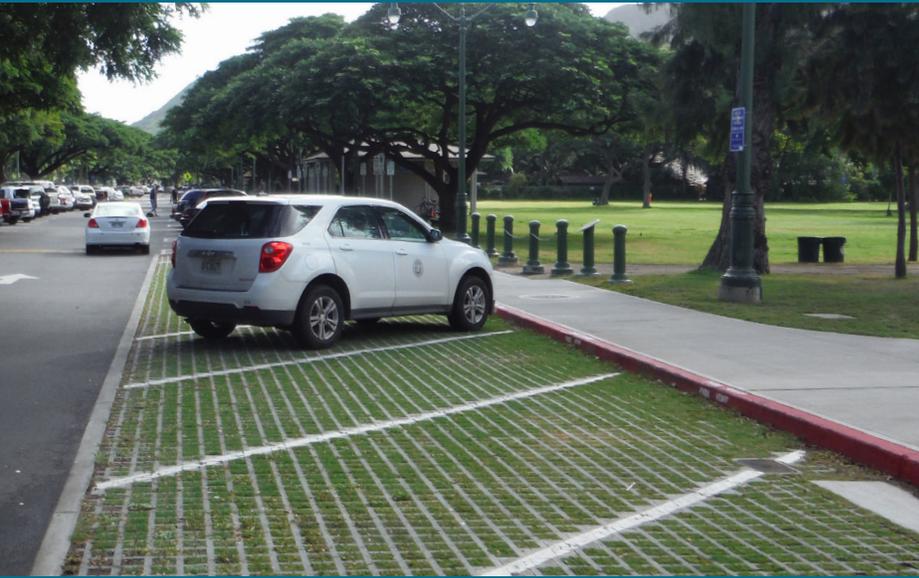
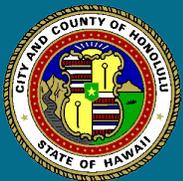


Post-Construction



Water Quality Requirements



CITY & COUNTY
OF HONOLULU

JULY 2019



CITY & COUNTY OF HONOLULU

POST-CONSTRUCTION WATER QUALITY REQUIREMENTS

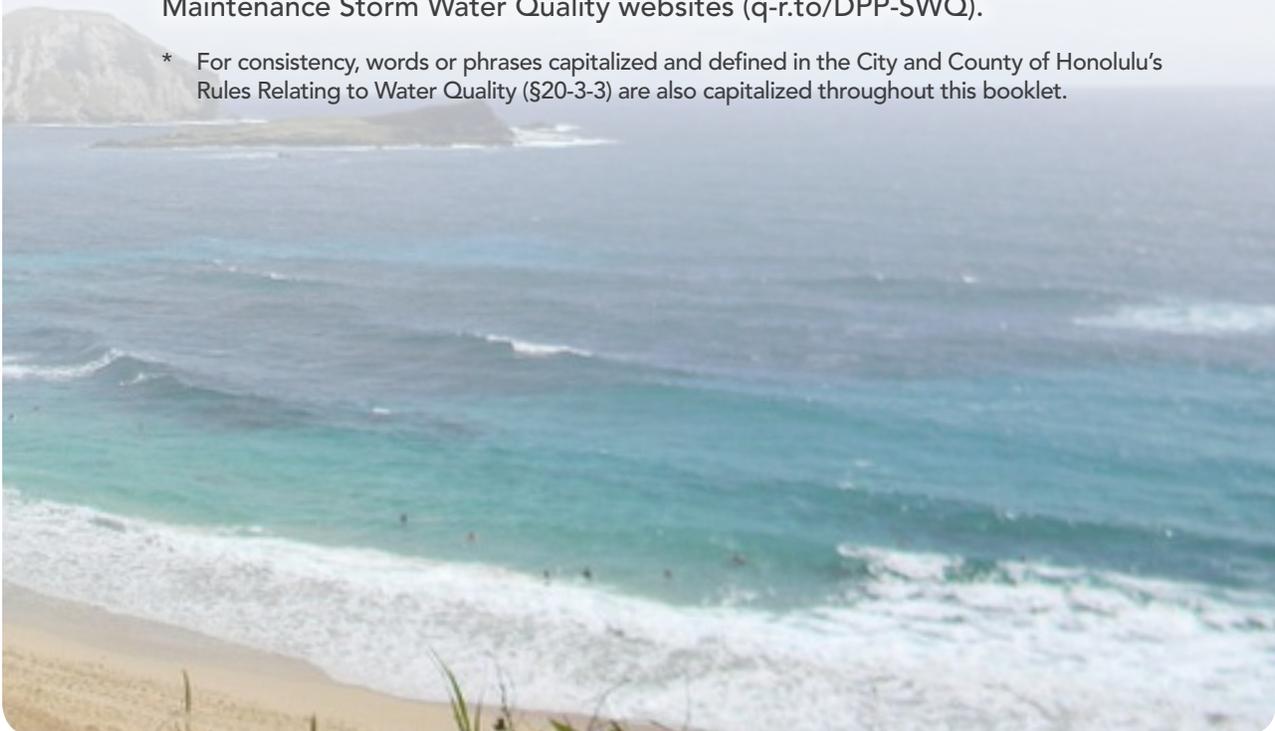
Purpose of this Booklet

The purpose of this booklet is to assist the public in navigating the City's Post-Construction Best Management Practice (BMP) requirements as specified in the **City and County of Honolulu's Administrative Rules Relating to Water Quality (§20-3)**, effective August 16, 2017, as amended and hereinafter referred to as Rules.

The Rules require Development* and Redevelopment Projects incorporate storm water management practices to ensure water quality. This booklet provides an overview of the City's Post-Construction BMP requirements and refers to materials that provide in-depth guidance.

See also the City's Storm Water BMP Guide for New and Redevelopment on the City's Department of Planning and Permitting and Department of Facility Maintenance Storm Water Quality websites (q-r.to/DPP-SWQ).

* For consistency, words or phrases capitalized and defined in the City and County of Honolulu's Rules Relating to Water Quality (§20-3-3) are also capitalized throughout this booklet.



POST-CONSTRUCTION WATER QUALITY REQUIREMENTS

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STORM WATER BEST MANAGEMENT PRACTICES

The natural water cycle allows storm water runoff to infiltrate into the ground. The earth acts as a natural filter, removing sediments and other pollutants, as water finds its way back to lakes, streams and the ocean.

Development introduces *impervious surfaces* such as buildings and pavement that prevent storm water infiltration into the ground, causing storm water to bypass the natural filtering process. It also prevents the movement of water below ground, which is necessary to replenish our streams and aquifers.

