals. Such modifications must be made as soon as practicable but no later than 90 days after determining that modifications are needed.

The date of this SWMP document or any appendix will be updated to reflect any modifications.

#### **1.2.9 Accuracy of Information Contained in this Plan**

Due diligence was performed to ensure the major provisions of this Storm Water Management Plan are accurate. However changing conditions that occurred after data collection may need to be identified and reflected in this plan.

## 2. Public Education and Outreach

In accordance with Parts 3.1 and Parts 3.2 of the Permit (MCM 1 and MCM 2), NBG (Naval Base Guam) is required to develop and implement a public education and involvement program to educate the community about the impacts of storm water, illicit discharges, and storm water pollution prevention.

The program shall, at a minimum, include the following:

1. Activity-specific educational materials and/or training for various targeted groups on Base.
2. Create positive changes in attitude, knowledge, and awareness.
3. Enable the public to identify and report pollution-causing activities (i.e., illicit discharges).
4. Outreach activities, as specified in the Permit, to promote awareness for the general public.
5. Program evaluation based on the number of brochures distributed, participation in events, volunteer hours, etc., and a survey to assess changes in public awareness and behavior.
6. Public involvement in the development of the SWMP including an informational meeting-prior to finalizing the SWMP, and other SWMP-related projects that can be used to educate the public about the impacts of storm water.

### 2.1 Program Goals

The goal of the public education and outreach program is to raise awareness and effect behavioral change by involving the community in the overall goals and implementation of the SWMP. Greater knowledge of the program will garner greater public support for the program, as well as more willingness to comply with the BMPs put forth in the program. The program should result in positive changes in public attitude, knowledge, and awareness; increased BMP implementation; pollutant load reduction; and an improvement in discharge and receiving water quality. The program will prioritize activities and target specific groups with specific goals in mind to maximize use of available funding, which can vary based on defense budgets.

### 2.2 Targeted Groups

Specific groups have been identified for targeted outreach based on their potential ability to impact storm water runoff quality. The Base-wide awareness efforts will include activity-specific messages and outreach activities. The Permit identifies five main groups as target audiences of the public education and outreach program. These groups are described below:

- Base Personnel
  - Military personnel and dependents that work or live on NBG
- Base Residents
  - Residents of base housing, including Apra Heights Housing areas (Old and New)
- Base School Children
  - Students attending DoDEA schools on base, who may or may not be base residents
- Contract Workers and Vendors
  - Civilian personnel that work on base
  - Construction and maintenance contractors that work on base



- Landscaping personnel and contractors
- Construction Industry
- Consultants and contractors that work on Navy land, such as,
  - Environmental consultants
  - Health and safety consultants
- Pesticide applicators
- Custodians
- Base Tenants
  - Industrial facilities covered by the NPDES permit program
  - Commercial businesses
    - Such as, automobile detailing, automobile repair and maintenance, retail gasoline outlets, and restaurants
    - Includes those types of businesses that have been highly ranked in Section 11 based on the relative risk of contamination of storm water runoff
  - Schools (including personnel, teachers, and students)
  - Recreational facilities (including staff, maintenance personnel and patrons/customers)

Additionally, NBG may identify any other source that is determined to be a potential pollutant concern to its Small MS4.

## 2.3 Outreach Activities

Depending on the results of the following activities and feedback from the targeted groups, the outreach efforts described in this SWMP may change over time. These efforts include the preparation and distribution of informational materials; use of electronic media to broadcast information and receive feedback on the program; and training of personnel and contractors periodically to enforce storm water messaging upon all who work and live on NBG.

### 2.3.1 Informational Materials

NBG will develop educational and outreach materials which promote general environmental awareness and guidance on storm water pollution prevention. These resources include posters, fact sheets, brochures, and coloring pages that will be available to the target audiences and general public on the NBG and JRM webpages and social media platforms.

#### 2.3.1.1 General Public Storm Water Pollution Brochure Series

Each brochure in this series presents individual topics about storm water pollution, then goes on to provide specific BMPs for a general public audience. The series presents the following topics:

- Why is Water Quality Important?
- Getting to Know Storm Water
- Getting to Know Your Drainage System
- Getting to Know Illicit Discharge
- Importance of Trash Reduction

The brochures present specific BMPs in the following areas:

- Trash Reduction
- Yard Maintenance
- Auto Care
- Pet Waste
- Good Housekeeping

These brochures are geared towards the general population that works and lives on the base, with the intent of providing general storm water knowledge and pollution awareness (Appendix G). Each brochure includes links to sources for more information and a telephone number to the EV Div to report any questionable discharges to the MS4.

Physical copies of the brochures will be available to all DON personnel, base residents, tenants, contractors and visitors with access to the following locations:

- Visitor Control Center (VCC)
- Fleet and Family Support Center
- Commissary
- Exchange
- Home and Garden Center
- Gas Stations
- Morale, Welfare and Recreation (MWR) Office

The brochures will also be distributed at NBG and at community-partnered activities, such as road and beach clean-up events. Electronic copies of the brochures will be posted on the NBG and JRM webpages and will be available for downloading by DON personnel and the general public.

### Measurable Goals 2-1

- NBG will distribute sufficient copies of educational materials to a minimum of 20% of the target audiences and track this distribution during each compliance year. Based on the most current Guam EPA SDWA population data for NBG, around 500 copies of the brochure series will be distributed to target groups during each compliance year. These materials may be distributed either as hard copies or soft copies via email or webpage downloads.

#### 2.3.1.2 Classroom Education Materials

NBG will develop and distribute educational materials to base schools. These include educational materials other than brochures, such as posters. Additionally, NBG will incorporate links to the following educational webpages on the NBG and JRM webpages. These links will also be cited as additional sources of information in educational posters and brochures.

<http://www.guamwaterkids.com/>

<https://www.usgs.gov/special-topic/water-science-school/education>

<https://water.unl.edu/article/stormwater-management/stormwater-education-kids>

### Measurable Goals 2-2

- NBG will develop educational materials, distribute around 500 copies to DoDEA elementary schools, and track this distribution during each compliance year.
- NBG will track the quantity and variety of materials posted to the educational webpage links that provide storm water education for students and teachers during each compliance year.

#### 2.3.1.3 Construction Site Operator Training Brochure

NBG will develop a storm water brochure aimed at educating construction operators on appropriate selection, installation, implementation, and maintenance of storm water controls, as well as overall program compliance (Appendix G). NBG will distribute the brochure to all construction operators who will be disturbing land within the MS4 boundary. BOS and other contractors will be asked to distribute the brochure during the contractor's new-hire orientation. The brochure will include NGB contact details and links to the NBG website where contractors can find more information.

### Measurable Goals 2-3

- NBG will distribute around 500 copies of storm water educational materials to construction site operators, and track this distribution during each compliance year.

## 2.3.2 Electronic Media

### 2.3.2.1 Storm Water Webpage

Naval Base Guam will use the following official NBG and Joint Region Marianas (JRM) webpage as a public outreach tool:

[http://www.cnicy.navy.mil/regions/jrm/installations/navbase\\_guam/](http://www.cnicy.navy.mil/regions/jrm/installations/navbase_guam/)

The webpage is openly accessible to the general public, which encompasses the target audience groups in the MS4 Permit. Links and documents posted on the webpage will include information related to storm water pollution prevention, storm water pollutant controls, BMPs, and applicable storm water rules and regulations, including:

- Educational materials aimed at residents and commercial tenants, such as good housekeeping practices, disposal of household hazardous wastes, and Base policies addressing pollution prevention;
- Educational materials and information for construction site operators on appropriate selection, installation, implementation, and maintenance of storm water controls, as well as overall program compliance;
- Links to storm water related documents including the public review drafts of the (security redacted) SWMP document during the public comment period;
- Links to SWMP Annual Reports that are required by chapter 12 of this document.
- Contact information for the EV Div to provide written comments for the draft storm water plans during the public comment period;

- Procedures for reporting illicit discharges;
- Contact information for the EV Div to request a copy of NBG’s current SWMP, NPDES Permit, or Storm Water Annual Report;
- Public meeting notices regarding storm water policies, regulations, and/or the SWMP, including locations and time, as applicable;
- Schedule for street sweeping so that voluntary curb clearing can occur; and
- Notices inviting public participation in NBG and NBG-partnered outreach events and activities, such as clean-up events and Storm Drain Marking activities.

#### Measurable Goals 2-4

- NBG will track the quantity and variety of storm water pollution prevention materials posted to the NBG and JRM webpages during each compliance year.

##### 2.3.2.2 Social Media

The Installation plans to use one or a combination of the following NBG and JRM Facebook pages as additional platforms for reaching out to target audiences.

<https://www.facebook.com/USNavalBaseGuam/>

<https://www.facebook.com/jrmguam/>

The webpages are accessible to the public, making them also accessible to tenants that may have trouble accessing websites that are restricted by the Navy for operational security (OPSEC) reasons. Pertinent MS4 documents such as educational materials aimed at residents and commercial tenants, good housekeeping practices, disposal of household hazardous wastes, and NBG policies addressing stormwater pollution prevention will be posted on these websites.

The pages will also feature information about upcoming public participation activities such as community clean-up events, and notices related to storm water management.

These social media platforms allow NBG to track the volume of followers to each webpage, and also track the number of “likes” for each uploaded post. This provides a feedback mechanism to NBG for measuring the effectiveness of the education and outreach program on these platforms.

#### Measurable Goals 2-5

- NBG will track the overall number of followers to the NBG and JRM Facebook pages, and track the number of “likes” to the NBG and JRM Facebook posts about storm water pollution prevention during each compliance year.
- NBG will track the number of public comments on the NBG and JRM Facebook pages regarding storm water pollution prevention during each compliance year.

##### 2.3.3 Storm Water Pollution Prevention Video

NBG will implement additional outreach BMPs as required by the results of the program survey and assessments. The following video BMP will only be funded and implemented if necessary.

The Joint Military News Network (JMNN) is an existing cable television (TV) channel that runs local programming on base-related activities, including environmental awareness topics. NBG will produce a spot to run on the JMNN that focuses on storm water pollution prevention on NBG. The programming on this channel runs on a 24-hour basis, and is available to all cable TV subscribers on Guam.

For base personnel and the members of the public that do not subscribe to cable TV, the video will be uploaded online to the JRM YouTube channel *JRM Guam*. This channel is accessible to the general public, and has nearly 4,000 subscribers. A link to this video will be posted on the NBG and JRM webpages.

The video spot will also be shown on the existing TV monitor at the Visitor Control Center (VCC) on NBG Main Base. The VCC is frequented by base personnel, contractors and visitors seeking a base pass. The video will cycle regularly with other base programming, providing an opportunity for all patrons of the VCC to view it while they are being processed by base personnel.

If it is determined to be necessary based on the program effectiveness assessment, NBG will produce a Storm Water Pollution Prevention Video to be shown in the JMNN. NBG will also upload the video to the *JRM Guam* YouTube channel, and track the number of times the video is viewed during each compliance year. NBG will track the number of subscribers to this channel during each compliance year.

#### 2.3.4 Storm Water Pollution Prevention Education and Training

There are several types of training already in place for base personnel and contractors that provide an opportunity for instruction on storm water pollution prevention. These are summarized below.

##### 2.3.4.1 Annual Multi-Sector General Permit Training

NBG conducts an existing Spill Prevention Control and Countermeasure (SPCC) Stormwater Pollution Prevention (SWP2) annual training and refresher in compliance with the Multi-Sector General Permit (MSGP) requirements for discharges from industrial activities. These SPCC and SWP2 training programs are being implemented as part of the current Environmental IDIQ Contract. The same training will be offered at least annually to all personnel stationed in the industrial/commercial facilities within the NBG MS4 Permit coverage area in addition to facilities covered under the MSGP training program.

##### 2.3.4.2 BOS Contractor Personnel Orientation

The NBG BOS contractors, including housing, newly hired personnel receive orientation training upon their arrival. During the orientation process, a presentation on environmental compliance is given to provide new personnel with a basic overview of NBG's environmental policies, including storm water pollution prevention. The BOS contractor does not currently track the new-hire orientation activities, since this is not a contractor deliverable.

#### 2.3.4.3 Government New Employee Orientation

New Government employees receive education and training that includes a basic overview of NBG's environmental policies, including storm water pollution prevention, as well as their specific responsibilities regarding any applicable components of the SWMP.

#### 2.3.4.4 Training During Annual Storm Water Inspection

NBG provides annual SPCC and SWPPP training to Navy personnel as needed during the annual storm water inspection visits at NBG industrial facilities. This training includes Good Housekeeping practices.

#### 2.3.4.5 Annual Construction Personnel Training

Refer to Section 4 Construction Site Runoff Control Program for more information.

#### 2.3.4.6 ECATTS Web-based Training

The Navy has internal web-based training, Environmental Compliance Assessment, Training and Tracking System (ECATTS), which includes a storm water module. ECATTS is required for construction contractors who work on NAVFACSYSCOM Marianas construction contracts at NBG.

#### 2.3.4.7 Pesticide Applicator Education

Guam EPA conducts pesticide applicator training on the island. NBG does not conduct this type of training but will supplement the training with educational material regarding storm water pollution prevention. Application of pesticides and synthetic fertilizers is primarily performed by certified pesticide applicators under Government contract. NBG maintains a roster of the contractor's certified pesticide applicators through the BOSC deliverables. The Navy requires all contracted pesticide applicators to employ a certified applicator, and submit appropriate certification credentials. NBG has strict supply system requirements which prohibit the purchase of pesticides by unqualified personnel. Navy entomologists must approve of all pesticides that are to be used.

### Measurable Goals 2-7

- NBG will continue the existing SPCC and SWP2 training programs required under the Multi-Sector General Permit, and identify additional facilities and personnel that require training under the MS4 Permit. NBG will modify and improve the SPCC and SWP2 training materials to include the MS4 Permit and SWMP requirements.
- NBG will expand and enhance the BOS / Housing Contractor new-hire orientation and personnel indoctrination programs to comply with the MS4 Permit and SWMP requirements. Similar training will be conducted for newly-hired Government personnel.
- NBG will track new hire orientation activities, including the number of orientation sessions and the quantity of attendees during each compliance year.
- NBG will track the number of training sessions and quantity of attendees at other training sessions.
- NBG will modify the existing BOS environmental contract or provide an alternate contract mechanism to include the MS4 training program for newly-hired personnel.
- NBG will track the number and type of storm water informational material that is distributed during the various orientation, education and training activities.

- NBG to maintain requirements that all contracted pesticide applicators to employ a certified applicator, and submit appropriate certification credentials.

### 2.3.5 Good Housekeeping Training

Good housekeeping is the ongoing maintenance by personnel to help control or eliminate workplace hazards. This extends beyond just cleanliness, but includes the orderly maintenance of facilities as part of incident and fire prevention. Good Housekeeping Training is the responsibility of each facility within NBG. This training will be supplemented with educational materials focused on storm water pollution prevention practices.

#### Measurable Goals 2-8

- NBG will track the number and type of storm water informational material that is distributed to the various facilities within NBG during each compliance year.

## 2.4 Public Involvement/Participation

As with Public Education and Outreach, there is great value in allowing the public to play an active role in both the development and implementation of the Storm Water Management Program. An active and involved community will help develop a large public support base for the program including a broader base of expertise. This community engagement will reduce implementation schedules due to fewer obstacles in the form of public challenges.

### 2.4.1 Development, Review, and Implementation of the SWMP

In accordance with the Permit, all plans related to the development of the draft and final SWMP shall be made available to the public for review and comment. The availability of plans shall be posted on the following NBG webpage during the review period:

[http://www.cniv.navy.mil/regions/jrm/installations/navbase\\_guam/](http://www.cniv.navy.mil/regions/jrm/installations/navbase_guam/)

The public review period is a minimum of 30 calendar days, and all comments and responses will be documented.

If necessary, an informational meeting shall be conducted prior to finalizing the SWMP to solicit further comments from the public. The meeting date and location will be announced on the NBG webpage. The final SWMP shall incorporate any feedback from the public.

Following the completion of the final SWMP, NBG will make the document available on its webpage and, upon request, at a physical EV Div Office.

#### Measurable Goals 2-9

- NBG will make the draft and final SWMP documents available for public review and comment on its webpage within 30 months of the effective date of the Permit.
- NBG will hold a public information meeting to receive feedback prior to finalizing the SWMP, if necessary.

#### 2.4.2 NBG Slogan and Logo Design

NBG will invite the public to participate in the design and development of the NBG MS4 slogan and logo for the public education and outreach campaign. The announcement will be posted on the NBG and JRM webpages and social media platforms. Participants must submit original graphic material and sign a waiver that the material and logo may be adapted and used by NBG for their outreach campaign. The slogan must promote NBG's storm water pollution prevention message, and be 10 words or less in length. The logo must complement the slogan and if possible, incorporate a locally-relevant theme.

##### Measurable Goals 2-10

- NBG will develop a logo and slogan with the participation of the public.

#### 2.4.3 Community Clean-up Events

NBG personnel have already been participating in various clean-up and base beautification events, including trash pick-up and beautification projects, such as, beach clean-ups. During these events, NBG personnel work with members of the community to clean up trash, green waste, and debris to help keep pollutants from entering the receiving waters. These events help to raise public awareness about the impacts of trash and illicit discharges on storm water runoff quality.

NBG will expand and improve upon these existing programs by working with the Community Relations (COMREL) personnel of various NBG tenants. In overseeing these programs, EV Div is responsible for documentation of participation numbers, amount of trash collected, and any observed trends or correlations to the other SWMP activities.

##### Measurable Goals 2-11

- NBG will expand and improve existing community clean-up and beautification programs to emphasize storm water pollution prevention education within 30 months after the effective date of the Permit.
- NBG will track the number of events and participants during each compliance year.

#### 2.4.4 Storm Drain Marking

NBG will work in partnership with the COMREL personnel of various NBG tenants to establish a Storm Drain Marking Program on the base. The program would promote increased public awareness about storm water pollution and discourage illicit discharges to the MS4. The program involves stenciling of a storm water pollution prevention message on the curb or sidewalk pavement adjacent to the storm drain inlet. For example, the message may be, "No Dumping, Drains to Ocean" or "No Dumping, Drains to River", depending on the drainage pathway.

The stencil would be applied with environmentally-friendly paints that are free of heavy metals and are low in volatile organic compounds. Regular inspections of the storm drains will determine whether the paint may need to be reapplied to maintain optimum visibility. The Permit requires that storm drains with illegible or missing labels must be re-stenciled within seven (7) days of inspection. Re-stenciling over the original paint to the extent possible is recommended. The



recurring need for storm drain marking affords other volunteer groups the opportunity to participate in this hands-on activity.

All storm drains receiving runoff from industrial and/or commercial facilities will be marked, where feasible, within five (5) years of the effective date of the Permit. This program may potentially be integrated with existing clean-up or beautification activities or events, where the same volunteer clean-up group would also stencil storm drains within their section of roadway.

Storm Drain Marking groups agree to:

- Mark storm drains within a sector of the Installation and re-apply the stencil, as needed over a two-year period of volunteer service.
- Provide safety training for their fellow volunteers before each marking activity.
- Pass along the message of preventing storm water pollution to members of their community.

The storm drain marking program would involve the following process:

1. NBG will help the group select the storm drains on the Installation that require marking. Priority shall be given to major streets and areas with pedestrian traffic.
2. The volunteer group's representative will sign an agreement form committing the group to the two-year participation and terms of the program. The participants must be a minimum of 12 years old, and in good physical condition, including good eyesight and hearing, and be mentally alert. Participants 17 years old or younger must have adult supervision, and those under 18 must have a signed parental release form. There must be two adults per 10 participants present at all times for groups with participants under 18.
3. Groups shall schedule the storm drain marking events with NBG at least one month in advance of each event.
4. NBG will provide the group with high-visibility safety vests, traffic cones, safety glasses, nitrile gloves, stencil kit, paint, brush for preparing the surface, and safety information. The group leader shall submit a Supply Request Form to NBG EV at least one month in advance of the stenciling date, indicating the number of participants for that event. The group is responsible for training its members on safety measures, and for conducting a refresher session prior to each stenciling event.
5. NBG will provide the group with storm water pollution prevention informational materials to share with members of their community.

### Measurable Goals 2-12

- NBG will launch a storm drain marking program, and track the number of participants and storm drains marked/re-marked during each compliance year.

#### 2.4.5 Community and Industry Workshops and Conferences

NBG personnel have participated in recent environmentally-related local community outreach events, such as World Earth Day and the annual *Assembly of Planners' Symposium* sponsored by the Bureau of Statistics and Plans, Guam Coastal Management Program. Although infrequent, these events are an opportunity for NBG to engage the public directly, receive feedback, and promote the storm water pollution prevention message. NBG will continue to participate in these events and maximize the opportunity to reach members of the general public and the industrial sector on Guam.

##### Measurable Goals 2-13

- NBG will participate in at least two local community workshops or conferences during each compliance year. NBG will either actively present a storm water topic at these events (if appropriate), or set up a table or booth that promotes storm water pollution prevention.
- NBG will track the number of attendees at these events and number of educational materials distributed if NBG has a table or booth.

#### 2.4.6 Partnerships

NBG will investigate the possibility of partnering with other MS4 permit holders to share resources that offer a common message regarding storm water pollution. NBG will also explore partnerships with nonprofit organizations, and other interested community organizations to raise awareness, implement BMPs, reduce pollutant loads, and improve storm water runoff quality.

Among the potential partners are the Bureau of Statistics and Plans, which hosts the Guam International Coastal Clean-Up at approximately 20 locations island wide. The annual event attracts hundreds of volunteers and provides a recurring opportunity for NBG to reach the public.

##### Measurable Goals 2-14

- NBG will identify potential partnership opportunities with other MS4 permit holders and community organizations beginning 30 months after the effective date of the Permit.

#### 2.4.7 Promoting Public Participation

There are a variety of other methods to involve the public in the NBG Storm Water Management Program, however, the success of such programs is largely dependent on community interest. NBG EV will continue to offer ideas, guidance, and/or opportunities to public groups that have shown interest in participating in SWMP-related programs.

##### Measurable Goals 2-15

- NBG will post contact information on its webpage and social media platforms inviting the public and community groups to participate in SWMP-related programs, beginning 30 months after the effective date of the Permit.

### 2.4.8 Survey

NBG will conduct a baseline survey prior to launching their public education and outreach program. This baseline survey will allow NGB to gauge the existing level of public awareness and behavior towards storm water pollution prevention. Information from this survey will be used to adapt the public education and outreach program to reach the groups in the target audience.

As required in the Permit, within six (6) months of Permit expiration, NBG shall assess changes in public awareness and behavior resulting from the implementation of the program, such as using a statistically valid survey. NBG will modify the program accordingly, based on the results of this assessment. The statistically valid survey approach is presented in Appendix H along with a survey form for use in the baseline and follow-up surveys.

#### Measurable Goals 2-16

- NBG to conduct baseline survey prior formal implementation of the SWMP. The surveys will be distributed to randomly selected personnel and groups within the five target groups in the Permit to capture representative responses from at least 20% of the target audience.

### 2.4.9 Program Points of Contact

For questions regarding the storm water program or to request a copy of the current Permit, SWMP, or Storm Water Annual Report, contact:

- NBG Storm Water Program, NBG EV Div, (671) 339-4100.

To report a questionable discharge into the storm drain system or nearby waters, base personnel should contact the following:

- For observations in NBG Family Housing, contact the Area Housing Manager, (671) 333-2033
- For all other areas, contact NBG EV Div, (671) 339-4100

## 2.5 Evaluation Methods

As part of the Annual Reporting of MS4 activities, NBG will assess its education and outreach program annually, beginning the third year of the Permit term. A summary of each year's efforts toward public and targeted group outreach will be included in the annual report.

The MCMs listed in this chapter will be used to evaluate the public outreach and public participation elements of the program.

See SWMP Chapter 13, Reporting Requirements for additional information.

### 3. Illicit Discharge Detection and Elimination

Per the Permit, Part 3.3, NBG is required to review and update its Illicit Discharge Detection and Elimination (IDDE) program to detect and eliminate illicit connections and illegal discharges into its MS4.

The upgraded Illicit Discharge Detection and Elimination (IDDE) program will include:

1. Review and approval process for drain connections;
2. Compilation of non-storm water discharges and measures to prevent these discharges;
3. System mapping;
4. Field screening and data tracking;
5. Subsurface oil investigation, cleanup, and interim control measures;
6. Public reporting;
7. Complaint investigation;
8. Spill prevention and response,
9. Handling and disposal of used oil, toxic materials, and other household hazardous wastes;
10. Enforcement, and
11. Education & Training.

The IDDE Program is administered in accordance with the Permit requirements, as follows:

#### 3.1 Illicit Discharges

The EPA defines an illicit discharge as “...any discharge to an MS4 that is not composed entirely of stormwater...,” with the exception of those that are specifically permitted by an NP

DES Permit.

##### 3.1.1 Conditionally Allowable Non-storm Water Discharge

Permit Specified Discharge Limitations:

The table below includes a list of conditionally allowable non-storm water discharges, provided the listed conditions are met and the general discharge is not determined to be a source of pollution by NBG.

In the event that any of the listed discharges or any individual discharge is observed or expected to be a significant source of pollutants to the MS4, the discharge will no longer be allowed.

Table 3: Conditionally Allowable Non-storm Water Discharges

<b>Discharge</b>	<b>Condition: Location</b>	<b>Condition: BMP</b>
Water line flushing	N/A	No cleaning/ disinfectant agent added. Sweep/ remove surface pollutants that may be transported to an outfall by flushed water.
Steam line condensate and flushing	N/A	Sweep/ remove surface pollutants that may be

<b>Discharge</b>	<b>Condition: Location</b>	<b>Condition: BMP</b>
		transported to an outfall by flushed water.
Landscape irrigation	Excluding commercial irrigation.	Reduce/ pause irrigation if water is running off onto adjacent pavement. Do not irrigate within 24 hrs of applying pesticide, fertilizer, or other chemical to the landscape.
Diverted stream flow	Where appropriately planned	Perform hydrological and hydraulic analysis to properly size diversion.
Rising ground waters	N/A	N/A
Uncontaminated Ground Water Infiltration ( <i>as defined in 40 CFR §35.2005(20)</i> )	N/A	N/A
<i>Uncontaminated pumped ground water, foundation and footing drains, not including construction related dewatering activities</i>	N/A	Check for visual indicator of contamination (oil sheen, high turbidity) Perform laboratory analysis if water source is suspected to be other than rain, groundwater infiltration or potable water.
Discharges from additional uncontaminated potable water sources (drinking water fountains, emergency wash basins, bottled water, etc.)	N/A	Check for visual indicator of contamination (oil sheen, high turbidity). Perform laboratory analysis if water source is suspected to be other than potable water.
Air conditioning, ice machine, other condensate	N/A	Source is from potable sources or natural humidity
Utility manholes and crawl space pumps dewatering	N/A	Check for visual indicator of contamination (oil sheen, high turbidity) Perform laboratory analysis if water source is suspected to be other than rain, groundwater infiltration or potable water.
Individual residential car washing	Where approved by respective housing manager	Use substitutes for organic solvents (non-caustic, non-chlorinated solvents and phosphate detergents).
Charity car wash events	Designated area only	Use substitutes for organic solvents (non-caustic, non-chlorinated solvents and phosphate detergents).

<b>Discharge</b>	<b>Condition: Location</b>	<b>Condition: BMP</b>
		Events shall be held only at locations far from any sensitive waterbodies. Divert water to grassy area instead of going into storm sewer inlets if possible. Use spray nozzles to minimized water use.
Fire truck/ vehicle and fire hose cleaning	Designated wash pads or racks at various fire stations.	Use substitutes for organic solvents (non-caustic, non-chlorinated solvents and phosphate detergents). Divert water to grassy area instead of going into storm sewer inlets if possible. Use spray nozzles to minimized water use.
Discharge from firefighting activities or training.	For training: designated training facilities.	N/A
Decontamination training water	Designated training locations.	Only potable water. Events shall be held only at locations far from any sensitive waterbodies. Divert water to grassy area instead of going into storm sewer inlets if possible.
Dechlorinated swimming pool discharge	N/A	Check for visual indicator of contamination (oil sheen, high turbidity)
Residual street wash water, including from sidewalks and driveways	Excluding parking lot, high priority/ industrial facility lots	Only water used to wash.
Dive gear rinse water	N/A	Intent of rinsing is salt removal only. Rinsing uses water only.
Parachute rinse water	N/A	Intent of rinsing is salt removal only. Rinsing uses water only.
Building exterior rinse water	N/A	Intent of rinsing is dust removal only. Rinsing uses water only.

### 3.2 System Mapping

Maps have been created that show the location of storm water drainage systems, outfalls and the names and locations of all waters of the U.S. that receive discharges from those outfalls. The data from the survey has been compiled into GIS and physical field maps. A minimum of 80 hours a year will be

allocated to field mapping and updating the GIS database. Discrepancies discovered during dry-weather surveys, field sampling, stormwater conveyance inspection and other related activities will be incorporated into the GIS and physical maps during updates. The complete MS4 program maps will eventually be used in updating the stormwater layer in the Navy's ArcGIS Enterprise GeoReadiness Explorer (GRX) where each asset can be linked to InFads / Maximo for sustainment funds allocations.

Priority outfalls have been identified per section 3.3.3 of the Permit. Seven priority outfalls have been selected based on the large flow they receive, and mixed facility uses, including facilities with outdoor activities that have a larger capability of contaminating stormwater. Priority outfalls may be reassigned pending field investigations, monitoring results or other information. The following codes are applied to the permit criteria for selecting priority outfalls.

- A: Areas with older infrastructure that are more likely to have illicit connections
- B: Industrial, commercial, or mixed use areas
- C: Areas with a history of past illicit discharges
- D: Areas with a history of illegal dumping
- E: Areas with onsite sewage disposal systems
- F: Areas with older sewer lines or with a history of sewer overflows or cross-connections
- G: Areas upstream of sensitive waterbodies
- Z: All other areas that may discharge significant quantities of pollutants directly to waters of the US

Table 4: Priority Outfalls

<b>Outfall Name</b>	<b>Location (Latitude/ Longitude)</b>	<b>Contributing Facilities Examples</b>	<b>Priority Code</b>
SRF4	13.4419066 144.6636687	Ship Repair Facility	B G Z
Sum1	13.4390414 144.6540442	North Lockwood Housing, School, Sumay Marina	A B G Z
UniTan1	13.4311855 144.6601388	Lockwood housing, Gas station, BOS Store, Uniform Wharf	A B G Z
Vic3	13.4182742 144.6676756	Sewage treatment plant, MWR, very large capacity for flow	A B G Z
AP12	13.4012615 144.6764671	Apra Palms Housing, NFM and BOS facility	B
Talis4	13.3821107 144.6900486	Munitions Annex Barracks and Storage	A B G
Hosp4	13.4720860 144.7380969	Naval Hospital	B G

Any illicit discharge identified will be mapped and recorded in an IDDE database. Illicit discharges that may discharge to a priority outfall will be considered a major deficiency. Procedures from the ERP (Enforcement Response Plan) will be undertaken to correct these issues as applicable.

Utilities and Energy Management (UEM) will be responsible for maintaining the geodatabases and maps. As new drain connections are approved or system components are modified, UEM will update the GIS information.

#### **Measurable Goals 3-1**

- A minimum of 80 hours a year, to NBG or contracted personnel, will be allocated to field mapping and updating the field database. Photographs of any illicit discharges will be time and location stamped and recorded with the field database.
- ArcGIS GRX stormwater data will be updated annually with the previous year's field and structured in accordance with GRX standards.
- A new physical field map will be composed and physically printed annually using the previous year's field data. The most recent field map edition can be reproduced or digitally made available to USEPA Region 9, Guam EPA or another applicable agency.
- Field map and GRX data will include the identification of any priority outfalls in coordination with Guam EPA.

#### **Measurable Goals 3-2**

- The ERP procedures will be used to correct IDDE as applicable. These procedures track current deficiencies and the actions taken to resolve them, with the overall objective to lessen the volume and severity of deficiencies throughout the permitted area.

### **3.3 Field Screening Plan and Tracking**

NBG will conduct an investigation to identify and locate the source of any continuous or intermittent non-stormwater discharge within 12 hours of becoming aware of the illicit discharge. Priority will be given to discharges suspected of being significantly contaminated.

Beginning in year four of the permit term, routine illicit connection inspections are performed to identify storm water discharges that are not identified as allowable in the Permit. In addition to the 80 hours a year allocated to field mapping, each commercial and industrial areas will be inspected at least once every five years to identify illicit discharges due to new connections, or the implementation of new practices by the tenants. Particular attention is paid to the use of hose bibs to wash down pavement and work areas and for vehicle washing.

Outfall and collection system inspections are conducted by NBG during routine maintenance completed throughout the year. In addition to the priority outfalls and based on historic data, EV will also designate areas for inspection and conduct specific inspections of the outfalls during the wet and dry seasons. If any outfall location is submerged or under piers or wharves at the time of inspection, the monitoring personnel will inspect the closest upstream storm drain structure or contributing tributary line outside of tidal influence.

Dry weather flow field screening will occur once per year for priority outfalls, and once per year for at least 20% of the total of outfalls, with the next years screening including outfalls that have not yet been



screened. By the end of the permit term, all outfalls will have been screened at least once. Outfall inspections include a visual survey of the physical conditions at each site. Observations are documented, including photographs. The flow is visually examined for characteristics (e.g., odor, color, clarity, floatables, deposits/stains, vegetation condition, structural condition, and biology). If such characteristics indicate the presence of non-storm water discharges, the survey will be expanded to track the flow upstream and determine the location of the discharge to initiate corrective actions.

Water samples will be collected to analyze for Ammonia, Conductivity, Surfactants, pH and Enterococcus. If the benchmark levels shown in Table 1 of the Permit are exceeded for any of these parameters, follow-up investigations will be conducted to identify and eliminate the source causing the exceedance. EV Div is responsible for the investigation of the contributing drainage basin, including industrial inventory and activities within the area. EV Div personnel shall conduct additional inspections during dry weather conditions, and walkthrough inspections at industrial and commercial facilities to review existing BMPs and compliance with SWPPPs, as applicable.

NBG will maintain an illicit discharge monitoring and tracking database which tracks outfall and collection system inspections, illicit discharges and spills, and field screening analytical results. At a minimum this database will include the dates the illicit discharge was observed, the results of the investigations, any follow up investigations, and the date the investigation was closed. For each illicit discharge or spill, the database will record the location, receiving water, type of discharge, responsible party, naval response, and resolution of the discharge to the Small MS4.

**Measurable Goals 3-3**

- The field screening tracking database will show all active known illicit discharges and the progress towards eliminating them with the goal of reducing the time required to address illicit discharges and ultimately having no illicit discharges throughout the permitted area.

**Measurable Goals 3-4**

- When used, laboratory analytic results will be appended to the field screening tracking database which will include date of sample delivery and date of receipt of these results. A goal is to reduce the total time required to sample and perform analytics. Any deficiency may be reduced by purchasing more equipment, bringing new staff onto the field or laboratory team, contracting, etc.

Table 5: Possible Sources of Pollutant Indicators

Field Survey Indicators	Possible Pollutant Sources
Ammonia >50 mg/L	Broken sanitary wastewater lines, wash water, industrial/commercial liquid waste.
Conductivity >2000 uS/cm	Sewage, wash water, industrial/commercial liquid waste (metal fabrication)
Surfactants >0.25 mg/L	Sewage, wash water (detergent use)
pH <6 or >9 s.u.	Wash water, industrial/commercial liquid waste.
Enterococcus (see Permit Table 2)	Sewage

### 3.4 Public Reporting and Complaint Investigation

Respective facility managers are responsible for sweeps and inspections of their areas. EV Div is responsible for regular compliance inspections for storm water under other programs in the SWMP and other environmental media. NBG EV personnel and / or their contractor are responsible for responding to complaints received via phone by people who live and work on base, as noted below:

*Complaint Hotline: 117 or (671) 333-4357*

NBG will develop a written spill/ dumping response procedure and a flow chart for internal use that shows personnel responsible for responding to public reports as well as any agencies and their contacts who would be involved in an illicit discharge response.