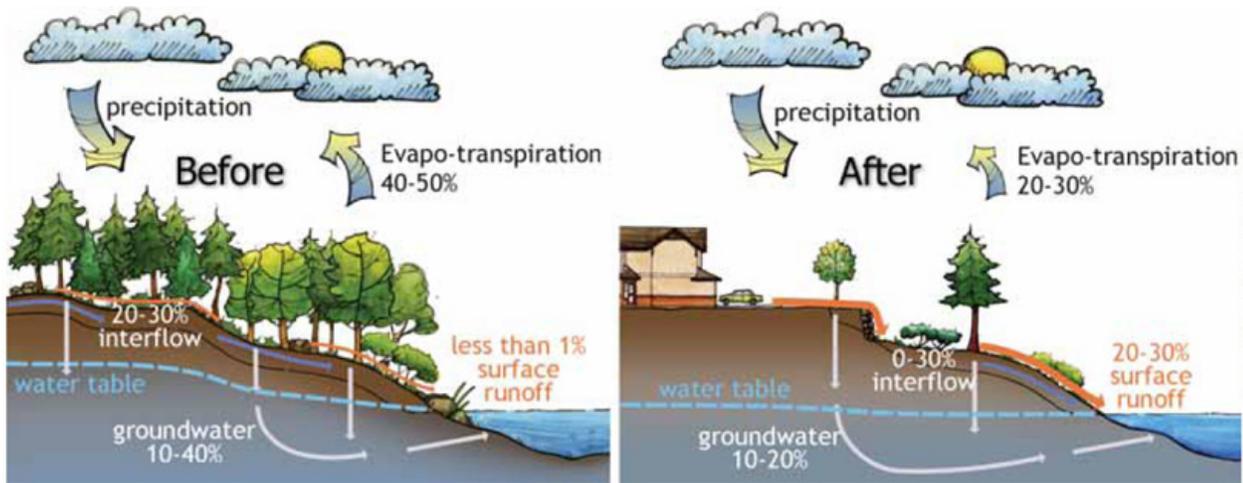


Image Courtesy of Puget Sound Partnership

Best Management Practices (BMPs) are design measures, practices, methods, and operations that collectively mitigate development and help maintain the natural water cycle and water quality.

Post-Construction BMPs are permanent BMPs that remain after construction is complete and are the focus of this booklet. These BMPs prevent erosion, control sediments and pollutants from developed areas and help maintain storm water infiltration. Examples include Low-Impact Design (LID) Site Design Strategies such as minimizing impervious surfaces, preserving natural areas and directing parking lot runoff to landscaped areas, Source Control BMPs such as automatic irrigation systems, providing canopy or roof cover over fueling and vehicle repair areas, and Treatment Control BMPs such as rain gardens, permeable pavement, and green roofs.



Green Roof at Hanauma Bay Nature Preserve



Pervious Pavers at Ala Wai Promenade



Grass Pavers at 'Iolani School (geogrid beneath grass)

Temporary BMPs are implemented during construction and are removed after the project is complete. Temporary construction BMPs are covered in the City's brochure on *How to Prepare Erosion and Sediment Control Plans for Small Construction Projects* and the City's *Storm Water Best Management Practice Manual for Construction*.

DO POST-CONSTRUCTION BMP REQUIREMENTS APPLY TO YOUR PROJECT?

Priority Projects as defined by the City's Rules (§20-3-48) must incorporate Post-Construction BMPs into the project.

Your Development or Redevelopment Project is a Priority Project if it proposes:

1. **Land Disturbing Activity of 1 acre or more including any incremental development and excluding contractor staging areas and base yards. (Priority A); or**
2. **Targeted land use activities that may have significant water quality impacts and result in more than 500 square feet of Impervious Surface area. (Priority B).**

Targeted land use activities that may have significant water quality impacts (Priority B Projects) include but are not limited to:

- Retail gas outlets
- Automotive repair shops
- Restaurants
- Parking lots with 20 stalls or more
- Buildings greater than 100 feet in height
- Retail malls
- Industrial Facilities (use or zone)

Priority B Projects are further classified as Priority B1 (Impervious Surface area is 5,000 square feet or more) and Priority B2 (Impervious Surface area is between 500 and 5,000 square feet).

Priority Projects do not include Routine Maintenance and Repair of Impervious Surfaces (as defined by the City), trenching and resurfacing work associated with utility installation in Real property or public and private streets, and the construction of temporary or permanent basins and drainageways.

A Priority Project is not determined by cumulative areas of multiple noncontiguous and unrelated work. For example, re-construction to meet ADA requirements for an existing building and new construction for addition to another building can be non-additive if the two work areas are separate. Where 50% or more of the Impervious Surface of a previously developed site will be altered, the entire Development Site must meet Post-Construction BMP requirements.

DO POST-CONSTRUCTION BMP REQUIREMENTS APPLY TO YOUR PROJECT?

DEFINITIONS*

Development is the sum of all actions that are undertaken to alter natural or existing conditions of Real property or improvements on Real property if a building, electric, grading, grubbing, plumbing, stockpiling or trenching permit is required.

Routine Maintenance means activities performed for the regular upkeep of existing Improvements to Real property including recurring, preventative and on-going maintenance necessary to delay or prevent the failure of existing Improvements.

Land Disturbing Activity is any action, activity, or land use that alters the soil or ground surfaces if a building, electric, grading, grubbing, plumbing, stockpiling or trenching permit is required. Examples include:

- demolition of existing foundations/ structures,
- construction of new structures,
- demolition of existing pavement,
- construction of new pavement,
- grading,
- grubbing.

Note: Contractor staging areas and base yards are excluded for determination of Priority A Projects.

Redevelopment is the creation, addition, and/or replacement of Impervious Surface on Real property. Redevelopment also includes changes in land use that may result in increased pollutant discharge to the MS4 or receiving waters. Redevelopment does not include Minor Development.

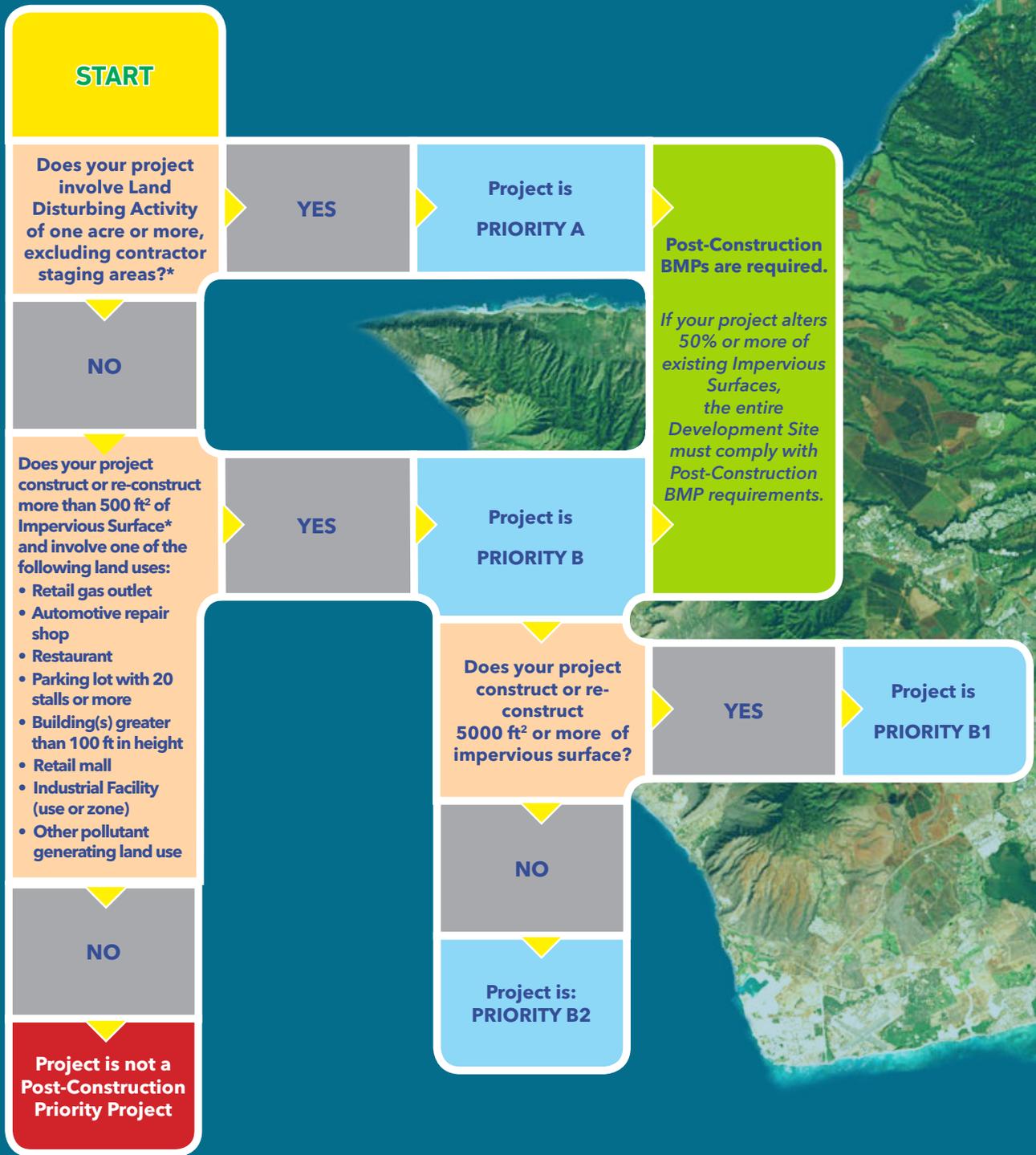
Repair means activities to mend, fix, or restore existing Improvements on Real property to an acceptable operating or usable condition after damage has occurred.