If an illicit discharge is observed, NBG will work with the responsible party to correct the violation as soon as possible. All reported illicit discharges and corrective measures are tracked through the database described in Section 3.3, above, and enforced as described in the "Enforcement Response Plan" (Appendix B).

NBG EV Division will promptly investigate observed, suspected, or reported illicit flows and pursue enforcement actions, as appropriate. All complaints will be responded to as soon as practicable, not to exceed 12 hours. If more than 12 hours passes between a complaint and follow up investigation, NBG will record the reason for the delay.

#### Measurable Goals 3-5

- All deficiencies and complaints will be electronically tracked per the enforcement response plan. The overall goal is to eliminate deficiencies throughout the permitted area and to reduce the time required to address them.

#### Measurable Goals 3-6

- Maintain existing sewer and hazardous material response program. This includes implementing and monitoring the SPCC Plans developed for appropriate facilities. Goals include keeping all subject facilities within the permitted area in compliance with SPCC requirements and to eliminate all spills within the permitted area.

### 3.5 Spill Prevention and Response

NBG has recently completed an update of its Spill Prevention, Control and Countermeasure (SPCC) Plan and the accompanying Facility Response Plan. These plans help ensure that oil storage facilities are equipped with proper spill prevention and spill response tools, and a standing procedure for reporting spills is maintained. These plans help prevent petroleum-based pollutants in reaching NBG's storm sewer system.

In conjunction with these plans, all of the BMPs from Appendix D SWMP BMPs must be implemented, where relevant, to prevent oil and hazardous material/ waste from entering the MS4. Relevant BMPs include:

- 001 Label all drums, cans, containers, tanks, and valves

- 006 Control spills
- 015 Store waste and recycling materials in proper containers
- 029 Maintain equipment in good condition
- 033 Check vehicles and equipment for leaks
- 057 Store liquids and significant materials within a building or covered area
- 066 Keep tanks, piping, and valves in good condition
- 077 Use oil containment booms
- 084 Construct oil/ water separator
- 088 Prepare appropriate spill prevention and response plans
- 102 Spill Prevention and Control

### 3.5.1 Household Hazardous Materials/ Waste

Pamphlets addressing household hazardous waste are available at the New Arrivals brief and on the Naval Guam Base website under Environmental Support. The pamphlet identifies the various types of household hazardous materials that require proper disposal as household hazardous waste and provides locations where residents may drop these materials off for proper disposal.

The NBG housing department provides residents with information regarding the base household hazardous material reuse center. The self-help centers within NBG accept residents' excess household hazardous materials and reissues the items as needed. Household hazardous materials that are not reissued are turned over to the Guam Solid Waste facility in Harmon.

#### **Measurable Goals 3-7**

- At least 500 household hazardous waste pamphlets will be produced and distributed to new arrivals annually.

### 3.5.2 Privately Owned Vehicle (POV) Maintenance

Vehicle repairs, engine cleaning, and oil changes are conducted at approved locations only. These facilities are trained and equipped to deal with the proper management and disposal or recycling of used oil, vehicle fluids, etc.

### 3.5.3 Industrial Vehicle Maintenance

Maintenance occurs at most of the industrial facilities on Base, including boats and automobiles/vehicles. Refer to the various facilities' SWPPPs for additional information about specific hazardous materials and BMPs associated with vehicle maintenance.

### 3.5.4 Hazardous Waste Accumulation Point

Proper hazardous materials handling and waste management at industrial and commercial locations is the responsibility of all personnel, with oversight by PRM4 or EV Div. The overall hazardous waste program is handled by the NAVFACSYSCOM MAR HAZWASTE IDIQ Contractor. Hazardous waste accumulation points have been established at industrial and commercial locations throughout NBG (Naval Base Guam). Hazardous wastes/materials are picked up from these accumulation points as needed by the NAVFACSYSCOM MAR HAZWASTE IDIQ Contractor for disposal for most facilities. HAZWASTE Facilities are inspected at least weekly. There may be some minor exceptions (tenants that have their own EPA ID number or others may arrange for pickup by private contractors).

#### Measurable Goals 3-8

- Total hazardous waste facility inspections will be tracked. Any reports will be copied and maintained with SWMP documentation. The overall goal is to have no facility deficiency within the permitted area.

## 3.6 Training

EV Div will provide annual training to staff responsible for the implementation of the conditions of this SWMP on identifying and eliminating illicit connections, illegal discharges, and spills to the MS4. This training will be consistent with the requirements of the SWMP, and incorporate findings from historic monitoring (i.e., types of illicit discharges that are most common). Training records of training provided must be maintained. Specific training will include the following:

### 3.6.1 Hazardous Waste Accumulation Point Management

EV Div trains personnel responsible for hazardous waste accumulation points when inspections are conducted at the facility (at a minimum, annually). Personnel (military, civilian, and contractors) who generate, package, handle, store, transport, manage and/or supervise those who manage hazardous waste in the performance of their duties at NBG are required to follow the requirements of OPNAVIST 5090.1.

### 3.6.2 BMP Training

NBG incorporates BMPs to prevent illicit discharges into its training for personnel responsible for construction management of NBG projects. Storm water pollution prevention has been incorporated into training for new arrivals. NBG is developing a "BMP" training class. Storm water pollution prevention will be part of this class and include training on applicable BMPs. The class will also include training on identifying and eliminating illicit connections, illegal discharges, and spills to the MS4.

PRM4 or their qualified contractor is responsible for the information provided at the class. The list of attendees or a general headcount will be included in the annual report.

Individual facility SWPPP require personnel training for that facility's BMPs. These SWPPPs will be updated to include applicable requirements from the SWMP.

### 3.6.3 Waterfront Operations

As part of the BMP Training, those personnel that work on Waterfront Operations are trained on the SPCC Plan and the Spill Contingency Plan to help them be familiarized with the NBG spill response procedure and act accordingly.

#### **Measurable Goals 3-9**

- Each SPCC related training opportunity or event and their description will be tracked with the goal of all waterfront operators to have received annual storm water training. This information will be documented annually.

## 4. Construction Site Runoff Control Program

NBG is required to develop and implement a Construction Site Runoff Control Program as part of its construction site management. The primary goal of the Construction Site Runoff Control Program is to reduce the discharge of pollutants from construction sites to the Navy's Small MS4 to the maximum extent practicable (MEP). This Construction Plan applies to all construction sites within NBG and annexes covered by the Permit, which include both in-house and contract construction and maintenance projects.

All sites are required to comply with applicable NBG policies and standards. All applicable requirements and appropriate BMPs from the NPDES Comprehensive Construction Stormwater Pollution Prevention Plan (Comprehensive SWPPP) for the Guam Military Relocation DPRI Construction Program, dated November 2014, must be complied with or selected for all contracted construction projects within the permitted area.

All construction projects that disturb or stockpile earth must obtain a Clearing, Grubbing, Grading and Stockpiling permit from the Guam EPA prior to construction. Compliance with the Guam and CNMI Stormwater Management Manual and preparation of Erosion and Sediment Control Plans are necessary to obtain this permit.

Construction that will disturb an acre or more of earth are required to obtain coverage under the current CGP (Construction General Permit) or obtain an individual NPDES permit.

Depending on the project, many to all of the aforementioned standards and references may apply. All of the appropriate BMPs from the SWMP, Comprehensive SWPPP, Guam and CNMI Stormwater Management Manual, and CGP may be applicable. In this case, the strictest of any requirement must apply, and the strictest recommendations, such as for maintenance and materials, should be applied.

The objectives of this Construction Site Runoff Control Program are to:

1. Require proposed construction projects to implement BMPs and to standardize implementation and maintenance of the BMPs.
2. Maintain an inventory of construction projects and track project information.
3. Standardize and administer the plan review and approval of construction project plans and permits to ensure that BMP measures are implemented to the MEP prior to, during, and after construction.
4. Conduct inspections using standard inspection forms and track inspections in databases.
5. Establish enforcement policies and penalties for projects in non-compliance with NBG policies, standards, and project-specific requirements and permits and develop and implement an Enforcement Response Plan (ERP).
6. Provide annual construction BMP training to staff and contractors with construction storm water responsibilities.
7. Provide educational material to project applicants, contractors, and other responsible parties.

### 4.1 Program Organization

As a military installation, NBG has several different types of construction projects and the agency that handles the oversight of each one depends on the nature of the work and who funds the work. The

overseeing agency has the most immediate authority over the day-to-day activities at each construction site. As such, the Construction Site Runoff Control Program is structured to place responsibility for implementation of NBG's SWMP policies at construction sites to each of these corresponding agencies. PRM2, ROICC/FEAD (Resident Officer In Charge of Construction/ Facilities Engineers and Acquisition Director), in coordination with the CMSC (Construction Management Support Contractor) is responsible for managing the overall Construction Site Runoff Control Program. EV Div is primarily responsible for updating policies as deemed necessary to improve the effectiveness of the program. Although typically any issues observed with regard to SWMP implementation or non-compliance with the MS4 Permit are resolved at a lower level of authority, the NBG Commanding Officer has the authority to adjust policies or direct enforcement actions for tenants/agencies subject to the Construction Site Runoff Control Program. Commander, NBG, has ultimate authority for Permit policies and enforcement actions.

To address the Permit requirements for construction site runoff, the various types of execution methods for construction and maintenance projects that occur on base and the corresponding agency responsible for oversight, are summarized in the organizational chart presented in Figure 22. Typically, construction projects are categorized as either:

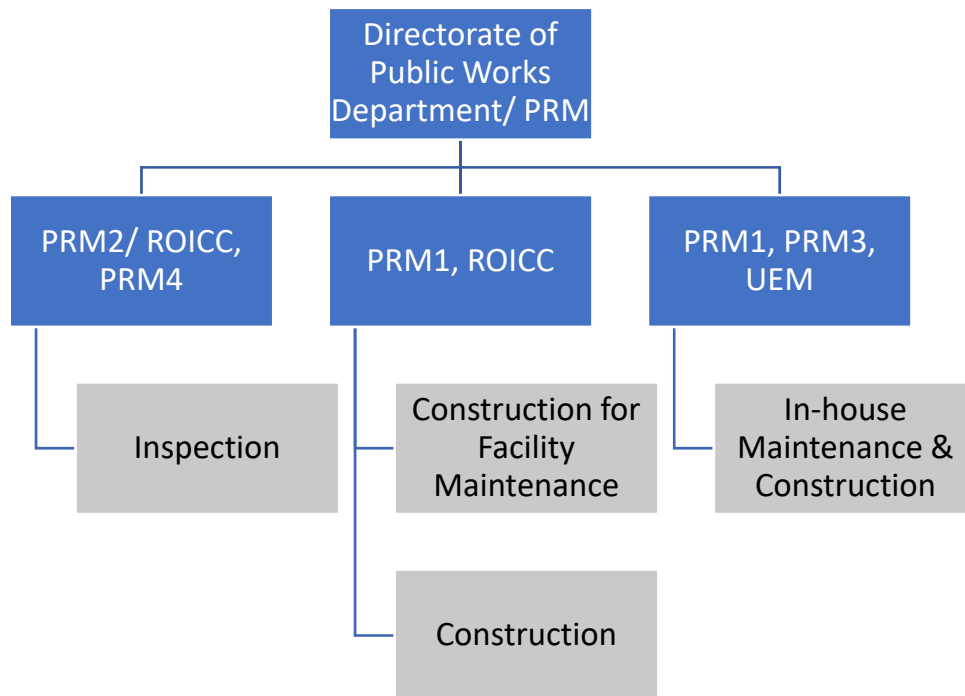
- i) *In-house Maintenance and Construction*– These are projects that are typically less than 5,000 square feet (SF) and/or related to emergency repair work. They are usually managed by the PRM2, PRM3 and UEM. Some in-house projects are accomplished and managed by military personnel (e.g., Seabees).
- ii) *Contract Maintenance and Construction* – These projects are usually contracted to an outside contractor to construct. Project management and oversight is typically accomplished by the Facility Engineering and Acquisition Division (FEAD) for NBG projects or ROICC for Marine Corps Activity Guam construction projects on NBG property. Construction for tenants may be accomplished by FEAD or other contracting agencies Oversight and management of these other contracted projects are by these other agencies.

Due to the nature of certain in-house maintenance and construction projects, where the potential risk of storm water pollution is minimal or projects are needed to address public health and safety, certain projects may be exempt from the requirements of the Construction Site Runoff Control Program. Exemptions will be decided upon on a case-by-case basis. Such projects may include:

- Construction projects with less than 1-acre of total land disturbance as specified in the Permit
- Routine maintenance to maintain the original hydraulic capacity, or the original purpose of the facility.
- Emergency construction activities required to immediately protect public health and safety; and
- Interior remodeling that involves no outside exposure of construction materials/waste to storm water.

These qualifying characteristics are subject to the discretion of PRM4 and may be revised as determined necessary and/or justifiable. All projects that do not meet these exemption criteria will be referred to herein as “*non-exempt*” construction projects.

Figure 22: Construction Organizational Chart



## 4.2 BMP Implementation

The Base Instruction that implements this SWMP as Base policy establishes the requirement to implement BMPs on construction projects to minimize the discharge of pollutants with storm water, including controls for erosion and sediment and non-storm water. NBG is responsible for establishing policies and standards that need to be met on contracted construction projects. These policies are incorporated as requirements into the construction contracts. SWMP BMPs are provided in Appendix D.

The Stormwater BMP Construction Inspection Checklist (Attachment 2-2) of the 2014 Comprehensive SWPPP is adopted for all construction projects in the permitted area whose ground disturbance exceeds 1-acre.

Tenants and other contractors working on base are required to comply with all applicable laws and regulations and base-wide instructions and permits. In-house construction projects will be required to implement BMPs per the requirements of this SWMP.

In addition, there are specific requirements for handling, storage, and disposal of wastes generated during construction.

These standards and requirements will be reviewed annually and, as necessary, revised to include descriptions of new, modified, or revised BMPs, including permanent BMPs and Low Impact Development (LID) practices. Any revisions will be discussed within the Annual Report and the documents included within this SWMP. All documents will be made available to facility staff, contractors, and consultants, as appropriate.



#### Measurable Goals 4-1

- Policy memoranda will be issued to FEAD instructing them to adopt the 2014 Comprehensive SWPPP and the MS4 Permit requirements twice per year with the goal of all FEAD staff being aware of such requirements.

#### Measurable Goals 4-2

- A presentation will be developed to orient ETs and CMEs regarding MS4 Permit requirements. Attendance is required prior to each new construction projects with a total land disturbance of one or more acres. A sign-in sheet for these presentations will be collected. The goal is to orient all applicable ETs and CMEs.

### 4.3 Inventory of Construction Projects

The Permittee must develop and maintain an inventory of all active public and private construction sites that result in a total land disturbance of one or more acres. To maintain the inventory, electronic tracking is required.

There are three general categories of construction projects at NBG; (1) In-house Maintenance and Construction, (2) NAVFACSYSCOM FEAD Contract Construction and Maintenance, and (3) Other Contracting Agency's Maintenance and Construction. Several construction projects are likely to be on-going at any given time. The benefits of developing and maintaining an inventory of public and private construction sites include:

- Helping to ensure that construction and BMP plans have been reviewed;
- Tracking potential points of discharge of pollutants into the system;
- Easily attaining project data and point of contacts to address issues; and
- Maintaining records of projects to verify that applicable inspections are being conducted, and that necessary enforcement action are being implemented.

Effectively maintaining and managing this information will enable NBG to identify and address compliance issues efficiently as well as help recognize recurring issues within the Construction Site Runoff Control Program or repeat offenders of the Permit requirements. Being able to easily identify and address issues will help promote the continual improvement of the Construction Site Runoff Control Program and facilitate its effectiveness in reducing storm water pollution from construction sites. To ensure its effectiveness the inventory must be continuously updated as new projects are permitted and projects are completed.

The information to be tracked as part of the inventory for construction projects will consist of the following:

- Relevant contact information for each project (e.g., names, address, phone, email, etc. for the site operators and contractor);
- Basic site information including location, status, size of the project and area of disturbance;
- Permit or file number , if applicable and available;
- Status of design and BMP Plan review and approval;
- Inspection dates, and if applicable, enforcement actions;

- If a Notice of Intent (NOI) has been filed, or a Notice of General Permit Coverage (NGPC) received for project-specific NPDES;
  - If projects disturbs one or more acre of land or is part of a larger common plan of development that disturbs one or more acre of land, coverage under the latest NPDES CGP is required.
  - Or if an individual permit application has been applied for or received, or any other requirement of the NPDES permit program has been satisfied
- Location of the project with respect to all waterbodies, and whether waterbodies are listed as impaired under the CWA Section 303(d) and approved by EPA;
- Permit tracking number issued by GEPA;
- Project threat to water quality;
- Required inspection frequency;
- Project start and anticipated completion dates; and
- Date the Permittee approved the erosion and sediment control plan and site-specific Storm water Pollution Prevention Plan in accordance with Part 3.4.3 of the Permit.

An inventory of applicable construction sites will be maintained as required by the Permit, by the responsible agency displayed in Table 5. In addition, all records are kept at the associated agency’s office and will be made available, when necessary, to the permitting authority upon request.

Table 5: Location of Inventory of Construction Sites

Type of Construction Project	Agency Responsible for Site Stormwater Management
In-house Maintenance and Construction	PRM1, PRM2, PRM4, UEM, Military agency responsible for construction
Contract Construction and Maintenance	PRM1 PRM4, PRM2/ROICC, Other Contracting Agencies

To prevent overburdening the tracking systems and procedures in place, in-house maintenance and construction projects (*exempt or non-exempt*) that (1) disturb a total area of one or more acres, *and* (2) can reasonably be considered to hold a negligible potential for discharging pollutants via storm water (with concurrence from PRM4), will not be included in the inventory of construction sites. Even *exempt* projects (such as emergency repair projects) are considered for tracking if these criteria are not met, because tracking can be instrumental in identifying recurring or resultant issues in the future. By eliminating the tracking efforts required by these smaller tasks, NBG will be able to direct more of its resources towards the management of projects that pose a greater potential to have an impact on storm water quality.

**Measurable Goals 4-3**

- An electronic tracking system with the information required by this section will be developed to inventory construction sites.
- The tracking system data will be printable to physical copies or letter-sized PDFs.