Replacement of Impervious Surface includes any activity that is not part of Routine Maintenance and Repair and where impervious materials are removed, exposing underlying soil or base course during construction.

Impervious Surface is a surface covering or pavement of a developed parcel of land that prevents the land's natural ability to absorb and infiltrate rainfall/storm water. Impervious Surfaces include rooftops, walkways, parking lots, and impervious concrete or asphalt roads.

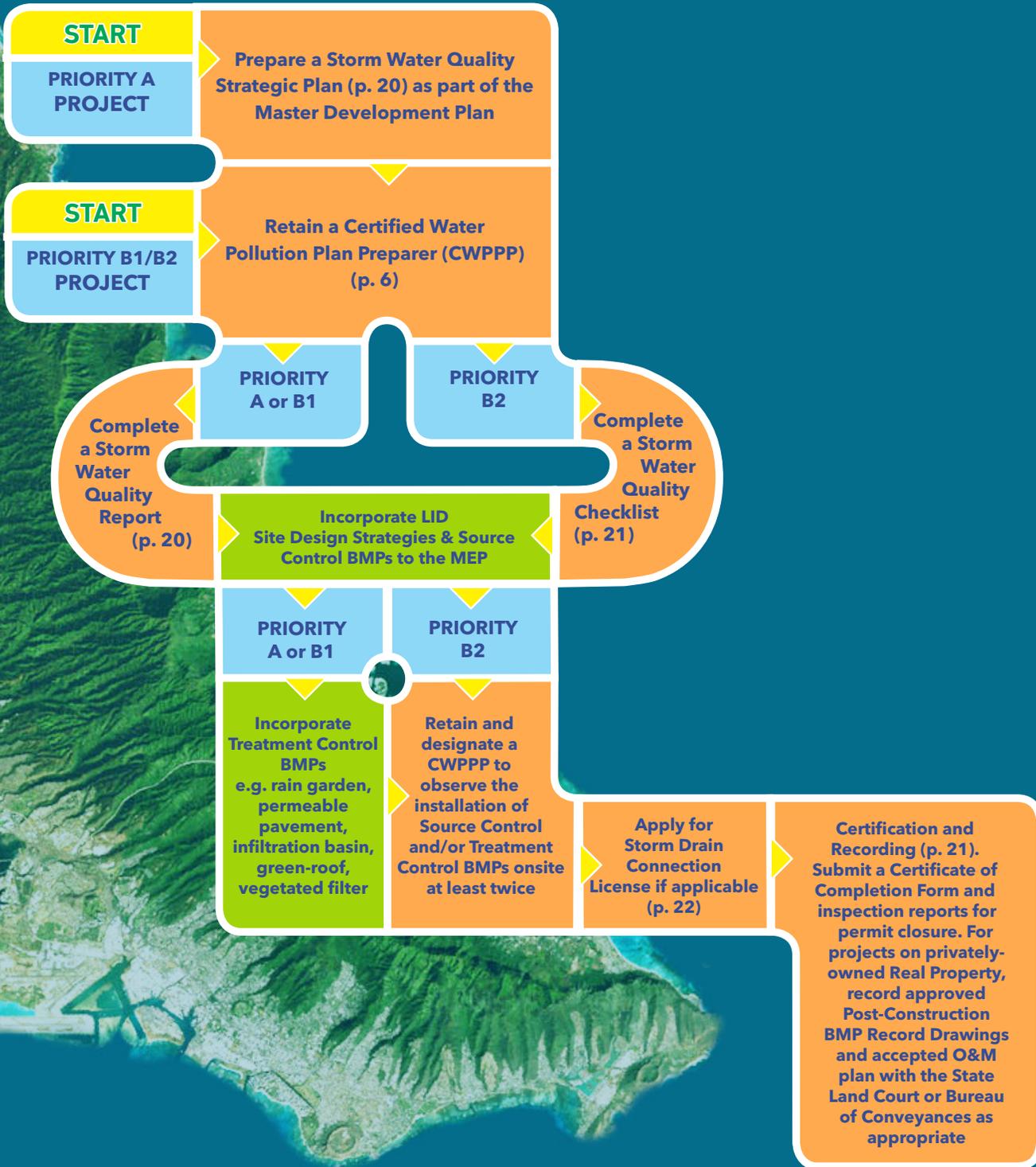
* See Abbreviations and Definitions section for full definitions.

IS YOUR PROJECT A PRIORITY PROJECT?



* Land Disturbing Activity or Impervious Surface areas of multiple noncontiguous and unrelated work are not cumulative.

PRIORITY PROJECTS & PATH TO COMPLIANCE



POST-CONSTRUCTION BMP REQUIREMENTS

Priority Projects must incorporate Post-Construction BMPs into the design to the Maximum Extent Practicable (MEP). These BMPs include 1) *LID Site Design Strategies* (i.e. identifying buildable areas and minimizing impervious surfaces based on a site’s natural drainage features), 2) *Source Control BMPs* (i.e. automatic irrigation, cover over fuel areas and loading docks, separate drain systems for vehicle washing), and 3) *Treatment Control BMPs* (i.e. infiltration basins, rain gardens, vegetated swales, green roofs).

POST-CONSTRUCTION BMP REQUIREMENTS BY PRIORITY PROJECT TYPE

BMP Categories	Priority A ≥1 Acre Disturbed Area	Priority B1 Targeted land use activities and ≥5,000 sq. ft. Impervious Surface Area	Priority B2 Targeted land use activities and between 500 and 5,000 sq. ft. Impervious Surface Area
1. LID Site Design Strategies	✓	✓	✓
2. Source Control BMPs	✓	✓	✓
3. Treatment Control BMPs	✓	✓	

The City’s Storm Water BMP Guide for New and Redevelopment provides planning and design guidelines to support implementation of the Water Quality Rules including minimum design and technical criteria. It also provides guidance for storm water quality during the planning phase and Operations and Maintenance (O&M) guidance. The guide can be found on the City’s Department of Planning and Permitting and Department of Facility Maintenance Storm Water Quality websites (q-r.to/DPP-SWQ).

CERTIFIED WATER POLLUTION PLAN PREPARER

A *Certified Water Pollution Plan Preparer* (CWPPP) is required to design Post-Construction BMPs. The CWPPP must be designated by the property owner using Appendix A of the Rules. A CWPPP is an Architect, Engineer, Land Surveyor, or Landscape Architect licensed in the State of Hawaii who has a current Water Pollution Plan Preparer Certificate from DPP. Certification is available online and is required annually. There are no fees for the certification.

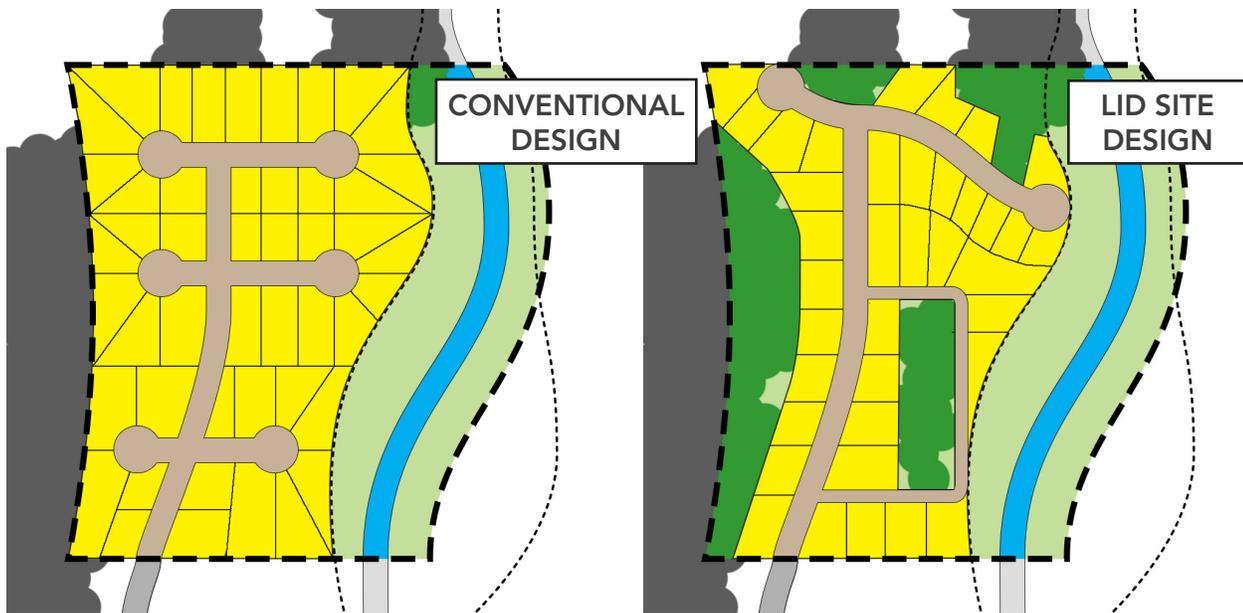
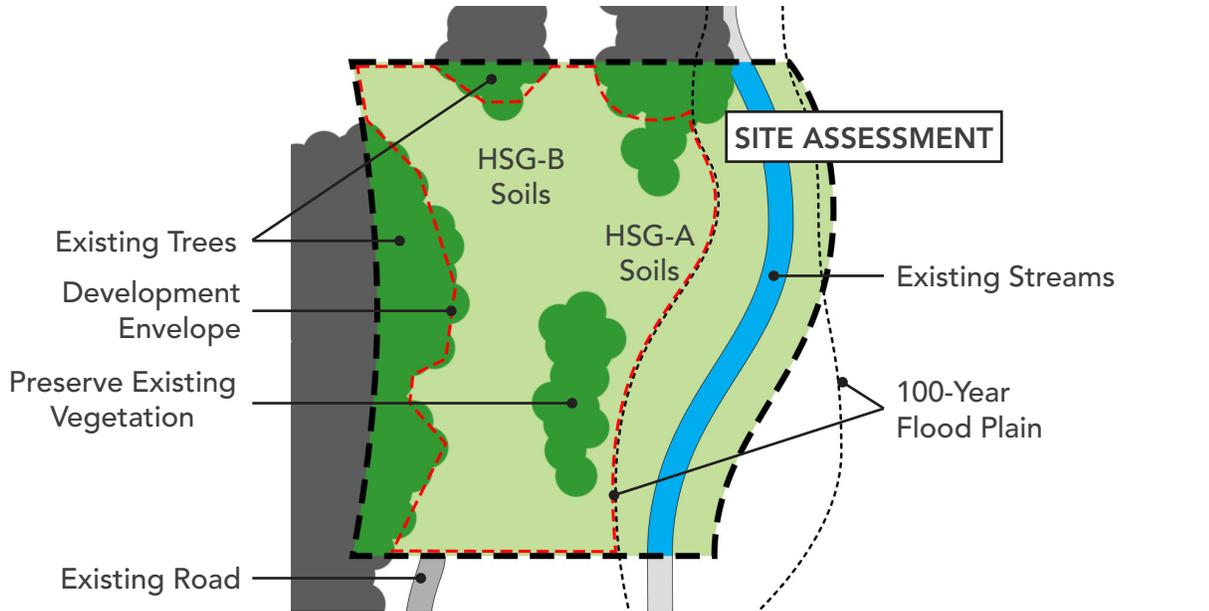
Web-based training for the certification is available at: q-r.to/DPP-SWQ

A CWPPP develops the Post-Construction BMP plan and associated design documentation. A CWPPP also conducts site observations of Post-Construction BMP installation during construction and completes a Certificate of Completion Form for permit closure.



STEP 1. LOW IMPACT DESIGN (LID) SITE DESIGN STRATEGIES

All Priority Projects must begin with an assessment of the site's watershed to identify and maximize preservation of natural drainage features such as wetlands, streams, vegetative buffers and slopes and to minimize impervious surfaces. LID Site Design Strategies help to maintain or restore the site's pre-development hydrology and to allow development with low-impact to the natural environment. These strategies reduce the amount of storm water runoff that requires treatment.