## 4.4 Plan Review and Approval

As a part of the design process, designers will consider requirements of this Construction Site Runoff Control Program as well as those of the Permit. NBG will perform a review of all non-exempt construction project plans developed in order to ensure applicable requirements are met.

Review of all site-specific storm water pollution prevention plans (site-specific SWPPP) and supporting documents will be conducted by the agency responsible for overseeing the project listed in Table 5. No SWPPP will be accepted unless it conforms to the requirements of the 2014 Comprehensive SWPPP.

Plan review is conducted similarly for all types of projects, and approval shall occur as follows:

- Document the process whereby all proposed construction projects are required to implement measures to ensure that the discharge of pollutants from the site will be reduced to the MEP and will not cause or contribute to an exceedance of water quality standards.
- Review and approve of the applicable Site-Specific SWPPP/BMP Plan to verify that it fully meets all requirements of the Permit and the checklist prior to approval of construction plans and specifications (if prepared prior to contract award) or prior to the start of construction activities (if prepared after contract award);
- If applicable to the project, ensure that there is proof of filing a Notice of Intent (NOI) or NPDES application for permit coverage and that a Construction BMPs Plan has been prepared; and
- Not allow construction to commence on any project unless and until it is verified that the project has been issued all relevant NBG permits (e.g., drainage connection, discharge of surface storm water runoff permit, etc.), received from USEPA a Notice of General Permit Coverage for the discharge of storm water associated with construction activities (if applicable - the project will disturb one or more acre of land or is part of a larger common plan of development that disturbs one or more acre of land), or other discharge as applicable (e.g., hydrotesting/disinfecting water, dewatering, etc.) , and satisfied any other applicable requirements of the NPDES permit program (e.g., individual NPDES permit).

If a plan submittal does not meet the requirements outlined by the plan review process, all deficiencies are noted on the project's Plan Review Checklist. The applicant must resubmit the checklist, with comments describing how each deficiency has been addressed. At a minimum, the reviewing agency will keep a record of deficiencies/comments noted, and the date in which revisions were made to the satisfaction of the reviewer. Other relevant information may be tracked at the discretion of the agency.

Prior to commencement of construction, the Navy PM or contractor is responsible for ensuring that necessary approvals, including documentation of any revisions made to satisfy reviewer comments, have been received and updated in the project record.

Any pertinent revisions to the SWPPP and supporting documents following review approval, including but not limited to design or concept changes, shall be resubmitted to the appropriate agency for review. As necessary, EV Div will oversee or provide assistance during the plan review process. EV Div will also review, update, and distribute the Plan Review Checklist as needed.

#### 4.4.1 Approval to Discharge or Connect to MS4

NBG will continue to implement multi-department review for all new construction / rehabilitation projects. Approval to discharge or connect to the MS4 is required for connection to the MS4 for facilities not under the direct control of NBG, or certain project-related discharges to the MS4 (e.g., dewatering or hydrotesting, surface storm water runoff associated with construction activities that disturb one or more acres of land or that are part of a larger common plan or development that would disturb one or more acre of land). EV Div will work with PRM1 and / or UEM to determine if the storm drain system has adequate capacity to accept a connection request.

#### 4.4.2 Commencement of Construction

Prior to any construction, a project owner must receive notice of the completion and acceptance of a SWPPP review and GEPA permit, if applicable. All construction activities, for in-house, military or contract projects, will also be prohibited until it is verified whether the project has received all applicable permits, and has satisfied all other requirements of the NPDES program.

### 4.5 Inspections

Inspections shall be conducted and include a review of site erosion and sediment controls, good housekeeping practices, and compliance with approved erosion control plans or construction BMPs plans. Inspectors shall use the approved inspection checklists 2-1 and 2-2 of the 2014 Comprehensive SWPPP. Inspection results will be tracked in a database or equivalent system by the agency responsible for the construction and made available to permitting authority upon request.

There are three construction inspection requirements that must be met for all applicable maintenance and construction projects. They are as follows:

- **Initial Site Inspection:**
  - Purpose: To ensure that BMPs are correctly installed, in the right locations, and in accordance with all approved SWPPP related documents.
  - Inspector: An engineer or qualified inspector familiar with the project's site-specific BMP Plan and related documents.
- **Quarterly Site Inspections:**
  - Purpose: To ensure the continued performance of BMPs throughout the life of the project, that SWPPP related documents are available to workers onsite, and to make sure that appropriate adjustments are made to BMPs that are found to be deficient. These inspections will be conducted for all projects.
  - Inspector: A qualified, independent inspector, with no involvement in the day-to-day planning, design, or implementation of the project.
  - Frequency: Quarterly.

- ***Other Frequencies of Inspections:***
  - ***Purpose:*** To ensure that, for construction projects where more frequent inspections are appropriate, performance of BMPs continues throughout the life of the project, that SWPPP related documents are available to workers onsite, and to make sure that appropriate adjustments are made to BMPs that are found to be deficient. Prior to beginning any ground-breaking activities the minimum inspection frequency and priority will be identified for each construction project.
  - ***Inspector:*** A qualified, independent inspector, with no involvement in the day-to-day planning, design, or implementation of the project and must respond to an illicit discharge report made by the public
  - ***Frequency:*** As determined prior to the beginning of the project, and may be adjusted through the duration of the project.

In addition to the above, an inspection may be triggered in response to an illicit discharge report from the public.

A prioritization process is being developed by NBG to identify sites that require more frequent inspections to ensure protection of the receiving waters. More frequent inspections would be conducted if problems are identified during construction that threatens water quality. In evaluating the threat to water quality, the following factors must be considered; soil erosion potential; site slope; project size and type; sensitivity of receiving water bodies; proximity to receiving water bodies; non-storm water discharges; and past record of non-compliance by the operators of the construction site.

NBG EV will be responsible for periodically reviewing and distributing updates to the inspection checklist and prioritization process as needed.

***Critical Deficiency:*** A deficiency that poses an immediate risk of discharge of pollutants to a storm drain MS4, or water body, or observed violation of regulations. Critical deficiencies include, but are not limited to, the following examples:

- Any evidence or observed discharge of non-storm water to the storm drain system, or water body generated by construction activity;
- No SWPPP or BMP document;
- No required NPDES permit;
- Absence of perimeter controls and/or linear barriers required by the SWPPP document;
- There are identified storm drain inlets, surface waters, or State waters within or adjacent to the project site in close proximity to disturbed soil areas without control measures in place so there is an immediate threat of untreated storm water discharges;
- Work in an active stream channel or other surface water body without proper implementation of required BMPs; and
- Any presence of any spilled oil or hazardous materials near unprotected storm drain inlets, swales, ditches, or water body.

The Permittee must adequately inspect all phases of construction. The Permittee must have trained and qualified inspectors. The Permittee must also develop, and revise as necessary, written procedures

#### 4.5.1 Initial Inspections

Prior to the initiation of construction activities, the site will be inspected by an engineer or qualified inspector for BMPs, as recommended by the Permittee. The Permittee must also develop, and revise as necessary, written procedures outlining the inspection and enforcement procedures. As mentioned in Part 3.4.4.4 in NPDES Permit, inspections of construction sites must, at minimum:

1. Check for coverage under the EPA construction general NPDES permit (Permit No. GUR100000) by requesting a copy of any application or Notice of Intent (NOI) or other relevant application form during initial inspections.
2. Review the applicable Site-Specific SWPPP and conduct a thorough site inspection to determine if control measures have been selected, installed, implemented, and maintained according to the plan.
3. Assess compliance with the Permittee's ordinances and permits related to storm water runoff, including the implementation and maintenance of designated minimum control measures.
4. Assess the appropriateness of planned control measures and their effectiveness.
5. Visually observe and record non-storm water discharges, potential illicit connections, and potential discharge of pollutants in storm water runoff.
6. Provide education and outreach on storm water pollution prevention, as needed.
7. Provide a written or electronic inspection report generated from findings in the field.

In addition to the initial inspection, the inspector will review the site's BMP plan and applicable permits and verify that BMPs have been installed as required, correctly and in the correct locations prior to the commencement of ground-disturbing activity. Specifically, the inspector will review erosion and sediment controls, good housekeeping practices, and compliance with site plans, Construction BMPs Plans, and other similar documents and approved permits. If the inspector identifies any site conditions that have the potential to result in the discharge of pollutants, corrective actions and re-inspection will be required prior to the commencement of construction activities. Prior to this inspection, a contractor may only disturb the soil to the extent that is required to install BMPs.

#### 4.5.2 Quarterly and Other Frequency Inspections

During active constructions projects, the Permittee is required to conduct inspections in accordance with the frequencies determined under Parts 3.4.4.1 and 3.4.4.2 of the NPDES Permit. All construction projects will be inspected either quarterly or more frequently to ensure that all BMPs specified in the SWPPP are properly maintained and continue to be sufficient in preventing storm water pollution resulting from construction activities through the duration of the project. All

inspections will be conducted by independent (i.e. not involved in the day-to-day planning, design, or implementation of the construction project) qualified inspectors.

Inspections will also be conducted upon complaints from citizens or concerned groups. Unannounced and follow-up inspections may be conducted as deemed necessary. NBG EV will coordinate with the overseeing agency if violations are documented. If violations are observed during general inspections, either the tenant or PRM4 will be notified. PRM4 will direct the issue accordingly. Adjustments to inspection frequency will be made at the discretion of the overseeing agency and EV Div, in accordance with the Permit requirements.

At the conclusion of the project, the Permittee must inspect all projects to ensure that all graded areas have reached final stabilization and that all temporary control measures are removed.

#### **4.5.3 Corrective Action and Reporting Procedure**

The Permittee must track the number of inspections for the inventoried construction sites. Throughout the reporting period to verify that the sites are inspected at the minimum frequencies required. Inspection findings must be documented and maintained for review by the permitting authority.

Critical deficiencies will be reported immediately to EV Div and the construction manager. Failure to address identified critical deficiencies can be escalated to the next higher authority and enforcement conducted through the contract or tenant lease agreement, as necessary.

Contractors are required to verbally notify FEAD/ ROICC within 1 hour of potential non-compliance.

#### **4.5.4 Tracking Inspection Results**

As a part of the inspection, all the documentation for the site must be produced by a project representative (e.g. BMP plan, applicable permits, site inspections, and training records). Inspectors will then verify that site conditions match those required in site documents. Further, the inspector will ensure that BMPs are properly maintained and effective in containing potential pollutants. Any deficiencies noted during these inspections shall be promptly corrected by the contractor. The inspections results, corrective actions, and follow-up inspection results will be tracked by the individual agencies and will be available for review by permitting authority.

#### **Measurable Goals 4-4**

- An inspection checklist will be developed and used for each construction project with a total of one or more acres of land disturbance. The checklist will be modified to include the proposed dates for inspections at the minimum or greater necessary frequency of inspections that are required by this section. Inspection reports will be attached to this checklist to track that the SWMP construction inspection requirements have been met over the life of an applicable project.
- Corrective action and follow-up inspection reports, if any, will be listed on the checklist and appended to this documentation.
- A major goal is to meet all of the Permit's construction inspection requirements and reduce the time required to reveal and address deficiencies.

## 4.6 Enforcement

To ensure compliance with the Construction Site Runoff Control Program and the Permit requirements, NBG is in the process of developing enforcement procedures for all maintenance and construction projects. The Enforcement Response Plan (ERP) includes policies and written procedures for appropriate corrective and enforcement actions, including penalties as appropriate, for projects found to be in non-compliance with the Construction Site Runoff Control Program. The ERP also includes follow-up inspections when an inspected project is not in full compliance with its requirements, other permits, and any other applicable requirements under the NPDES permit program.

## 4.7 Construction BMP Training

Employees in targeted positions, whose jobs or activities are engaged in construction will be trained regarding the requirements of the Construction Site Runoff Control Program. Positions with Construction Site Runoff Control Program responsibilities include construction engineers, construction and maintenance inspectors and plan reviewers, and any other staff responsible for managing the Construction Site Runoff Control Program. Contractors, through their EV Managers, are responsible for providing training to their employees.

Training sessions are being developed that will relate to specific facility construction activities, and include information on proper installation and maintenance of approved BMPs, Construction Site Runoff Control Program policies, rules, procedures, and resolution of any issues observed during the previous year.

The Navy has internal web-based training, Environmental Compliance Assessment, Training and Tracking System (ECATTS), which includes a storm water module. ECATTS is required for construction contractors who work on NAVFACSYSCOM Marianas construction contracts at NBG.

Field inspectors are also encourage to take other DoD web-based training such as the Construction site stormwater seminar provided by Air Force Institute of Technology (AFIT):

[https://www.afit.edu/CE/course\\_desc.cfm?p=WESS%20031](https://www.afit.edu/CE/course_desc.cfm?p=WESS%20031)

EV Div will be responsible for ensuring that updated information, current inspection forms, and any other updates to the Construction Site Runoff Control Program policy, procedures, etc. are made available to personnel and contractors working in construction.

NAVFAC Marianas Construction Department personnel receive annual classroom training on BMPs and storm water protection via a PowerPoint presentation and a question-and-answer session. This training includes construction and design engineers and field inspectors, and is conducted by EV personnel. The purpose of the training is to improve awareness of storm water pollution and its effects, and also includes information on storm water regulations regarding construction storm water permits and construction best management practices.

### Measurable Goals 4-5

- The active construction database will have fields for the storm water BMP training received for each project meeting or exceeding one acre of land disturbance. A record or sign-in sheet will be appended with the names and positions of the personnel who



received training with the goal of no relevant employee being unaware of the current installation BMP standards.

- The active construction database will have a field for the latest date of the Construction Site Runoff Control Program at the date of construction Notice to Proceed. A meeting with the construction project team will be requested if program changes will affect the construction activity. Contract change requests may be initiated on a case by case basis, e.g it is likely that multiple deficiencies are occurring due to a weakness in the program.

## 4.8 Permittee Staff Training

The NPDES Permit under Part 3.4.5.1, the Permittee must ensure that all staff whose primary job duties are related to implementing the construction storm water program, including permitting, plan review, construction site inspections, and enforcement, are trained to conduct these activities. The training can be conducted by the permittee or outside training can be attended, however, this training must include, at a minimum:

1. Erosion and Sediment Control/Storm water Inspectors:
  - Initial training, beginning no later than three years after the permit effective date, regarding proper control measure selection, installation, implementation, and maintenance, as well as administrative requirements such as inspection reporting/tracking and use of the permittee's enforcement responses; and
  - Annual refresher training for existing inspection staff to update them on preferred controls, regulation changes, permit updates, and policy or standards updates. Throughout the year, e-mails and/or memos must be sent out to update the inspectors as changes happen.
2. Other Construction Inspectors: Initial training must be held beginning no later than three years after the permit effective date, on general storm water issues, basic control measure implementation information, and procedures for notifying the appropriate personnel of noncompliance. Refresher training held at least once every two years.
3. Plan Reviewers:
  - Initial training, beginning no later than three years after the permit effective date, regarding control measure selection, design standards, and review procedures; and
  - Annual training regarding new control measures, innovative approaches, permit updates, regulation changes, and policy or standard updates.
4. Third-Party Inspectors and Plan Reviewers: If the permittee utilizes outside parties to conduct inspections and/or review plans, these outside staff must be trained per the requirements listed in Section 4.8, number 1 under the SWMP.

### Measurable Goals 4-6

- The name of any staff member who may be involved with the construction storm water program and their current or potential role will be electronically tracked. This tracking will include the initiation training and annual refresher training relative to their role and date. The goal is to train and maintain training for all applicable staff.

## 4.9 Education and Public Involvement

### 4.9.1 Education

Part 3.4.6.1 of the Permit requires that the permittee develop and distribute educational materials for construction site operators and other responsible parties each year as part of the effective management of its Construction Site Runoff Control Program.

Requirements:

1. The permittee must provide information on existing training opportunities or develop new training for construction operators on control measure collection, installation, implementation, and maintenance as well as overall program compliance.
2. The permittee must develop or utilize existing outreach tools (i.e. brochures, posters, website, plan notes, manuals etc.) aimed at educating construction operators on appropriate selection, installation, implementation, and maintenance of storm water controls, as well as overall program compliance.
3. The permittee must make available appropriate outreach materials to all construction operators who will be disturbing land within the MS4 boundary. The permittees' contact information and website must be included in these materials.
4. The permittee must include information on appropriate selection, installation, implementation, and maintenance of controls, as well as overall program compliance, on the permittee's existing website.

The program will promote a general understanding of the SWMP, and more specifically of the requirements that they must meet as participants of the Construction Site Runoff Control Program. Part of this education involves knowledge of the proper procedures/approvals necessary to begin construction, as well as knowledge of how to remain in good standing throughout the construction process, and where to go for additional information and assistance.

For more information on education materials and outreach refer to the Chapter 2 of the SWMP Document.

### 4.9.2 Public Involvement

The permittee must adopt and implement procedures for receipt and consideration of information submitted by the public "regarding construction projects. This includes, but is not limited to, the public reporting mechanisms described in Part 3.3.6 of the Permit.

\*Note: For purposes of this permit, “public” refers to the military community consisting of people of live or work on a military installation.

The program will promote a general understanding of the SWMP, and more specifically of the requirements that they must meet as participants of the Construction Site Runoff Control Program. Part of this education involves knowledge of the proper procedures/approvals necessary to begin construction, as well as knowledge of how to remain in good standing throughout the construction process, and where to go for additional information and assistance.

For more information on Public Involvement refer to the Chapter 2 of the SWMP.

## 5. Post Construction Storm Water Management

NBG is required to develop, implement, and enforce a Post-construction Storm Water Management Program. The purpose of the program is to address storm water runoff from all new development and redevelopment projects that result in a land disturbance of one (1) acre or more and smaller projects that have the potential to discharge pollutants to the MS4.