STEP 1. LID SITE DESIGN STRATEGIES (Continued)

LID SITE DESIGN STRATEGIES:

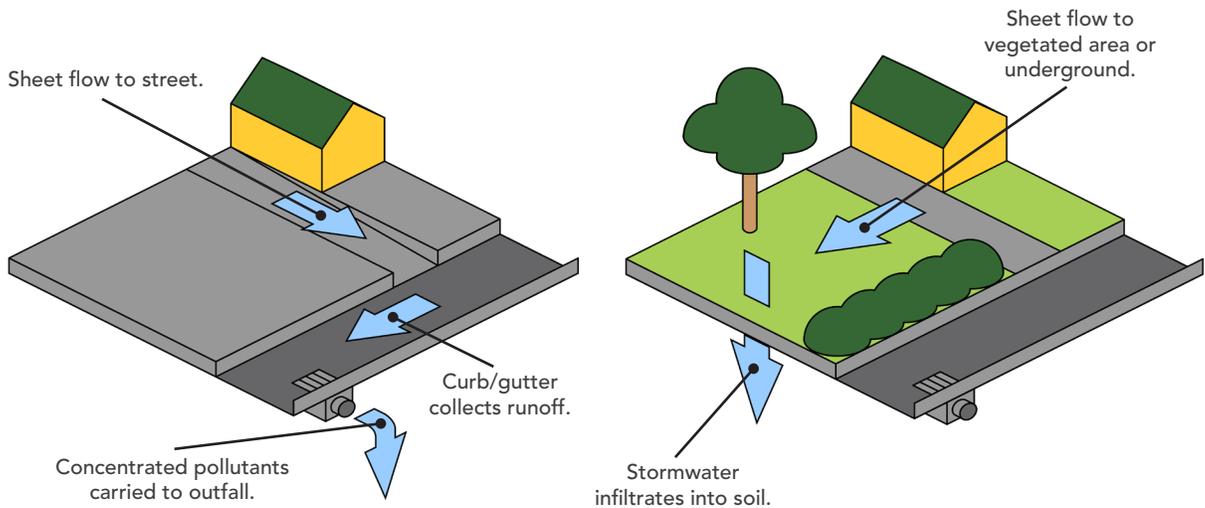
- **Conserve natural areas and minimize disturbance.**
- **Minimize soil compaction.**
Soil compaction reduces soil absorption and infiltration rates and limits plant growth. Minimize soil compaction by limiting areas of heavy equipment and material storage areas and restore compacted areas with tilling and soil amendments.

- **Minimize Impervious Surfaces.**
Impervious Surfaces prevent storm water from infiltrating into the ground, preventing a key component of the water cycle - the movement of water below ground. Strategies to minimize impervious surfaces include: clustering buildings, maximizing height of buildings to minimize ground footprint, using green roofs and pervious pavements, and locating buildings to minimize driveway length.

Natural or landscaped areas, which retain storm water and do not accept runoff from other areas, are considered *Self-Mitigating Areas* and may drain directly to the storm drainage system without further treatment.

For Priority A & B1 projects, Self-Mitigating Areas and/or Self-Retaining Areas can be excluded from Treatment Control BMPs provided certain criteria are met. See next page for more on Self-Mitigating Areas.

- **Direct runoff to landscaped areas and reduce directly connected impervious areas (DCIA).**
Impervious Surface areas such as parking lots contain oils, sediments, metals and other pollutants that are "washed away" with storm water runoff. This polluted water should be directed to landscaped areas for removal of pollutants via biofiltration.



Conventional Design

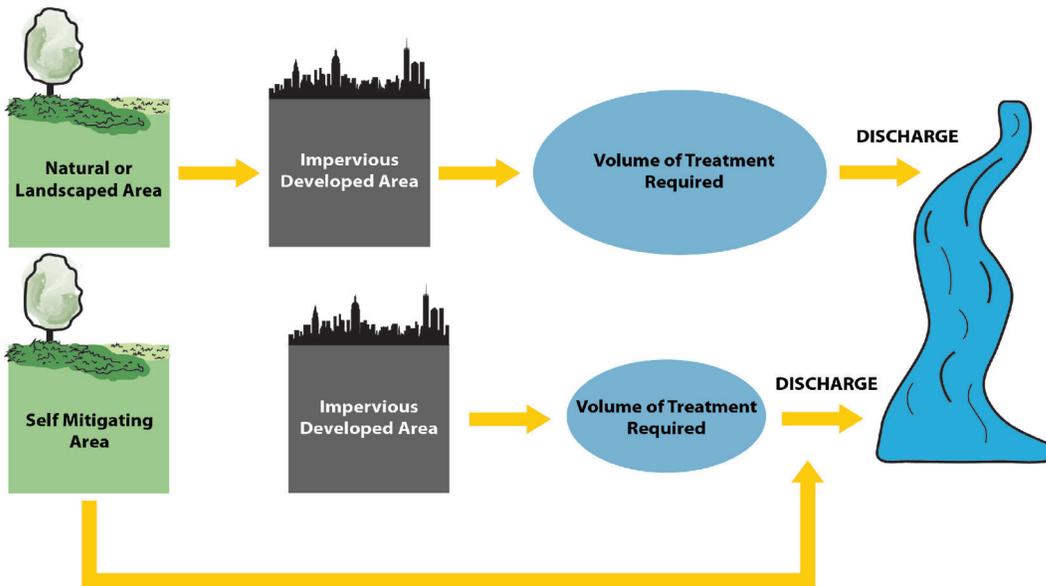
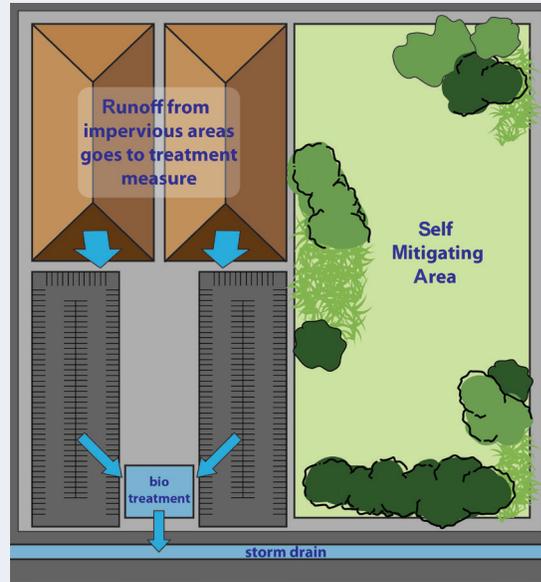
LID Site Design

STEP 1. LID SITE DESIGN STRATEGIES (Continued)

SELF-MITIGATING AREAS

Self-Mitigating Areas are natural or landscaped areas (including green roofs) that retain and/or treat storm water and do not accept runoff from other areas. They may drain directly to the storm drainage system without further treatment and can be excluded from the required Water Quality Volume (p.17), which reduces the size of Treatment Control BMPs. Self-Mitigating Areas must meet the following criteria:

- Vegetation is native or non-native and non-invasive drought tolerant species that do not require fertilizers and pesticides.
- Soils are undisturbed native top soil, or amended and aerated to promote water retention equal to undisturbed native topsoil.
- Any incidental impervious areas are less than 5% of the Self-Mitigating Area.
- Incidental impervious areas are not hydraulically connected to other impervious areas unless it is a storm water conveyance system (such as brow ditches).



Natural or landscaped areas that drain to impervious developed area require treatment, whereas Self-Mitigating Areas may drain directly to the storm drain system.

STEP 1. LID SITE DESIGN STRATEGIES (Continued)

SELF-RETAINING AREAS

Self-Retaining Areas are designed to retain the first inch of rainfall (by ponding and infiltration and/or evapotranspiration) on itself and from adjacent areas without producing storm water runoff. Self-Retaining Areas may be created by designing concaved landscaped areas at a lower elevation or which are bermed or ditched to accept runoff from adjacent impervious areas. They must meet all the following criteria to be eligible for exclusion:

- A maximum of 1:1 ratio of impervious area to the receiving pervious area. The maximum impervious to pervious area ratio may be increased to 1.5:1 if the soils in the pervious receiving area have been amended by incorporating at least 8 inches of compost/ amendments and tilled/aerated to promote water infiltration and retention.
- The functional area must be flat (less than 5% slope), designed for sheet flow, and with a minimum of 10 feet from inflow to overflow route.
- Side slopes and flow paths protected from erosion by appropriate velocity dissipation methods (e.g. riprap or level spreaders).
- Vegetation should be native and/or non-native/non-invasive drought tolerant species that can tolerate periodic ponding and do not require regular application of fertilizer and pesticides.



Green Roof at Hanauma Bay Marine Education Center

STEP 2. SOURCE CONTROL BMPs

The second step for all Priority Projects is to incorporate Source Control BMPs to the MEP. Source Control BMPs seek to physically separate potential sources of pollutants such as fuel areas and loading docks from the storm water drainage system.

Source Control BMPs are required for the following activities and areas:

- Landscaped areas
- Automatic irrigation systems
- Storm drain inlets
- Vehicle/equipment fueling
- Vehicle/equipment repair
- Vehicle/equipment washing & cleaning
- Residential vehicle/equipment washing for condominium & apartment buildings
- Loading docks
- Outdoor trash storage
- Outdoor material storage
- Outdoor work areas
- Outdoor process equipment operations
- Parking areas with Impervious Surfaces

SOURCE CONTROL BMP GUIDE*

Landscaped areas

Limit runoff from landscaped areas to impervious areas and protect slopes and channels.

Automatic irrigation systems

Minimize excess irrigation water by grouping plants with similar water requirements and using timing and application methods such as automatic and drip irrigation systems. Design irrigation system to each landscape area's specific water requirements.

Storm drain inlets

Provide stenciling or labeling of all storm drain inlets and catch basins within facility boundaries to indicate whether the flow is to the storm drain, sewer, or oil/water separator. Post signs which prohibit illegal dumping at public access points along channels and streams within the project site.



* This booklet provides an overview of Source Control BMPs. For detailed guidance and requirements see both the Rules (City Rules §20-3-57) and the Storm Water BMP Guide for New and Redevelopment (Section 3.3).

STEP 2. SOURCE CONTROL BMPs (Continued)

Vehicle/Equipment Fueling	
Source Control BMP	Specific Requirement(s)
Covering	<p>Provide cover over fuel dispensing areas. The minimum cover must extend to any grade breaks that separate the fueling area. If large equipment or vehicles prohibit the use of cover, design fuel island to preclude run-on and runoff.</p> 
Surfacing	<ul style="list-style-type: none"> • Pave with Portland cement concrete (or equivalent smooth Impervious Surface) extended to a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus 1 foot, whichever is less. • Use asphalt sealant to protect asphalt paved areas surrounding the fueling area.
Grading & Drainage	<ul style="list-style-type: none"> • Slope fuel dispensing areas to prevent ponding and separate area from rest of site by a grade break that prevents run-on. • Direct storm water runoff from vehicle/equipment fueling area to a dead-end sump or vegetated/landscaped area. • The covering and any associated downspouts must discharge beyond the fueling area. • Label all drains to distinguish flows to the storm drain, sewer, or oil/water separator.

Vehicle/Equipment Repair	
Source Control BMP	Specific Requirement(s)
Covering	<p>Locate repair bays indoors or design to preclude run-on and runoff.</p> 
Surfacing	<p>Pave with Portland cement concrete (or equivalent smooth Impervious Surface)</p>
Grading & Drainage	<ul style="list-style-type: none"> • Provide impermeable berms, drop inlets, trench drain, catch basins, or overflow containment structures around repair bays. • Direct storm water runoff from vehicle/equipment repair areas to a dead-end sump for collection and disposal. • Label all drains within facility using paint or stencil to distinguish flows to the storm drain, sewer, or oil/water separator.

STEP 2. SOURCE CONTROL BMPs (Continued)

Vehicle/Equipment Washing & Cleaning	
Source Control BMP	Specific Requirement(s)
<p>Incorporate at least one of the Source Control BMPs listed below.</p>	
Covering	<p>Be self-contained and/or covered with a roof or overhang.</p>
Grading & Drainage	<ul style="list-style-type: none"> • Surround wash areas with a perimeter berm and clearly mark designated washing areas. • Install sumps or drain inlets to collect wash water. • Treat wash water with a clarifier, engineered infiltration system, or other equivalent pretreatment facility. • Divert/dispose wash water to the sanitary sewer system with an approved sewer connection permit, or to an engineered infiltration system, or to an equally effective alternative. • Direct storm water runoff from wash pads and exposed areas around wash pads to alternatives other than the sanitary sewer, or • Use cover, perimeter berm, and clearly mark vehicle washing area.
Storm Drain Inlets	<p>Label all drains within facility using paint or stencil to distinguish flows to the storm drain, sewer, or oil/water separator.</p>



Residential Vehicle/Equipment Washing for Condominiums & Apartment Buildings	
Source Control BMP	Specific Requirement(s)
Grading & Drainage	<ul style="list-style-type: none"> • Direct wash water to a vegetated area, sanitary sewer (with an approved sewer connection permit), an engineered infiltration system or approved equivalent. • Direct storm water runoff from the wash area to alternatives other than the sanitary sewer.
Other	<p>Designate a car wash area with posted signs.</p>

STEP 2. SOURCE CONTROL BMPs (Continued)

Loading Docks	
Source Control BMP	Specific Requirement(s)
Covering	Cover loading dock areas or design to preclude run-on and runoff.
Surfacing	Pave with Portland cement concrete (or equivalent smooth Impervious Surface).
Grading & Drainage	<ul style="list-style-type: none"> Grade and/or berm the loading dock to a dead-end sump. Prevent runoff from depressed loading docks (truck wells) from discharging into storm drains. Drain below-grade loading docks from grocery stores and warehouse/distribution centers of fresh food items through water quality inlets, an engineered infiltration system or approved equivalent.



Outdoor Trash Storage	
Source Control BMP	Specific Requirement(s)
Covering	Cover area with roof, awning or attached lids.
Surfacing	Pave with Impervious Surface.
Grading & Drainage	<ul style="list-style-type: none"> Grade site (e.g. grade breaks, berms, slopes) to prevent run-on from adjoining roofs and pavement or grade outdoor trash storage area to drain towards vegetated/landscaped areas. Prevent runoff from depressed loading docks (truck wells) from discharging into storm drains. Use lined bins/dumpsters or drip pans underneath dumpsters, or perimeter berm around dumpster area. Locate storm drains away from trash storage areas.
Other	Post signage to prohibit dumping of hazardous materials.



Note: Hazardous waste must be handled in accordance with Hawai'i Administrative Rules Title II Chapter 58.1 Solid Waste Management Control.