The Post-construction Program implements the following control measures to minimize storm water impacts to the MEP and ensure permanent controls are in place for applicable projects:

- Develop and implement revised standards, and feasibility criteria for requiring post-construction permanent BMPs (PBMPs), including Low Impact Development (LID) measures that will effectively reduce pollutants, including foreseeable potential future pollutants, to NBG's MS4.
- Review and accept plans for projects to ensure that appropriate PBMPs have been included in the project design and bid package.
- Develop, operate and maintain an Asset Management System (AMS) database to track PBMP installations including inspections, operations and maintenance, and inspection frequency of PBMPs.
- Provide education and outreach materials on the selection, design, installation, operation, and maintenance of storm water BMPs, structural controls, PBMPs, and LID practices.
- Provide annual training for staff and contractors responsible for inspecting PBMPs and LID practices.

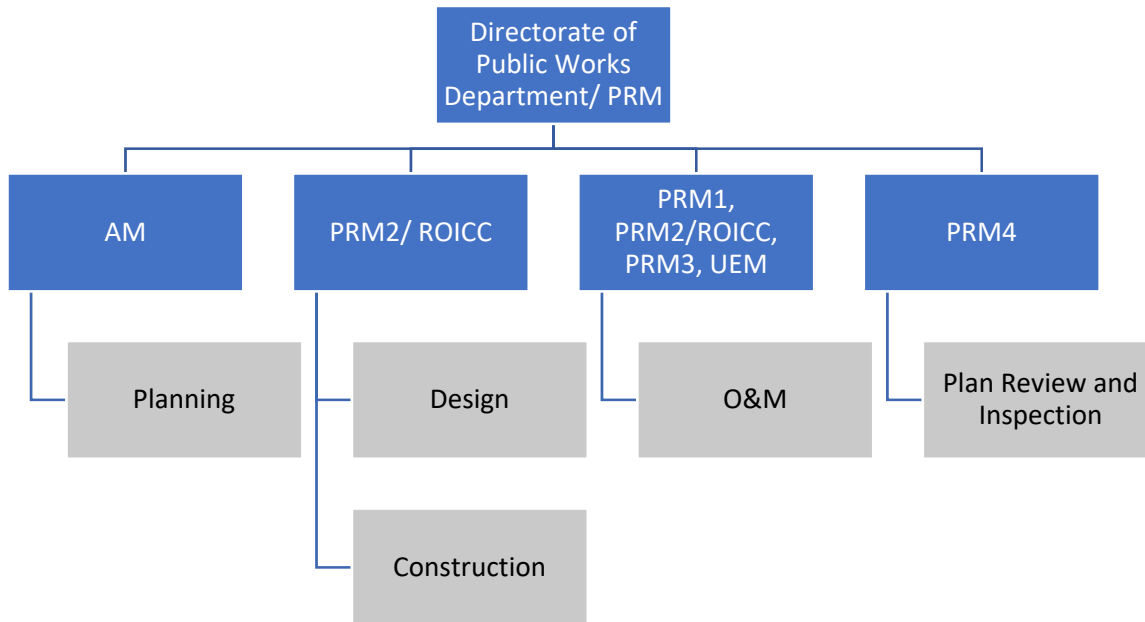
The implementation the program must be consistent with the performance standards set forth in the documents in Part 3.5.2 under the NPDES Permit upon the effective date of this Permit.

### 5.1 Program Organization

The program organization for the Post-construction Storm Water Management Program would be dependent on who is responsible for design and construction of the project. The agencies responsible for overseeing that all Post-construction Storm Water Management Program requirements are met for the various types of construction projects are primarily PRM4 and PRM1. The Post-construction Storm Water Management Program includes planning, design, and a long-term maintenance component, which is coordinated by PRM1, under the overall direction of the Public Works Department PWD.

Figure 23 outlines the organization of the Post-construction Storm Water Management Program.

Figure 23: Post-Construction Organizational Chart



NAVFACSYSCOM typically accomplishes project management, planning, design, and construction for most NBG and tenant projects. Construction for tenants may be accomplished by other contracting agencies.

Parties responsible for each are described below. Work contracted by other agencies would be planned, designed, and managed by the agencies responsible for the project. Operation and maintenance (O&M) for the PBMPs would be responsibility of the tenant. PRM4 and PRM1 would be responsible for compliance oversight and tracking for O&M.

Typically, NAVFACSYSCOM construction projects at NBG are categorized as either:

- i) *In-house Maintenance and Construction*– These are projects that are typically less than 5,000 square feet (SF) and/or related to emergency repair work. They are usually managed by the PWD and UEM. Some in-house projects are accomplished and managed by military personnel (e.g., Seabees).
- ii) *Contract Maintenance and Construction* – These projects are usually contracted to an outside contractor to construct. Project management and oversight is typically accomplished by the Facility Engineering and Acquisition Division (FEAD) for NBG projects or ROICC for Marine Corps Activity Guam construction projects on NBG property. Construction for tenants may be accomplished by FEAD or other contracting agencies Oversight and management of these other contracted projects are by these other agencies.

To address the Permit requirements, construction projects subject to the requirements of the Post-construction Storm Water Management Program are those that disturb one (1) or more acres, or smaller projects that have the potential to discharge pollutants into NBG's MS4. This program covers all new development and redevelopment projects.

For the purpose of this SWMP and the Post-construction Storm Water Management Program, the following construction activities are *not* considered for classification as "redevelopment" projects:

- Routine maintenance to maintain the original hydraulic capacity, line and grade, or the original purpose of the facility;
- Trenching and pavement resurfacing activities related only to utility work;
- Resurfacing or replacement of damaged pavement;
- Emergency construction activities required to immediately protect public health and safety;
- Interior remodeling that involves no outside exposure of construction materials/waste to storm water; and
- Exterior building renovations that do not disturb ground or increase the footprint of impermeable surfaces.

Those projects classified as exempt projects are subject to the discretion of the overseeing agency and NBG EW.

Similar to all other programs in this SWMP, the NBG has the authority to adjust policies or direct enforcement actions for tenants/agencies. The Installation Commanding Officer has ultimate authority for Permit policies and enforcement actions.

## 5.2 Standards Revision

In accordance with the Permit, Part 3.5.2, the program must ensure the design, installation, implementation and maintenance of post-construction storm water control measures from new development and redeveloped sites discharging to the MS4 in compliance with the following:

- 2006 CNMI and Guam Storm water Management Manual; and
- 2010 Guam Transportation Stormwater Drainage Manual

NBG will be determining whether it is necessary to develop a separate "Plan for Requiring Low Impact Development in the Standards (Plan for Requiring LID)." Low impact development (LID) aims at preserving or mimicking the site's predevelopment hydrology. This is achieved by minimizing ground disturbance and use of impervious cover, and infiltrating, storing, detaining, evapotranspiring, and/or biotreating storm water runoff as close to its source as reasonably possible. Ideally LID measures are based on the concept of preserving or recreating the natural landscape features and minimizing imperviousness, and treating storm water as a resource rather than a waste product. NBG's LID design standards are intended to prioritize management practices that favor harvesting and use, infiltration, evapotranspiration, or biotreatment, followed by other practices to treat and release storm water.

The revised Plan for Requiring LID is anticipated to cover the following items:

- Criteria for requiring implementation of LID;

- Quantitative criteria for a specific design storm to be managed by LID techniques;
- Feasibility criteria for circumstances in which a waiver could be granted for the LID requirements;
- List of alternatives that may be implemented when an LID waiver is granted;
- Draft LID planning and design example checklist; and
- Draft LID and PBMP inspection example checklists.

NBG has already implemented the required LID standards for its projects in accordance with updated LID Standards. These standards are outlined in Section 438 of the Energy Independence and Security Act of 2007 (EISA) and establish strict storm water runoff requirements for federal development and redevelopment projects with a footprint of 5,000 square feet or more. The Under Secretary of Defense released a policy memorandum on January 19, 2010, for DoD Implementation of Storm Water Requirements under Section 438 of the Energy Independence and Security Act (EISA), which identified the design storm criteria as the 95<sup>th</sup> percentile storm. This policy memorandum also includes a flow chart that includes examples of on-site design options and technical constraints. NAVFACSYSCOM projects are required to follow the requirements of the Unified Facilities Criteria (UFC) 3-210-10, Low Impact Development, which provides design criteria for LID and technical feasibility criteria.

### 5.3 Review of Plans for Post-Construction BMPs

A primary goal of the Post-construction Storm Water Management Program is to ensure that no applicable construction project will proceed without the inclusion of the appropriate PBMPs and documentation outlining future PBMP maintenance requirements. To achieve this goal, all projects, design-bid-build and design-build alike, must be reviewed and accepted for suitable use of PBMPs. This review and acceptance process will be conducted by the overseeing agency shown in Figure 23, and will incorporate all LID standards that have been developed for the Permit.

All project owners will have access to the criteria for requiring LID, and the “Low Impact Development Planning and Design Checklist,” (LID Design Checklist) which is being developed. No non-exempt project shall proceed without the inclusion of appropriate PBMPs unless a waiver has been granted with approval by the Regional Engineer based on specific documentation demonstrating that PBMPs are not technically feasible. Criteria for technical feasibility include restrictions imposed by State or local regulations on types of LID features (e.g., green infrastructure, rain harvesting). Economics may be a factor, but should not be considered the only constraint to justify technical infeasibility.

At the time of review, the project owner must also submit documentation of required maintenance activities. These will also be reviewed for long-term feasibility.

To assure the implementation of adequate PBMPs, no construction shall begin or be awarded until the plans have been appropriately reviewed and accepted by the overseeing agency. As part of the Plan for Requiring LID, the applicant must also submit a description of the alternative measures or non-LID PBMPs that will be implemented should the LID waiver be granted by NBG due to technical constraint(s).

## 5.4 PBMP, Operation and Maintenance, and Inspection Database

Adequately operating and maintaining PBMPs is an important factor in ensuring their long-term effectiveness. A successful maintenance program relies on routine inspection and accurate tracking/recordkeeping.

When vegetated PBMPs are installed there is a stabilization period over which the contractor is responsible for their maintenance. This stabilization period can be helpful in identifying design problems, or oversights during installation. When non-vegetated structural PBMPs are installed, they are required to be functional and clean when turned over to the base. To facilitate the turnover of PBMP ownership to NBG, the contractor may document any observed maintenance baseline or other information that may be useful to NBG. The process for a contractor to turn over ownership of a new or redeveloped facility to NBG includes:

- Submittal of as-built plans, with clear distinction of all PBMPs (supplemental written documentation may be submitted for additional clarification of any details);
- Submittal of all relevant documentation outlining PBMP/LID specifications and required future maintenance; and
- Submittal of proof of PBMP stabilization (photos, prior maintenance records, etc.), if applicable.

These documents are to be submitted to the overseeing agency who will ensure that PRM1, PRM3, PRM4, and others receive them as necessary. Once proof of stabilization has been accepted, maintenance of the applicable PBMPs will fall under the responsibility of PRM1. It is up to the project owner/contractor to ensure that all relevant information is provided to NBG.

A copy of the as-built plans will also be provided to the overseeing agency to be used to update NBG's existing Geographic Information System (GIS) file and its existing overall storm drain system database, which is used primarily for tracking and scheduling of maintenance work. At a minimum, the PBMP Database will include:

- General Information: Project name, owner, general location, start/end date of construction, date of acceptance by overseeing agency;
- Current ownership information (name, address, contact number)
- Type and number of LID practices;
- Type and number of Source Control PBMPs;
- Type and number of Treatment Control PBMPs;
- Latitude/Longitude coordinates of controls using Global Positioning Systems and WGS84 or other Datum as long as the datum remains consistent;
- Photographs of controls (as allowable due to security);
- Description of the condition of the structural storm water control measure
- Operation and maintenance requirements;
- Frequency of inspections, (or contact information for inspection records);
- Inspection results, necessary follow up actions, and responses; and
- Frequency of maintenance, (or contact information for maintenance records).

The maintenance program will allocate resources and prioritize the operation and maintenance of facilities with the maximum potential to affect storm water quality. The PBMP Database will be used to



ensure that all PBMPs, including LID features, are met. This requires that inspections be conducted on a routine basis for each PBMP, with maintenance performed as necessary to retain its function.

#### Measurable Goals 5-1

- The PBMP database will be used to ensure that an initial inspection was made by NBG after or along with proof of stabilization, and that at least twenty-five PBMPs have been inspected per year. Every PBMPs should be inspected and documented at least once per every five years, or at a greater frequency dependent on the maintenance requirements of that PBMP.

Routine maintenance activities will also be conducted to the MEP, but priority will be given to PBMPs that have been identified by inspection, or public notification, as malfunctioning. Inspection and maintenance records will be tracked via work orders generated by FMD, and by field notes documented by maintenance personnel. All inspection/maintenance records will be maintained by FMD, and made available for review upon request.

## 5.5 Retrofit Plan

NBG is in the process of developing a plan to retrofit existing developed sited that are impacting water quality. The retrofit plan must be developed within three years of permit effective date and must emphasize controls that infiltrate, evapotranspire, or harvest and use storm water discharges. Written procedures for implementing this plan must be incorporated into the SWMP document. The plan must include:

1. An inventory of potential retrofit locations, which considers, at a minimum:
  - Locations that contribute pollutants of concern to an impaired waterbody
  - Locations that contribute to receiving waters that are significantly eroded
  - Locations that are tributary to a sensitive ecosystem or protected area
  - Locations that are tributary to areas prone to flooding
2. An evaluation and ranking of the inventoried locations to prioritize retrofitting which includes, at a minimum:
  - Feasibility
  - Cost effectiveness
  - Pollutant removal effectiveness
  - Impervious area potentially treated
  - Maintenance requirements
  - Landowner cooperation
  - Neighborhood acceptance
  - Aesthetic qualities, and
  - Efficacy at addressing concern.

## 5.6 Education and Training

### 5.6.1 Project Proponents

As part of its Post-construction Storm Water Management Program, NBG will implement an ongoing education program directed at those parties with project design and construction storm water

responsibilities on the selection, design, installation, operation, and maintenance of storm water BMPs, structural controls, PBMPs, and LID practices. Education of all participating parties will promote consistency, and efficiency within the Post-construction Program.

NBG will use its Plan for Requiring LID and may develop other materials, as needed, to facilitate learning on, including but not limited to:

- thresholds triggering specified requirements;
- list of required permits;
- implementing agencies, fees, overviews, and timelines; and
- brief discussion of potential environmental impacts associated with storm water runoff.

EV Div is responsible for oversight of the Installation's post-construction education and outreach program, including contents and method of which information is circulated. Outreach material will be developed, revised, and distributed at the discretion of the PRM4. These materials will be used to address observed issues or general program policy updates.

### 5.6.2 Inspectors

EV Div will oversee the conduct of, at a minimum, annual training for all staff and contractors tasked with inspecting PBMPs. Information will focus on proper installation and maintenance of approved PBMPs, Post-construction Program policies, procedures, and resolution of any issues observed during the previous year.

PRM4 will be responsible for updating and ensuring that current resources are available to NBG staff and contractors tasked with managing any portion of the Post-construction Storm Water Management Program

## 6. Debris Control Program

A crucial component of NBG's SWMP is its base-wide pollution prevention and good housekeeping program. Generally this is a multi-faceted system maintenance program aimed at reducing discharge of pollutants from all NBG-owned property to the MEP. NBG-owned property includes facility roads, parking lots, maintenance facilities, sites with industrial activity, and its Small MS4.

This chapter focuses on NBG's Debris Control BMPs Program

Per the Permit, NBG is required to develop and implement a Debris Control Program as part of the System Maintenance Plan. As described above, the Debris Control Program applies to all NBG-owned property, including structural and vegetated BMPs, and related appurtenances.

A distinction is made that trash is not inclusive of non-man made materials, such as branches, leaves, and other vegetation, that is deposited into water bodies naturally.

The main objective of the Debris Control Program is to reduce the discharge of pollutants from NBG facilities, especially sediment and trash, to the MEP. The Debris Control Program will identify and track problem areas, and prioritize maintenance efforts to maximize removal of debris once captured within the MS4.

Main components of the Debris Control Program include:

1. Use of an Asset Management System (AMS), in conjunction with mapping of the Small MS4, to maintain an inventory of Small MS4 facilities and any related appurtenances (including maintenance equipment). The AMS is also used to facilitate scheduling and tracking of prioritized inspection and maintenance efforts.
2. Prioritized inspection and maintenance efforts for the Small MS4, and a preliminary schedule outlining how work will be completed.
3. A prioritized storm drain marking program for commercial and industrial areas that also incorporates an element of Public Outreach.
4. A Base-wide *Action Plan for Maintenance of Structural Controls*.
5. A Base-wide *Trash Reduction Plan*.

### 6.1 Program Organization

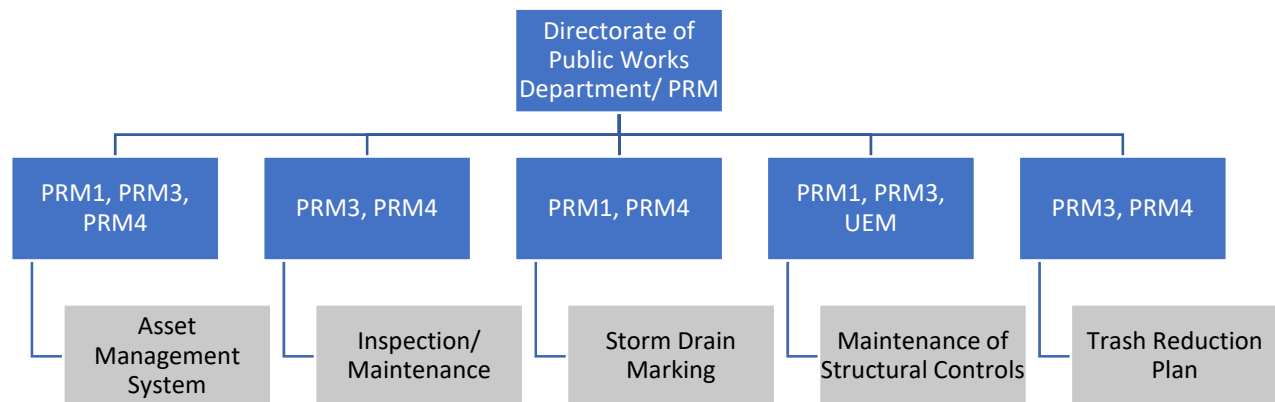
Implementation of the Debris Control Program requires collaboration between the PRM1, PRM3 and PRM4. These divisions manage the Debris Control Program for all of Main Base and facilities in outlying areas. The Debris Control Program applies Base-wide to all NBG-owned facilities, including those occupied by its tenants.