STEP 2. SOURCE CONTROL BMPs (Continued)

Outdoor Material Storage	
Source Control BMP	Specific Requirement(s)
Covering	<ul style="list-style-type: none"> Enclose or provide secondary containment (e.g. berms, dikes, curbs) for materials with potential to contaminate storm water. Provide roof, canopy, or awning beyond outdoor material storage area to minimize storm water runoff within secondary containment area. Manufactured storage sheds are allowable for small containers. 
Surfacing	Pave with Portland cement concrete (or equivalent smooth Impervious Surface).
Grading & Drainage	<ul style="list-style-type: none"> Grade to prevent run-on. Direct runoff from downspouts/roofs away from storage areas. Slope outdoor material storage area to a dead-end sump to contain spills.

Outdoor Work Areas	
Source Control BMP	Specific Requirement(s)
Covering	Cover work area with a roof to prevent rain from falling on the work areas.
Surfacing	Pave with concrete or asphalt concrete or use prefabricated metal drip pan appropriate for the work area.
Grading & Drainage	<ul style="list-style-type: none"> Berm or mound perimeter around the perimeter of that area to prevent run-on. Locate storm drains away from outdoor work areas. Connect water runoff from outdoor work areas to the sanitary sewer system with an approved sewer connection permit or to a specialized containment system. 

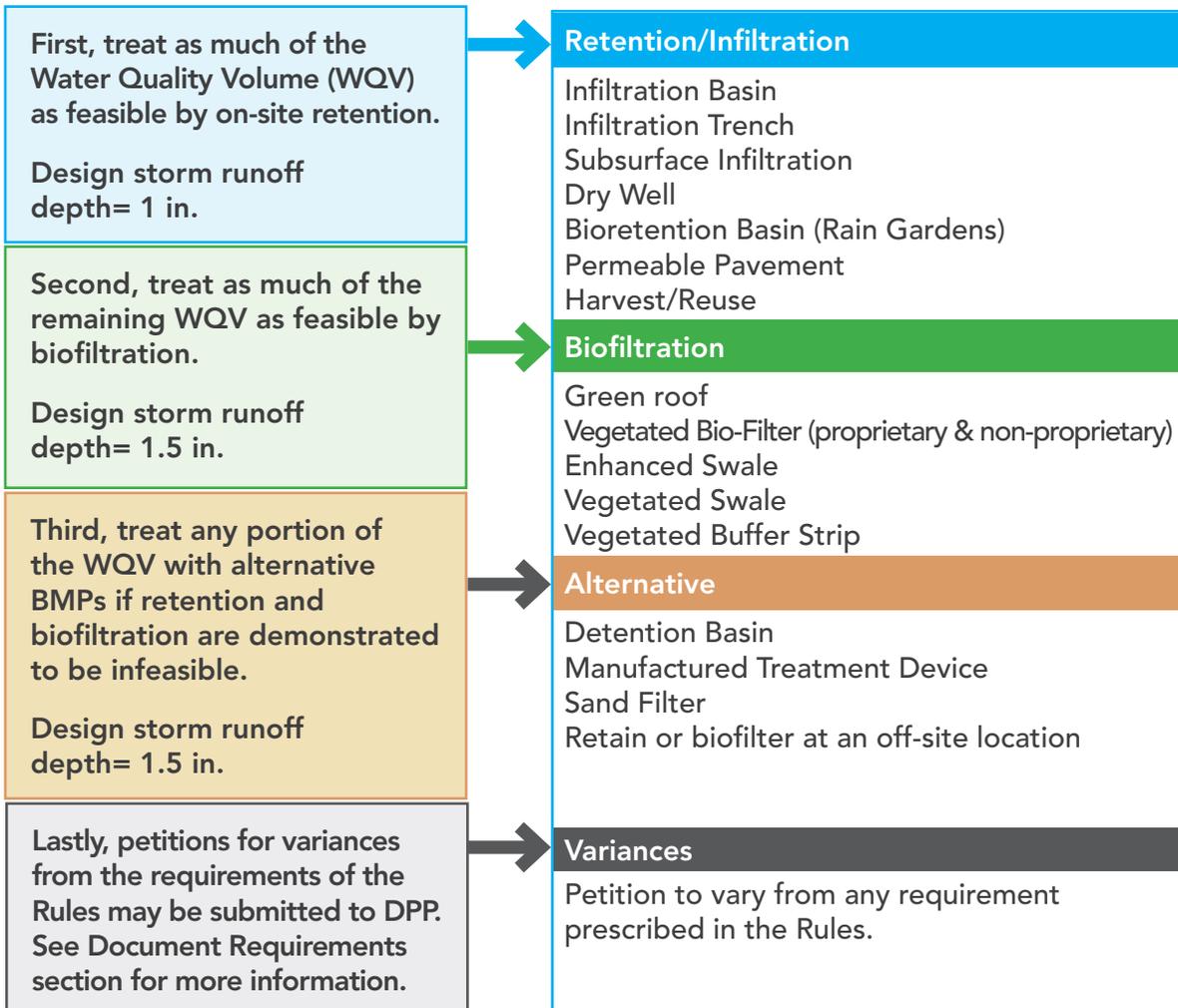
STEP 2. SOURCE CONTROL BMPs (Continued)

Outdoor Process Equipment Operations	
Source Control BMP	Specific Requirement(s)
Covering	<p>Enclose or provide roof, canopy, or awning over areas with highest potential for pollutants or use grading and/or drainage to separate outdoor process equipment operation area from draining to storm drain system.</p> 
Grading & Drainage	<ul style="list-style-type: none"> • Grade to prevent run-on and slope area toward a dead-end sump or provide covering. • Discharge to the sanitary sewer system with an approved sewer connection permit and appropriate treatment or provide covering. • Do not install storm drains in areas of equipment repair.

Parking Areas with Impervious Surfaces	
Source Control BMP	Specific Requirement(s)
Grading & Drainage	<p>Direct storm water runoff from impervious paved parking areas to landscaped areas or other Post-Construction Treatment Control BMPs.</p> 

STEP 3. TREATMENT CONTROL BMPs

For Priority A & B1 Projects, the last step is to incorporate Treatment Control BMPs that are appropriate for the site. Treatment Control BMPs are engineered technologies that treat storm water runoff from Impervious Surfaces by allowing runoff to infiltrate into the ground (retention), be used and filtered by plants (biofiltration), or be filtered by other means. Site evaluation of appropriate Treatment Control BMPs must be documented using the City's Feasibility Screening Worksheet (Appendix F of the Rules). Feasibility criteria includes soil infiltration rates, setbacks, utility conflicts, harvest/reuse demands, groundwater table relative to drain inverts, etc.



Formulas to calculate the Water Quality Volume (WQV) are provided in the Rules. Generally, it is the volume of water in cubic feet required to be treated. Greater WQVs result in larger sizes of Treatment Control BMPs.

The WQV is dependent on two design features: 1) selection of Treatment Control BMPs and 2) the extent of impervious versus pervious surface areas. Note: Use of biofiltration and alternative Treatment Control BMPs includes a sizing factor of 1.5 versus retention BMPs. Greater impervious surface areas increases the required WQV, whereas Self-Mitigating/Retaining Areas reduce it.

STEP 3. TREATMENT CONTROL BMPs (Continued)

INFILTRATION TESTING

The infiltration rate is a measure, in inches per hour, of how fast water passes vertically through soil under saturated conditions. The Falling Head Percolation Test and the Double-Ring Infiltrometer Test are two of the most common infiltration test methods. Infiltration testing is required per the table below.