Much of the Debris Control Program success is related to management of NBG's Base-wide Facilities Maintenance Program. Several good housekeeping practices are currently conducted on Base as part of the Facilities Maintenance Program. These include street sweeping, catch basin cleaning, green waste and accumulated soil removal, regular refuse collection, and storm drain inspections. Building managers at all facilities on base are required to perform routine inspections around their facilities to determine if the area requires cleaning or additional trash removal. If there are any issues that need to be addressed, the building manager will put a request in to FMD to have it addressed.

- PRM4- General Program oversight, development of Debris Control Program standards, and working with the PRM1 and PRM3 to ensure that the components of the Debris Control Program meet all Permit requirements. Additional responsibilities include:
  1. Fund and oversee the storm drain marking program.
  2. Annual Reporting of Debris Control Program progress.
- PRM1 - Act as a liaison between tenants and its divisions. Delivering instruction to applicable tenants and overseeing implementation of each program component.
- PRM3 - Act as a liaison between tenants and its Contractors. Delivering instruction to applicable tenants and overseeing implementation of each program component.
- Building Managers, and Base Inspectors - Conduct routine inspections around industrial/commercial facilities, and regional zone inspections to identify problem areas within the storm drain system.

Similar to all other programs in this SWMP, the NBG ICO has the authority to adjust policies or direct enforcement actions for tenants/agencies subject to the Debris Control BMPs Program. The ICO, has ultimate authority for Permit policies and enforcement actions.

Figure 24: Debris Control Program Organizational Chart



## 6.2 Asset Management System and Mapping

NBG is in the process of developing a Base-wide AMS to track and manage inspections and maintenance of its entire MS4 system. The AMS will serve as an ongoing inventory of facilities and will be used to prioritize inspections/maintenance activities, such that resources are focused on areas that pose the greatest risk to water quality.

The AMS shall, at a minimum, assign an identification number for each drain inlet, outfall, and BMP, and map their location on the Geographic Information System (GIS). The AMS will include an inventory of related appurtenances, including maintenance equipment, to ensure appropriate debris removal and

system maintenance. The AMS will be used to establish priorities and to schedule and track system maintenance and debris removal activities such as street sweeping, catch basin cleaning, and green waste and accumulated soil removal. It will include justification of the priorities on the basis of potential impacts to water quality.

Currently NBG has a GIS map, which includes storm drainage features. FMD will be responsible for having it maintained. Tracking of permanent BMPs (PBMPs) is discussed in Chapter 5.

As new construction occurs, as-built construction plans will be provided for entry into the MS4 geodatabase and the Navy's ArcGIS GRX and linked to InFADs / Maximo for sustainment allocations.

### 6.3 Inspection/ Maintenance Schedule

FMD will work with FEC/ FSC to develop a priority-based schedule for routine maintenance and debris removal activities, such as street sweeping, catch basin cleaning, and green waste and accumulated soil removal for each area on Base. The current system will be reviewed and revised to address future concerns and priorities. The factors that will be used to determine areas prioritized for maintenance efforts, in order from highest to lowest priority, will be:

1. Concerns or notifications brought to the attention of EV Div or through any inspections.
2. Sediment and debris loading observed during the initial storm drain assessment, and subsequent inspections.
3. Proximity to commercial and industrial facilities.
4. Potential to impact water quality of receiving waters, and proximity to receiving waters.
5. Proximity to areas prone to erosion, or containing several trees, or areas with higher accumulation of plant debris.
6. Cost effectiveness. Maintenance and inspections will be grouped into areas that will most effectively utilize available resources at NBG.

Currently NBG conducts street sweeping, storm drain cleaning and trash removal to help reduce the accumulation of sediment and debris within its Small MS4. Storm drains surrounding industrial areas are also inspected periodically for any problems. Storm drain maintenance and repair is performed as often as possible to ensure function of the system and to prevent accumulated debris from being washed into receiving waters. These efforts will be reviewed and redistributed as necessary to comply with Permit requirements.

As part of the Permit requirements, NBG is required to put together a prioritized inspection/ maintenance schedule for specified Small MS4 features. It required that each of these MS4 elements is inspected/maintained as much as needed based on sediment and debris accumulation observations. Each feature will be inspected at least once during the Permit term. At a minimum, all structural controls will be inspected/cleaned once per permit term. To more effectively use its resources, NBG is permitted to conduct maintenance in lieu of a separate inspection to meet this requirement. The following outlines the facilities subject to the inspection/maintenance requirement for the Debris Control Program:

1. *Major streets* – Any roadway on NBG or its outlying areas as containing heavy traffic or used primarily for accommodating general traffic movement around the base will be subject to

routine street sweeping of the roadway, shoulders and/or medians to prevent storm water pollution from debris and sediment.

2. *Streets within Industrial and Commercial Areas where Storm Water Discharges to the MS4* – any roadways on NBG or its outlying areas within industrial or commercial areas that contain MS4 features will be subject to prioritization for inspections and maintenance for sweeping and debris control.
3. *Storm Drain System Features*– This includes all MS4 features, including but not limited to catch basins, storm drain inlets, pipes, gutters, open ditches, and trenches.
4. *Major Permanent BMPs* - Any permanent storm water BMP or LID feature.
5. Any street or area outside of the specified areas identified as needing maintenance during a regional zone inspection or as reported by the public.

Based on observed trends, NBG will develop a sediment and debris accumulation threshold to facilitate future maintenance prioritization efforts and a required frequency of maintenance. The thresholds will correspond to various types of storm drain features observed on Base, such as depth of sediment within a storm drain inlet or BMP, or amounts of debris observed on a mile of roadway.

NBG is in the process of setting up a separate project to develop a storm drain repair plan based on findings of the storm drain survey/assessment studies. This work will address structural deficiencies observed during the assessments.

Priority area features will be categorized into three groups. The groups will be roughly outlined as follows:

*HIGH PRIORITY* – Features that currently exceed the trash, sediment and debris accumulation thresholds or that pose a high potential risk to storm water quality or receiving waters. High priority streets must be swept at least on average of twice per month.

*MEDIUM PRIORITY* – Features that do not have a large amount of trash, sediment and debris accumulation, but can be reasonably expected to reach or exceed the threshold by the time of the next inspection. Medium priority streets must be swept at least on average of once per month.

*LOW PRIORITY* – Features that are currently functioning well, and are not reasonably expected to be significantly impacted by observed trash, sediment and debris loading will be addressed on a lower priority, or as resources are available. Low priority streets must be swept at least on average of twice per year.

Catch basins inspection and cleaning prioritization is also categorized into three groups which is outlined as follows:

*PRIORITY A* – Catch basins that are designated as consistently generating the highest volumes of trash and /or debris and must be inspected and cleaned 3 times per year.

*PRIORITY B* – Catch basins that are designated as consistently generating moderate volumes of trash and /or debris and must be inspected and cleaned 2 times per year

*PRIORITY C* – Catch basins that are designated as consistently generating moderate volumes of trash and /or debris and must be inspected and cleaned 1 time per year,

A default Priority C rating is initially assigned to all catch basins, Priority designation will be adjusted as more data become available, or more observations are generated and recorded through maintenance effort feedbacks and the MS4 program and existing performance-based storm drainage inspection and clean-up contract implementation.

With the information currently available, a preliminary implementation schedule for the Inspection/Maintenance Program is outlined in Table 6. This schedule is subject to change, as more information becomes available following completion of the initial storm drain system assessment and as Maintenance Program achievements and challenges are reviewed on an annual basis. Changes along with explanations of the changes will be submitted within the Annual Report. The schedule is also subject to change based on what is needed to address observed deficiencies of the MS4 system or complaints received throughout the Permit term. These emergency issues will continue to be addressed and given priority for available maintenance resources, when needed.

Table 6: Inspections/ Maintenance Program Implementation Schedule

<b>Task</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
Conduct Preliminary Inspections/Maintenance of Major Roadways, Streets in Industrial and Commercial Areas, and All Storm Drain System Features	X	X	X		
Establish and Update Internal Asset Management System and Mapping, as needed	X	X	X	X	X
Address Emergency Maintenance Issues	X	X	X	X	X
Determine Prioritization Ranking System		X			
Appropriation of Funding for Required Inspections/Maintenance Activities based on priorities developed: <ul style="list-style-type: none"> <li>• High Priority</li> <li>• Medium Priority</li> <li>• Low Priority</li> </ul>		X	X	X	
Implementation of Inspections/Maintenance Activities: <ul style="list-style-type: none"> <li>• High Priority</li> <li>• Medium Priority</li> <li>• Low Priority</li> </ul>		X	X	X	
Evaluation and Updates of the Priority-based Scheduling, and Overall Debris Control Program, as needed (in the Annual Report)	X	X	X	X	X

#### Measurable Goals 6-1

- The completion and maintenance of the asset database which can be used to quickly pull the current asset inspection and maintenance schedule is a priority goal. This will be tested by randomly selecting five catch basins per year from the permitted area and inspecting their condition to relate to what is shown in the database.

## 6.4 Storm Drain Marking

As part of its Public Outreach Program, *Section 2.4.3*, and under the Debris Control Program, storm drain structures may be marked to indicate its eventual discharge into the nearby receiving waters. The installation of informational storm drain stenciling or placards is intended to create public awareness of the connection of the storm drain system to the ocean and other waterbodies, with the intent of discouraging intentional or negligible behaviors that negatively impact storm water quality. Storm drain placards have already been installed on inlets in industrial areas and some areas of family housing. Efforts to mark storm drain inlets are ongoing and are based on the availability of funds. Storm drain stenciling or placards are required at all storm drains receiving runoff from industrial and commercial areas, where feasible.

NBG will continue to evaluate the effectiveness of its existing storm drain markings (e.g., by documenting public participation in storm drain stenciling events, and by noting any observable change in trash accumulation levels within storm drains before and after storm drain markings are installed as described in the Public Education and Outreach section of the Program Effectiveness Assessment Plan, and change the types of markings if needed.

NBG will complete the installation of storm drain markings on all storm drain inlets receiving runoff from industrial and commercial areas, within 5 years of the effective date of the permit if possible, but subject to the availability of funding.

Priority will be given to industrial and commercial areas with pedestrian traffic, and areas determined in the initial assessment to be a HIGH priority for maintenance. As needed, stencils or placards will be replaced during scheduled storm drain inlet maintenance.

An evaluation of effectiveness and justification for future placement of placards will be described in the Annual Report.

## 6.5 Maintenance of Structural Controls

In accordance with the Permit, NBG is in the process of developing an *Action Plan for Maintenance of Structural Controls*. This is a five (5) year plan intended to reduce storm water pollution by ensuring the effectiveness of existing Base-wide structural BMPs (used synonymously with the term “permanent BMPs”) through maintenance and, if needed, improvements.

Key elements of the *Action Plan for Maintenance of Structural Controls* will include:

- Existing policies regarding structural BMPs;



- Implementation of a Base-wide inventory of structural BMPs;
- Inspections/Maintenance for structural BMPs;
- Identification of areas for improvement, or suitable for retrofit projects with water quality protection measures; and
- Five (5) year implementation schedule.

Every year, the program status and implementation schedule shall be evaluated, and annual updates to the *Action Plan for Maintenance of Structural Controls* will be incorporated into the Annual Report. The update will also consider system inspection results, storm water monitoring data, recent construction, and required operations and maintenance, and new retrofit projects with water quality protection measures, where applicable. These updates will include, but are not limited to, projects in compliance with any TMDL implementation and monitoring plan.

## 6.6 Trash Reduction Plan

In accordance with the Permit, NBG has developed a *Trash Reduction Plan*. The goal of NBG's Trash Reduction Plan will be to reduce its overall debris discharges from its Small MS4 to receiving waters.

The main objectives of the *Trash Reduction Plan* are to:

- Assess the issue of trash generation;
- Identify and implement control measures; and
- Monitor control measures and evaluate overall effectiveness.

Some of the components in the *Trash Reduction Plan* include:

- A definition of "trash" for NBG;
- Existing NBG solid waste programs and policies;
- Existing control measures and BMPs;
- An implementation plan for trash reduction; and
- Methods for measuring program success.

Annual reports will be used to review progress of NBG's *Trash Reduction Plan* including trash load reduction actions taken (controls measures and BMPs) including types of actions and levels of implementation, and a summary of the effectiveness of these measures in each year. This annual review will be used to identify any areas of concern and make modifications to the plan, if needed.

### Measurable Goals 6-2

- The volume of trash collected will be recorded annually to observe the efficacy of the trash reduction plan.

## 7. Erosion Control BMPs Program

A crucial component of NBG's SWMP is its base-wide pollution prevention and good housekeeping program. Generally, this is a multi-faceted system maintenance program aimed at reducing discharge of pollutants from all NBG-owned property to the MEP. NBG-owned property includes facility roads, parking lots, maintenance facilities, sites with industrial activity, and its Small MS4.

This chapter focuses on NBG's Erosion Control BMPs Program. The main elements of this program are:

1. Implementation of erosion control improvements as necessary, and identification of erosional areas;
2. Implementation of temporary erosion control measures as appropriate when permanent solutions are not immediately possible; and
3. Development of a maintenance plan for vegetated portions of the drainage systems used for erosion and sediment control and LID features.

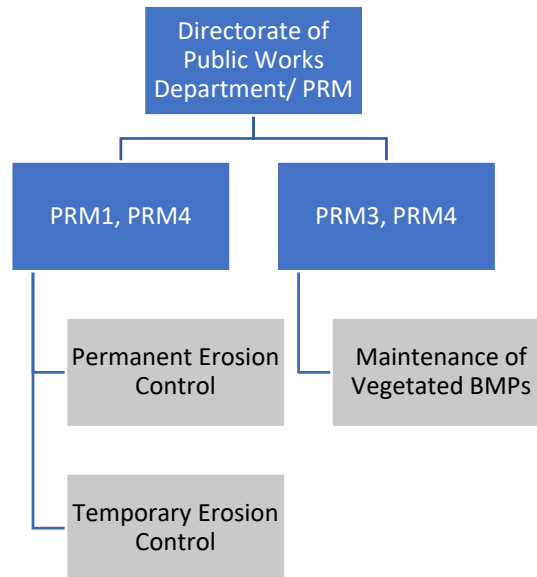
### Measurable Goals 7-1

- Drive throughs of the permitted area in areas that have slopes exceeding 1 vertical to 3 horizontal units will be conducted at least once per year during or immediately after a storm event to physically observe for sediment laden runoff. Photos and locations of such runoff will be recorded to inform priorities for the Erosion Control BMP Program. The goal is progress towards eliminating visual erosion.

### 7.1 Program Organization

PWD is responsible for general oversight of the Erosion Control BMP Program. This includes revising erosion control BMPs or policies, as needed, to meet program requirements and to facilitate program implementation. EV Div is responsible for including a status report of any such revisions and program updates in each Annual Report. Data provided through inspections or complaints/ notifications will be used to identify and prioritize areas of erosional concern. For NBG projects, permanent erosion control measures will be designed by NAVFACSYSCOM Marianas or Facilities Engineering and Acquisition Division (FEAD), Project Management and Engineering Branch and installed in-house or through a contractor managed by FEAD. Some tenants may have erosion control projects within their leased areas, but they are not common. These projects may be contracted by other agencies that would be responsible for contract management. NBG has the authority to adjust policies or direct enforcement actions for tenants/agencies subject to the Erosion Control BMPs Program. Commander, NBG, has ultimate authority for Permit policies and enforcement actions. A streamlined schematic of this organizational structure is outlined in Figure 25.

Figure 25: Erosion Control Organizational Chart



## 7.2 Permanent Erosion Control Improvements

As part of the permit requirements, NBG is required to implement erosion control improvements as necessary to address impact to water quality. NBG will implement the following procedure for identifying and implementing construction of permanent erosion control improvements.

Areas with erosional concerns will be identified to PRM4 and PRM1 via routine maintenance and inspection of facilities, observations/complaints, or from inspections completed for other programs of the SWMP such as SWPCP inspections and illicit discharge inspections.

PRM4 and PRM1 will identify areas that require construction of permanent erosion control improvements. PRM4 and PRM1 will prioritize the implementation of projects using the following prioritization guidance:

*High Priority* – Highest priority will be given to: areas that affect public health and safety (i.e., direct exposure to dust and runoff) and areas where erosional runoff discharges directly to the MS4 or receiving water. Priority will be based on potential for impact to water quality based on evidence of erosion (e.g. rilling, gullying and/or other evidence of significant sediment transport, and areas in close proximity to receiving waters listed as impaired by either sediment, siltation and/or turbidity).

Secondary considerations for prioritization will be based on potential for erosion and proximity to storm drain inlets/swales or receiving waters.

*Medium Priority* – Medium priority will be given to areas that will eventually discharge to the MS4 or receiving water, but first discharge to a BMP feature (i.e., grassed swale or sedimentation basin).

Low Priority – Low priority will be given to bare areas that will erode, but not discharge to the MS4 or receiving water. These projects will have no impact on the MS4 or receiving waters.

PRM4 will provide the prioritized list of areas to PRM1. PRM1 will determine the responsible party and create projects. PRM2 or a contractor will be responsible for design and construction of erosion control improvements.

PRM4 and PRM1 will update the prioritized list of projects, as needed, to include new areas identified during routine maintenance and inspections and remove those projects where erosion control improvements have been completed.

### 7.3 Temporary Erosion Control Measures

Temporary erosion control measures will be implemented, as soon as possible, to address any erosional areas identified as posing a significant risk to water quality when a permanent solution is not immediately possible. Other projects will be implemented in priority order. FMD will be responsible for having temporary erosion control measures (e.g., erosion control blankets and/or fabrics, gravel bags, and silt fencing/fiber rolls) on erosional areas. Until permanent control measures are constructed, FMD will be responsible for ensuring that someone (FEAD, other agency) performs adequate maintenance to maintain the function of these BMPs and to protect the receiving waters.

There are currently no projects that have been identified by NBG that require a Water Quality Certification (WQC). NBG will evaluate any newly identified maintenance and/or construction projects to ensure that a WQC and any other NPDES requirements are submitted to USEPA when applicable.

Although temporary erosion control measures will be in place, PRM4 and PRM1 will continue to work toward constructing a permanent erosion control to address the situation as soon as possible.

### 7.4 Maintenance for Vegetated Best Management Practices

Permanent BMPs and LID features will be incorporated into the Asset Management System, which will be maintained as various construction projects are completed. Vegetated portions of the drainage system and LID features will be maintained by FMD in accordance with the Maintenance Activities BMPs Program. As part of this program, a maintenance activities BMP field manual will be developed based on the common BMPs within the permitted area. This field manual will address controlling any excessive clearing/removal, cutting of vegetation, and application of herbicide which affects usefulness of the erosion control measure or LID feature.

As new vegetated areas and LID features are established, PRM1 will update their maintenance schedule database to incorporate maintenance of the areas or features per the recommended frequencies.

## 8. Maintenance Activities BMPs Program

A crucial component of NBG's SWMP is its base-wide pollution prevention and good housekeeping program. Generally, this is a multi-faceted system maintenance program aimed at reducing discharge of pollutants from all NBG-owned property to the MEP.

The Maintenance Activities BMPs Program establishes pollution prevention strategies for maintenance activities, including routine maintenance projects.

Ensuring the implementation of proper source control measures and spill response procedures can effectively reduce the discharge of pollutants associated with maintenance activities. Appropriate implementation of BMPs is required for all maintenance activities.

The objectives of this program are to:

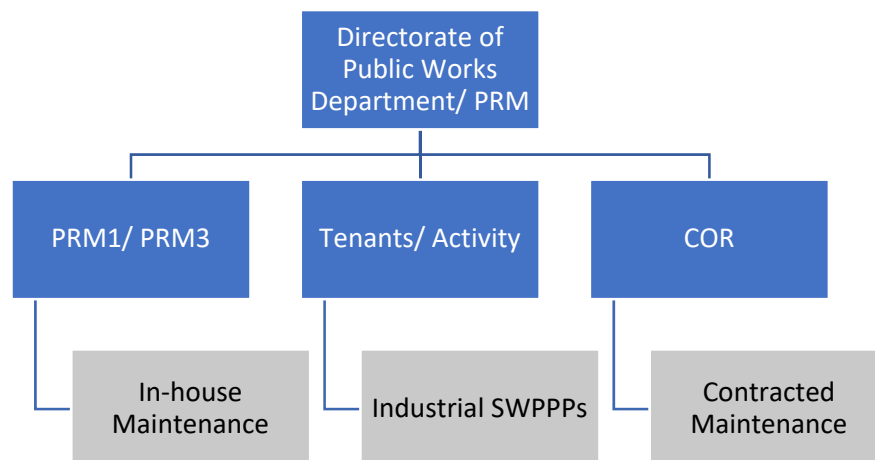
1. Develop and implement a written procedure to implement minimum BMPs for maintenance activities.
2. Train staff on proper BMP implementation and pollution prevention strategies.

### 8.1 Program Organization

The program organization for the Maintenance Activities Program, is shown on Figure 26. Military personnel and the BOS contractor are responsible for most general maintenance projects for facilities within NBG, with the exception of some non-Navy tenants. Some facility maintenance is contracted through PRM2.

PRM4 and PRM1 are responsible for general oversight of the Maintenance Activities Program. This includes revising maintenance activity BMPs or policies, as needed, to meet program requirements and to facilitate program implementation.

Figure 26: Maintenance Activities Organizational Chart



## 8.2 Inventory and Map of Commercial Facilities and Activities

Routine maintenance projects are scheduled, or cyclical projects performed to preserve the life of a system; to restore the original function or delay the deterioration of an existing asset without substantially increasing its structural capacity; or to maintain the original line and grade, hydraulic capacity or original purpose of a facility, system or asset, in which land disturbance does not go beyond the original footprint of the previous structure. The field manual will contain BMPs for the most common activities performed in the field which include:

- Vehicle and equipment maintenance;
- Vehicle or equipment fueling;
- Chemical storage;
- Recycling;
- Paving and road repairs;
- Street cleaning;
- Concrete work;
- Curb and gutter replacement;
- Buried utility repairs and installation;
- Vegetation removal;
- Painting and paving;
- Debris and trash removal; and
- Spill cleanup.

The procedures will ensure that appropriate BMPs are verifiable through field inspections. The field manual will be updated as needed.

## 8.3 Training

As part of its Maintenance Activities Program, NBG will implement annual training for maintenance staff and contractors on proper maintenance activities to prevent storm water pollution. The training will focus on the field manual, identification of potential sources of pollution, general BMPs that can be used to reduce and/or eliminate such sources, and procedures for establishing site-specific BMPs for their activities. The training will be intended to educate maintenance personnel that they serve a role in protecting water quality, and will include, but not be limited to the Permit and overall SWMP.

EV Div is responsible for oversight of maintenance activities education and outreach program, including contents and method of which information is circulated. Outreach material for tenants, personnel, contractors, and facilities will be developed, revised, and distributed at the discretion of PRM4. These materials will be used to address observed issues or general program policy updates.

### Measurable Goals 8-1

- The BMPs field manual is being developed based on the prevalent BMPs used within the permitted area. The goal is to produce a field manual tailored to local installation practices and will be modified if BMP selection and maintenance methods are improved or are inappropriate. This is measured through inspections and feedback from maintenance staff.

## 9. Commercial Activities Discharge Management Plan

A crucial component of NBG's SWMP is its base-wide pollution prevention and good housekeeping program. Generally, this is a multi-faceted system maintenance program aimed at reducing discharge of pollutants from all NBG-owned property to the MEP. NBG-owned property includes facility roads, parking lots, maintenance facilities, sites with industrial activity, and its Small MS4.

This chapter focuses on NBG's Commercial Activities Discharge Management Program. NBG is developing and implementing a CADM Program as part of the System Maintenance Program to reduce to the MEP the discharge of pollutants from all commercial facilities and activities that discharge into the Small MS4.

The CADM Program is made up of the following components:

1. An inventory and map of commercial facilities and activities that discharge directly or indirectly to the Small MS4.
2. Requirement for commercial facilities to implement BMPs, including an approval process for non-NBG connections or surface runoff discharges to the Small MS4.
3. An inspection program for all commercial facilities and activities.
4. Designate priority levels for inspection frequency.
5. Annual review and summary of CADM Program progress.
6. Enforcement policies and procedures.
7. Training of all related personnel, specific to each component of the CADM Program.

"Commercial facilities/activities," include at a minimum facilities and activities such as shopping centers, restaurants, and any other commercial facility that either the Permittee or NBG determines has the potential to contribute loading to the Small MS4.

### 9.1 Program Organization

Commercial activities at NBG are managed primarily by two major tenants; Morale Welfare and Recreation (MWR) and Navy Exchange (NEX). Although tenant-specific responsibilities are defined within each individual tenant agreement, all entities that operate on Base are required to follow Base-wide instructions. As such, both MWR and NEX are required to follow the policies and procedures outlined in this SWMP.

FMD with assistance from EV Div is responsible for the oversight of general management and implementation of the CADM Program on NBG. The following is an overview of the basic responsibilities for each entity.

- PRM4 – General program oversight to ensure CADM Program Permit compliance, training of personnel implementing/enforcing the CADM Program, and annual review and modifications, as needed, to the CADM Program. PRM4 is also responsible for any necessary coordination with other Installation entities; if there are persistent issues with non-compliance.
- PRM1 - Act as the liaison between the Base and tenants, maintain an inventory and map of commercial facilities at NBG, require written approvals for drainage connections of non-NBG

tenants, maintain an inventory of non-NBG drainage connections, general oversight of CADM Program implementation by tenants.

Any persistent issues with non-compliance of a tenant will be handled by escalating issues to the next higher level of authority. The NBG Commanding Officer has the authority to adjust policies or direct enforcement actions for tenants/agencies subject to the CADM Program. Commander, NBG, has ultimate authority for Permit policies and enforcement actions.

## 9.2 Inventory and Map of Commercial Facilities and Activities

NBG EV Division will compile a list of commercial facilities on Installation for inclusion in the commercial inventory and map. NBG has awarded a contract to develop the commercial inventory and map required by permit which will be completed by calendar. The commercial inventory will include all applicable facilities and activities that discharge directly or indirectly to the Small MS4. The inventory will be periodically updated and used to track the following information:

- Facility Name;
- Priority Ranking
- Location (building number, geographic area, street address);
- Receiving Water;
- Nature of business or activity;
- Standard Industrial Classification (SIC) or North American Industry Classification System (NAICS) code(s) that best reflect products and services; and
- Principal storm water contact.

The commercial inventory and map will include the following types of facilities and activities:

- Shopping Centers;
- Restaurants; and
- Any other commercial facility that NBG, GEPA, or USEPA determines is contributing pollutants to the
- MS4 that may cause or contribute to an exceedance of State water quality standards.

Some retail facilities may be classified as industrial and are thus covered under Chapter 10 of this SWMP.

EV Div-is responsible for maintaining and updating the inventory and associated maps, as needed.

### **Measurable Goals 9-1**

- A complete and maintained commercial facility inventory is critical to measuring the efficacy of the commercial activities discharge management plan. Five commercial facilities will randomly be inspected annually to compare observed data to that shown in the inventory. Inspections will primarily consist of observing the exterior activities of these facilities and the condition of their immediate connections to the MS4 system.



### 9.3 Requirements to Implement BMPs

All commercial activities on Base are required to comply with Base-wide instructions, including the implementation of BMPs.

All drainage connections not under the direct control of NBG, including connections from commercial facilities, will require review and approval from FMD. The drainage connection approval will require commercial facilities and activities to implement BMPs that will be subject to inspection and enforcement.

### 9.4 Inspection of Commercial Facilities and Activities

NBG has developed inspection program guidelines dependent on findings/outcomes of the investigations, to ensure that the requirements of the CADM Program are implemented and that corrective actions are taken, if needed.

At a minimum, inspections will be used to:

- Identify deficiencies, such as illegal connections to the Small MS4, illicit discharges, potential sources of pollution, and deficiencies in BMPs;
- Assess potential impacts to receiving waters;
- Evaluate the suitability and effectiveness of BMPs implemented at each facility; and
- Outline required corrective actions, when deficiencies are identified.

Inspections of commercial facilities are primarily the responsibility of the tenant command that contracted the commercial facility. All facilities identified in the commercial inventory are required to be inspected and re-inspected as often as necessary to ensure compliance with storm water as well as other environmental laws and regulations. Each facility will be assigned a priority level of low or high, depending on the perceived potential risk to storm water quality. The priority rankings will be based on factors including, but not limited to, proximity to receiving waters, type of commercial activity, severity of potential pollutant concerns, and results of past inspections. These priority rankings may change to reflect findings of inspections or other new information. EV Div will conduct compliance inspections as required by permit. Facilities that have been identified as high priority will be inspected annually, and at a minimum, all remaining commercial facilities must be inspected at least once every five years.

Inspectors will use the *Industrial and Commercial Site Inspection Sheet* (being developed for this program) and photographs (where allowable) to document non-compliant findings and site conditions during inspections. Inspections are conducted in accordance with the applicable portions of the NPDES Compliance Inspection Manual (USEPA 305-X-04-001), published in July, 2004, to the maximum extent possible.

In addition to general inspection information, deficiencies will be documented. Any discrepancies discovered in the commercial inventory list will also be brought to the attention of FMD or other appropriate agency, so that the appropriate modifications can be made to databases, maps, and inspection schedules.

NBG will submit annual summaries of inspection activities done within the previous period to USEPA with the Annual Report. At a minimum, annual CADM Program summaries will include:

- Commercial facilities inspected;
- The total number of commercial inspections completed (including follow-up visits);
- Significant findings that remain unresolved for greater than three (3) calendar months;
- An overall assessment of the CADM Program; and
- Any revisions that should be made to the commercial inventory or the CADM Program.

Records of inspections are maintained for a minimum of five (5) years.

## 9.5 Enforcement Policy

The CADM Program applies Base-wide to all identified commercial facilities and activities. NBG is developing an enforcement policy that will apply to all industrial and commercial activities and facilities. The commercial facilities enforcement policy will include:

- Inspections;
- Written documentation to a facility representative of storm water deficiencies within thirty (30) calendar days of the inspection. This documentation must include copies of all pertinent field notes, correspondence, photographs (if allowable), and sampling results (if applicable);
- A timeline for required corrective actions; and
- Provisions for follow-up inspections and enforcement procedures.

Similar to the enforcement policy for all other SWMP components, the CADM Program is part of an overall escalating enforcement policy, where the ICO has the authority to adjust policies or direct enforcement actions for tenants/agencies. The ICO has ultimate authority for Permit policies and enforcement actions.

In instances where an inspector discovers that a commercial facility conducts Permit regulated industrial activities, and has not applied for NPDES permit coverage for discharges of storm water associated with industrial activities or any other applicable NPDES permit, EV Div will be immediately notified. NBG or their representative, will assess the situation, to determine if Permit coverage is needed, and will provide email notification to USEPA of such a determination.

## 9.6 Training

Training on how to conduct commercial inspections will be provided to inspectors and tenant commands, if necessary, on an as-needed basis or at least annually. The training will address the following areas:

- Inspection and enforcement techniques;
- Identifying deficiencies during inspections of commercial facilities and activities;
- Assessing potential impacts to receiving waters;
- BMPs and source control measures for commercial facilities to reduce storm water pollution;
- Evaluating the appropriateness and effectiveness of BMPs;
- Identification of types of industrial activities that require NPDES permit coverage for industrial storm water or other activities that are potential sources of pollutants so that they may be covered under this Permit; and

- Forms and/or processes for documenting inspections of commercial facilities and activities.

The training will be specific to Facility activities and NBG policies, rules, and procedures.

## 10. Industrial Facilities

As part of its SWMP, NBG is required to ensure that specific types of industrial facilities are covered in the Permit, and are in compliance with the Permit and all other State and Federal regulations. The determination of whether industrial facilities need to be covered under this Permit is based on the Standard Industrial Classification (SIC) code of its primary activity. The main regulatory components for these industrial facilities include the Storm Water Pollution Prevention Plans (SWPPPs) developed for each facility and the Permit.

The overall objective of this Industrial Facilities Program is to reduce pollutants from NBG facilities, classified as “industrial” in accordance with the latest EPA Multi-sector General Permit and 40 CFR §122.26(b)(14), to the MEP. At a minimum, pollutants are to be reduced to the appropriate discharge limitations subject to the BAT/BCT discharge requirement, consistent with the Clean Water Act and other applicable federal and state requirements.

Key components of the Industrial Facilities Program are to:

1. Ensure that industrial facilities are covered by the Permit, as required, or that the appropriate measures have been taken to qualify for “No Exposure” Certification or “No Discharge” documentation or similar for qualifying industrial sites;
2. Develop a map of storm water sewer sheds and identify where each industrial activity or facility occurs;
3. Develop, implement and routinely update a facility-specific SWPPP for each industrial facility covered by the Permit;
4. Maintain Permit compliance for all industrial facilities covered by the Permit;
5. Designate an individual from each industrial facility to receive appropriate training and be accountable for ensuring implementation of the facility-specific SWPPP;
6. Develop and implement Facility-wide spill prevention and response procedures;
7. Conduct inspections for identified industrial areas or facilities;
8. Provide annual training to all personnel that work within industrial areas or facilities;
9. Inform NBG of any changes to the list of industrial facilities (i.e., either adding or removing a facility) and significant changes to SWPCPs in the Annual Report; and
10. Submit “MS4 NPDES Individual Permit – Industrial Storm Water Discharge Notification” form for each industrial facility.

As mentioned, the EPA only requires permits for the discharge of storm water for specific types of industrial activities, in accordance with Appendix D of EPA’s Multi-sector General Permit and 40 CFR § 122.26(b)(14). Those industries requiring storm water permits are described in one of two ways - by a narrative description, or by a SIC code.

Requirement to obtain permit is based on the SIC code for primary site activity. This means that, if the listed activity is not the primary site activity, it does not need a permit. A “primary site activity” is considered to be the principal industrial activity in which a facility or plant engages in. The “site” is considered to be the area or areas immediately surrounding the plant or facility where the industrial activity takes place. Excluded from the term “site” are areas located on facility or plant lands separate from the facility or plant’s industrial activities, such as office buildings and accompanying parking lots, as long as drainage from the excluded area is not mixed with storm water drained from the facility or plant defined as the primary site activity. Permit requirements for activities described by a narrative definition

are considerably more stringent because any of the described activity occurring on site would require regulation.

For purposes of this SWMP, five broad categories of industrial activity are described by the narrative definition as an “industrial activity” and are subject to permit for discharges of storm water associated with the facility and need for SWPCPs:

- 40 CFR Subchapter N Industries;
- Landfills;
- Steam Power Generation Facilities;
- Sewage Treatment Plants; and
- Hazardous Waste Treatment, Storage, and Disposal Facilities.

Five general categories of industrial activity are described by SIC codes:

- Heavy Manufacturing;
- Light Manufacturing;
- Mining;
- Recyclers; and
- Industrial Transportation.

## 10.1 Program Organization

Implementation of facility-specific SWPPPs is primarily the responsibility of the facility manager. An individual at each industrial site is designated for ensuring implementation of the SWPPP, as required by the Permit. PRM4 is responsible for general program oversight and, with help from EV Div, for identifying facilities that should be added or removed from Permit coverage. This also involves oversight of the

Monitoring Program described in Chapter 11, and providing annual updates of all activities, SWPPP revisions, as required, and status of inspections. NBG will implement the requirements to prevent the discharge of pollutants from industrial facilities into the MS4 via the base instructions. The NBG Commander has the authority to adjust policies or direct enforcement actions for tenants/agencies subject to the Industrial Facilities Program. Commander has ultimate authority for Permit policies and enforcement actions.

## 10.2 Industrial Facility Mapping and Identification

NBG has developed a map of the Small MS4’s storm water sewer sheds and will be identifying locations of industrial areas, facilities, and activities within each storm water sewer shed which discharge storm water to the Small MS4. EV Div will evaluate each area, facility, and activity to determine if they require permit coverage. If a facility requires permit coverage, a facility specific SWPPP will be prepared and implemented. Updates will be made periodically as activities and facilities change within NBG.

### **Measurable Goals 10-1**

- A complete and maintained industrial facility inventory is critical to measuring the efficacy of the industrial facilities program. Five industrial facilities will randomly be inspected annually to compare observed data to that shown in the inventory, such as appropriate SIC and the observed cleanliness of the facility grounds. Inspections will primarily consist

of observing the exterior activities of these facilities and the condition of their immediate connections to the MS4 system.

### 10.3 Facility-specific Storm Water Pollution Prevention Plans

The person designated at each facility for ensuring SWPPP compliance will be responsible for conducting inspections, identifying deficiencies, and performing corrective actions. Inspections will be conducted semi-annually. The facility will keep records of the inspections. NBG will also conduct semi-annual inspections at industrial facilities covered by the Permit. Records of the inspections shall at a minimum include: dates on which the inspections were conducted, weather conditions at the time of the inspection, inspection findings, any photo documentation, any impact to receiving waters, timeframes for corrective actions to be performed, and corrective actions taken.

The permit requires that storm water samples be collected at each facility. EV Div will be responsible for the monitoring program as outlined in Section 11.

SWPPPs will be reviewed as needed, at a minimum of once annually, and will be updated as needed by the facility and EV. Any changes will be provided to the corresponding facility for review and acceptance before it is submitted to NBG. EV will document all SWPPP reviews and report any significant changes to NBG within 30 calendar days of when the changes occur. Any significant changes to the SWPPP will be highlighted within the Annual Report. The term "significant changes" shall include, but not be limited to the size and location of the industrial area or facility, type of industrial activities, BMPs and housekeeping practices, sampling location, and sampling parameters.

NBG will provide annual training to all Facility and military personnel that work within the identified industrial areas or facilities with the potential to impact storm water runoff quality and impact receiving water quality. The training will be sufficient to ensure the SWPPP will be properly implemented.

### 10.4 Changes to Industrial Facilities Covered by the MS4 Permit

NBG will continue to manage its industrial program to add or remove industrial areas, facilities, and activities which discharge storm water to its MS4, as they are identified. NBG EV Division will be responsible for having appropriate documentation prepared.

If a change to the industrial facility coverage is required in the future, the NBG will follow the applicable procedures outlined in the Permit. In addition, if a listed facility changes use (i.e. SIC code change that does not require permit coverage) or is no longer in use, PRM4 will notify USEPA via the Annual Report that the facility be removed from the permit list.

## 11. Monitoring Plan

### 11.1 Introduction

This Monitoring Plan provides the technical and management procedures that will be implemented to meet the monitoring requirements of the Permit.

All monitoring described in this plan are required by the Permit and/or state and federal storm water regulations. The Permit requires the Department of the Navy, Navy Base Guam to monitor their storm water discharges.

### 11.2 Sampling Locations and Rationale

Industrial facilities covered by MSGP (Multi-Sector General Permits) will sample for the pollutants described in their MSGP SWPPPs. The seven outfalls listed in section 3.2 and shown in the field maps of this SWMP are the locations selected for monitoring. Refer to section 3.2 for the rationale behind this selection.

#### 11.2.1 Annual Monitoring Sites

Sampling locations for outfalls identified as a priority are provided in section 3.2. These sites will be monitored once per year throughout the five (5) year period of this permit.

#### 11.2.2 Secondary Monitoring Locations

Sampling locations not identified as the highest priority are shown in the field maps. These locations will be monitored at least once over the five (5) year permit period as per the schedule provided.

### 11.3 Permit Compliance

A description of how results from each activity are used to ensure permit compliance is provided in this section. Results from sample analysis and physical observations of storm water discharges will be evaluated against acceptable runoff effluent limitations as set forth by the applicable water quality standards in the Guam Water Quality Standards. Data will be evaluated to measure the effectiveness of control measures of the management program and to assess the overall health of impacts to receiving waters. Monitoring locations where sample results fail to meet the limitations will be investigated for potential sources of pollutants including natural sources. The site will also be inspected to determine if illicit discharges or illegal connections are present. Based on the findings, BMPs will be evaluated for potential improvements.

### 11.4 Management Measures Effectiveness

Both visual observations during storm water monitoring and storm water sample analysis results will be used to help determine whether management measures are effective at reducing pollutants and flow. Visual observations of management measures will be recorded on field sampling sheets when possible during storm water sampling. Examples may include storm water breaching an absorbent sock or a sock that is effectively preventing a sheen from entering a storm drain inlet. Data from storm water analysis will be evaluated to determine whether management measures used to reduce a pollutant are effective or not by comparing numerical values to past exceedances.

## 11.5 Storm Event Selection Criteria

Sampling performed for (IDDE) Illicit Discharge Detection and Elimination will be performed on dry weather flow. See Section 3 for more information on the IDDE program. Industrial Facilities permitted under individual MSGP permits will follow the storm event selection described in their respective SWPPPs.

Sampling of the MS4 SWMP outfalls will be collected from storm events that are greater than 0.1 inch in magnitude and occur at least 72 hours from the previously measurable (greater than 0.1 inch) storm event. The 72 hour requirement is waived if the preceding measurable storm event did not result in measurable discharge, or it is documented that less than a 72 hour interval is representative of local storm events during the current season.

## 11.6 Storm Water Sampling and Analysis

Locations where parameters fail to meet the limitations of the permit must be resampled until parameters return to compliance using improved management practices.

### 11.6.1 Sample Collection and Transport

#### 11.6.1.1 Manual Sampling

Samples may be collected manually or with the automated ISCO Avalanche Refrigerated Sampler. Manual sample collection may include the use of a sheet flow sampler such as a surface bailer type device, direct grabs using a glass jar such as the 1.8 liter ISCO container or through a peristaltic pump with tubing run down through a storm drain inlet. Care must be taken to use sampling equipment with inert surfaces to avoid interactions with target analysis such as Oil and Grease. Reasonable effort should be made to take grab samples within the first two hours of a storm event.

Equipment should be Teflon lined, glass or stainless steel. If low level analysis of metals associated with steel, such as chromium are required, contact with metal surfaces should also be avoided. Monitoring locations were designated based on collecting discharge from priority areas. Each site poses different challenges in obtaining a representative sample.

#### 11.6.1.2 Automated Sampling

Automated sampling improves the efficiency of sampling and is useful in collecting samples from discharge events that occur outside of typical business hours. Deployment of automated samplers requires a site visit prior to a qualifying storm event. Automated samplers utilize a peristaltic pump which delivers sample to jars within the unit. A mechanism moves the sample stream between jars according to user defined programmed events. This allows the sampler to take composite and grab samples. Teflon lined sample tubing is secured to a sampling intake screen which is typically mounted within storm drain inlet upstream of a weir. A fluid sensor is secured just above the sample intake to initiate sampling once discharge is detected. A pressure transducer and Doppler velocity unit may also be secured beside the sample inlet to measure flow. The tubing and wiring is then routed to the autosampler. A rain gauge may be attached to



the sampler to record rainfall, used to determine compliance with a qualifying event or to help establish flow.

Automated samplers require routine maintenance once deployed until samples are successfully obtained. It is recommended that samplers are visited on a weekly basis. Batteries need to be checked and replaced as needed, pH probes require calibration checks, sample inlets should be cleared of debris and sediment and tubing connections should be checked and replaced when faulty. In this case, samples need to be removed, bottles cleaned and replaced and batteries recharged or replaced. Once a sampler has successfully obtained a qualifying sample, it should be removed from the sampling location, maintained and either deployed at another site or placed in storage.

#### 11.6.1.3 Sample Transport

Once samples have been obtained, either manually or through automation, samples may need to be analyzed for pH, dissolved oxygen, oxygen saturation, temperature and turbidity using field equipment if the parameters were not measured by automated equipment or if they cannot be transported to the laboratory within the method holding times. Samples must then be transferred to appropriate laboratory provided bottles, placed in a cooler with ice and transported to an analytical laboratory. A chain of custody must be filled out and accompany the samples.

#### 11.6.2 Analytical Requirements

The Permit requires that all sites be analyzed for the parameters listed in Tables 1-and 3 of the Permit. Industrial facilities within the permitted area are being classified per their standard industrial code (SIC) and may be sampled for parameters in addition to those listed in the Permit or individual MSGPs. While this work is underway, the parameters listed in Table 7 will be sampled for at each outfall to cover all NBG’s SIC Benchmark monitoring requirements. This list will be refined and tailored towards individual outfalls as monitoring progresses.

Industrial facilities covered under individual MSGP permits must submit their sampling results to NBG for electronic tracking. All analysis will be performed in accordance with procedures listed in 40 CFR 136.

Table 7: Additional Analytical Parameters

<b><i>Parameter</i></b>	<b><i>Units</i></b>	<b><i>Frequency</i></b>	<b><i>Sample Type</i></b>
Total Dissolved Solids	mg/L	Once/ year	Composite
Sulfate	mg/L	Once/ year	Composite
Cyanide	mg/L	Once/ year	Composite
Silver	mg/L	Once/ year	Composite

#### 11.7 Quality Assurance/ Quality Control

NBG will predominantly utilize the services of the U.S. Navy Laboratory (USNL) with an established Quality Assurance Program Plan (QAPP, Appendix J) and have been participating in the EPA annual DMR-QA studies. NBG may also tap into other contract vehicle such as the Environmental IDIQ contract and adopt their QAPP or their subcontractor.

### 11.7.1 Field Sample Procedures

Adherence to proper sampling preparation, sample handling, and laboratory procedures is essential to maintaining data quality and integrity. This section details the required standard operating procedure for sampling and sample handling as set forth by the EPA.

#### 11.7.1.1 Field Sample Procedures

Representative sampling sites have been selected in accordance with feasibility, accessibility, and safety constraints. Communication with laboratories will be established and a Sampling Field Notebook will be prepared. Field teams will be trained by experienced personnel. Supervisors will be responsible for coordination of sampling efforts and for preparedness of teams.

#### 11.7.1.2 Sampling Field Notebook

A specific Sampling Field Notebook will be prepared and kept on file. The Sampling Field Notebook will contain the following items and procedures:

- List of equipment
- Location (map and description) of sampling point(s)
- Field Data Sheets
- Field sampling instructions
- Sample packing, transfer, and tracking (chain-of-custody) instructions and forms

These procedures will be followed by the field personnel in all phases of the field monitoring program. Personnel with field experience in storm water sampling will be responsible for training field sampling personnel.

### 11.7.2 Chain-of-Custody Procedures

All sample custody and transfer procedures will follow EPA-recommended procedures and emphasize careful documentation of sample collection and handling processes, including transfer of sample and chain-of-custody details such as sample date and time, number of sample containers and sampling method required. Field teams will adhere to proper chain-of-custody and documentation procedures for all sampling operations. Preformatted sample and chain-of-custody forms will be used to document the relevant information for each sample bottle and the transfer of bottles to the laboratory.

### 11.7.3 Laboratory Procedures

Analysis for the routine parameters will be performed by a qualified laboratory. A qualified laboratory shall meet EPA DMRQA requirements. The laboratory must make every effort to meet target detection limits, holding times, and sample preservation techniques. The laboratory shall provide a written QA/QC report addressing any deviations from the QA/QC requirements.

#### 11.7.3.1 Accuracy

Laboratory accuracy can be assessed through performance and evaluation programs, and/or a certification of performance. As an alternative, the use of “blind” standard reference samples supplied by a reputable vendor (NSI, ERA, etc.) and through the analysis of laboratory-prepared matrix spike samples, or “internal standards”, can be used. Blind ERA reference samples would be analyzed once every quarter in which samples are analyzed. A goal of five percent of the samples shall be analyzed as matrix spike duplicates. For the matrix spike duplicate, a known standard analyte concentration is first spiked, or added, to an original sample and then duplicated. The accuracy of the analytical methods is evaluated from the results of the analytical recoveries of the first, or matrix spike, and second, or matrix spike duplicate spikes.

#### 11.7.3.2 Precision

Laboratory precision must be assessed through the analysis of laboratory duplicates, for example analysis of two portions derived from the same sample, at the frequency of 10 percent of the samples. In addition, five percent of the samples will be analyzed for matrix spike duplicates as described above.

#### 11.7.3.3 Laboratory Blanks

Sample contamination resulting from laboratory analysis procedures or sample storage methods will be assessed through the use and analysis of laboratory blanks and equipment blanks. Laboratory blanks, including reagent and/or method, shall be reported for each day samples are analyzed.

#### 11.7.3.4 Completeness

All reported analyses will be evaluated against the requested analyses to assess the completeness of the analytical characterization of the water samples. Any missing data will be accounted for by the laboratory or field programs, with an overall goal of 95 percent completeness.

### 11.7.4 Data Reduction, Validation, and Reporting

Overall data quality will be assessed by laboratory personnel responsible for QA/QC based on sampling and analytical conditions, adherence to internal QC procedures, and results of accuracy and precision checks. Actual detection limits will be reported in the final analytical report summary along with the results of the external QA samples, field duplicates, laboratory duplicates, matrix spike duplicates, and equipment and reagent blanks. Corrective action will be identified if necessary.

### 11.7.5 Reporting Requirements

Refer to Chapter 12 of this SWMP Document.

## **11.8 Analytical Requirements, Map and Sampling Information by Monitoring Location**

Field personnel are to identify the appropriate analysis to perform for each sample location, identify sampling locations in relationship to permitted facilities with map oriented photos of each location and relevant information to successfully sample each location. Individual site descriptions will be provided and justification presented for sites that are no longer viable.

## 12. Reporting Requirements

In accordance with the Permit, NBG is required to submit Annual Reports to USEPA Regional Office Number 9 by April 30th. The report includes the following:

1. An Annual Report, which includes documentation of all SWMP activities during the previous calendar year and demonstrates compliance with the Permit with respect to various activities and milestones.
2. An Annual Monitoring Report, which documents the sampling events, data collection and water quality assessments described in Chapter 11, Monitoring Requirements, including Discharge Monitoring Reports (DMR) for industrial facilities, if needed.
3. An Annual Fiscal Analysis, which documents the analysis of expenditures needed to operate and maintain the permit requirements

Well-maintained records management and clear reporting formats are necessary for regulatory compliance. They are also useful for the assessment of the effectiveness of the storm water management program.

In addition to the annual reporting requirements, certain updates to the SWMP may occur at any time during the permit period. NBG is also required to report any of the following SWMP modifications:

1. If the discharge from the Small MS4 exceeds of any discharge limitation or water quality standard established in the Guam Water Quality Standards, revisions, as necessary, shall include BMPs and/or measures to reduce the amount of pollutants found to be in exceedance from entering Guam Waters.
2. Change in conditions and incorporation of more effective approaches to pollutant control.
3. System modifications, including any planned physical alterations or additions to the permitted MS4 and any existing outfalls newly identified over the term of the permit.

### 12.1 Annual Reports

The structure of the annual report will be consistent with the structure of this SWMP.

The Annual Report chapters are organized by program element, as follows:

- Public Education and Outreach, including Public Involvement/Participation;
- Illicit Discharge Detection and Elimination;
- Construction Site Runoff Control;
- Post-Construction Storm Water Management in New Development and Redevelopment;
- Pollution Prevention/Good Housekeeping;
- Industrial and Commercial Activities Discharge Management; and
- Monitoring.

Each chapter in the Annual Report contains the following information:

- Requirements - Status of compliance with permit requirements and commitments set forth in this SWMP;
- Past year's activities;

- Future activities;
- Resources – resource base for the current and future reporting period;
- Modifications – any changes to the SWMP, schedule, and/or the MS4, and
- Program effectiveness reporting – evaluation of activities and collected information to assess the effectiveness of past SWMP activities and to refine future decision making regarding resource allocation and program implementation.

The Annual Report will be reviewed by the IEPD. Upon approval/concurrence, the report will be submitted either through electronically using EPA's NeT or hard copies to the following address:

Water Enforcement Section II (ENF-3-2), EPA Region 9  
75 Hawthorne Street  
San Francisco, CA 94105

## 12.2 Annual Monitoring Reports

Annual monitoring reports will be completed in accordance with the Permit and the Monitoring Plan, as described in Chapter 11 of this SWMP. The report will include a summary of collected data and an assessment of the results. The Annual Monitoring Report will be reviewed by the IEPD. Upon approval/concurrence, all monitoring results shall be submitted in a format as to allow direct comparison with the effluent limits, monitoring requirements, and conditions of this permit. Influent and effluent monitoring results are to be reported on EPA Form 3320-1, a pre-printed DMR provided by the EPA Region 9 DMR Coordinator for NPDES. A DMR form must be submitted for the reporting period even if there was no discharge, and shall be submitted by the 28<sup>th</sup> day of the month following the previous annual reporting period. Duplicate signed copies of these, and all other required reports, to be submitted to EPA and Guam EPA at the following addresses:

U.S. EPA Region 9  
Enforcement Division DMR (ENF-4-1)  
75 Hawthorne Street  
San Francisco, CA 94105

Administrator  
Guam EPA  
P.O. Box 22439 GMF  
Barrigada, GU 96921

## 12.3 Annual Fiscal Analysis

The Annual Fiscal Analysis will be completed and submitted with the annual report required by the Permit. The analysis summarizes the capital needed to maintain the expenditures of operation, maintenance and resources needed to meet the development, implementation and enforcement activities required by the SWMP document.

The analysis must include estimated expenditures for the reporting period, the preceding period, and the next reporting period. Each analysis will contain:

- A description of the source of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds;
- A description of the staff resources necessary to meet the permit requirements; and
- A narrative description of circumstances resulting in a 25 percent or greater annual change of any budget line items.

The Annual Fiscal Analysis will be reviewed by PRM4.

## **12.4 Records Management**

The SWMP and supporting records are considered public documents under Section 308(b) of the CWA.

Therefore, any member of the public may request to review NBG's storm water permit documentation.

Copies of the SWMP, annual reports, monitoring information, and data pertaining to the Permit must be retained at the EV Div office for a minimum period of five years from the date of measurement, observation, report, or application. The above may be made available to the public upon request; however, any information that is deemed sensitive (and the release of which would be harmful to a government or private interest) cannot be released and is exempt from the Freedom of Information Act.

A designated record keeper role on the permit management team is responsible for archiving all documents associated with the SWMP, including the site map, inspection reports, maintenance records, and annual reports.