BMP	Min. # of Infiltration Tests
Infiltration Basin	1 every 2500 Sq. Ft.
Subsurface Infiltration Systems	1 every 2500 Sq. Ft.
Dry Wells	1 every 2500 Sq. Ft.
Bioretention Basins	1 every 2500 Sq. Ft.
Permeable Pavement	1 every 2500 Sq. Ft.
Infiltration Trench	1 every 100 linear Ft.

A minimum safety factor of 2 shall be used for the design infiltration rate to account for uncertainties and inaccuracies.

FEASIBILITY CRITERIA

For more information on permanent BMPs refer to the City’s *Storm Water BMP Guide for New and Redevelopment*. On-site infiltration is demonstrated to be infeasible when any of the following conditions are met:

- Measured infiltration rates are less than 0.5 in./hr. or on-site soils are USDA HSG “C” or “D” as reported by the USDA Natural Resources Conservation Service.
- The seasonally high groundwater table is within 3 feet from the BMP invert/bottom.
- There is documented concern for on-site pollutants.
- There are geotechnical concerns at the site.



Rain Garden



Vegetated Swale



Rain Barrel at Punahou School

BMP DOCUMENTATION SUMMARY

The City Department of Planning & Permitting (DPP) requires documentation of the design, installation, and operations and maintenance of Post-Construction BMPs for permit review and closure.

Design reports and checklists must be prepared by a Certified Water Pollution Plan Preparer (CWPPP), who is designated by the property owner using Appendix A (CWPPP Designation Form) of the Rules.

SUMMARY OF DOCUMENT REQUIREMENTS

Documents	Priority A ≥1 Acre Disturbed Area	Priority B1 Targeted land use activities and ≥5,000 sq. ft. Impervious Surface Area	Priority B2 Targeted land use activities and between 500 and 5,000 sq. ft. Impervious Surface Area
Storm Water Quality Strategic Plan	✓	N/A	N/A
Storm Water Quality Report (SWQR)	✓	✓	N/A
Storm Water Quality Checklist (SWQC)	N/A	N/A	✓
CWPPP Designation Form	✓	✓	✓
Storm Drain Connection License Application	If Applicable	If Applicable	If Applicable
Variance	If Applicable	If Applicable	If Applicable
Post-Construction BMP Plan & Recording	✓	✓	✓
Operations and Maintenance (O&M) Plan	✓	✓	If Applicable
Certificate of Completion with Inspection Reports	✓	✓	✓

The following pages provide an overview of these document requirements. More detailed information is provided in the Rules (City Rules §20-3) and the City's Storm Water BMP Guide for New and Redevelopment. In addition to design criteria, the guide provides information on application of permanent BMP requirements and O&M guidance. Both can be found on The City's Department of Planning and Permitting and Department of Facility Maintenance Storm Water Quality websites (q-r.to/DPP-SWQ).

DOCUMENT REQUIREMENTS

STORM WATER QUALITY STRATEGIC PLAN

Priority A Projects must submit a Storm Water Quality Strategic Plan (Strategic Plan) with, or as part of, the Master Development Plan. The Strategic Plan is conceptual and shall include a written description of the:

- Proposed development
- Proposed land use activities
- Expected pollutants generated by site activities
- LID Site Design Strategies
- Development schedule

STORM WATER QUALITY REPORT (SWQR)

Priority A and B1 Projects must submit an SWQR prepared by a Certified Water Pollution Plan Preparer (CWPPP). Refer to Appendix E of the Rules (report template) for details on preparing an SWQR.

In general, the SWQR must include:

- Project: Name, address, TMK, size, impervious area (square feet)
- Master Plan Development name
- Property owner(s)/developer(s): name, address, and telephone number
- A description of site characteristics including drainage patterns, soils, vegetation, and steep or unstable slopes that may be of concern
- Proposed land use activities including those that require Source Control BMPs
- A description of the Pollutants of concern (POC) generated at the site
- A description of LID Site Design Strategies, Source Control and Treatment Control BMPs

Attachments:

- Locations map and site plans
- Existing and proposed drainage maps with drainage areas
- Permanent BMP plan
- Treatment Control BMP sizing calculations and/or worksheets and infiltration testing results
- Feasibility Screening Worksheet (Appendix F of the Rules)
- Certification or verification of any proprietary treatment devices

Appendix E

City and County of Honolulu

Storm Water Quality Report

Project Name:

Project Location:
Tax Map Key(s):
Total Project Size:
City MUA Facility(s):

Prepared For:
Owner/Developer's Name
Owner/Developer's Street Address
Owner/Developer's City, State, Zip Code
Owner/Developer's Telephone Number

Prepared By:
Preparer's Name
Preparer's Street Address
Preparer's City, State, Zip Code
Preparer's Telephone Number

Date of Preparation

DOCUMENT REQUIREMENTS

STORM WATER QUALITY CHECKLIST (SWQC)

Priority B2 Projects must submit an SWQC prepared by a Certified Water Pollution Plan Preparer (CWPPP). Refer to the City's SWQC Preparation Manual and Appendix G (checklist template) of the Rules to prepare an SWQC.

CWPPP DESIGNATION FORM

The CWPPP must be designated by the property owner using the City's form provided as Appendix A of the Rules.

OPERATION & MAINTENANCE (O&M) PLAN*

O&M plans are required for Priority A and B1 Projects and for all Post-Construction structural BMPs. Post-construction structural BMPs include: treatment control BMPs such as Self-Mitigating Areas, infiltration basins, dry wells, subsurface infiltration and green roofs. The O&M plan must be prepared using Appendix H (O&M Plan template) of the City's Rules Relating to Water Quality.

The O&M Plan must provide contact information for the responsible individual(s) or entity who shall inspect, document, implement, monitor, and maintain each BMP, excluding those that are designated within limited common areas of individual subdivided lots or condominium property regimes (CPR).

POST-CONSTRUCTION BMP CERTIFICATION AND RECORDING

Priority A and B Projects shall submit a post-construction Certificate of Completion form signed by a CWPPP prior to the closure of grading and/or building permits. Refer to Appendix G (Certificate of Completion Form) of the City's Rules Relating to Water Quality. The certification includes observation of Treatment Control and Source Control BMP installation with at least two inspections. Inspection reports shall include photographs, observations, maps, and test data. Certification also includes submittal of Post-Construction BMP record drawing tracings.



The approved Post-Construction BMP Record Drawings and the accepted O&M plans shall be recorded with the State of Hawai'i Land Court or Bureau of Conveyances as appropriate.

Post-Construction BMP Record Drawings and O&M Plans for regional BMPs shall be recorded with the land that contains the BMPs. Designated limited common areas or private areas with Post-Construction BMPs shall be defined in the recorded deed of each affected subdivided lot or CPR with a description of the permanent structural BMPs and the O&M Plan.

* This booklet provides an overview of O&M plans. For detailed guidance and requirements see both the Rules (City Rules §20-3-53) and the Storm Water BMP Guide for New and Redevelopment (Section 7 and Appendix C).

DOCUMENT REQUIREMENTS (Continued)

SUBMITTAL TO DEPARTMENT OF FACILITY MAINTENANCE

A copy of the drainage connection license and O&M Plan shall be submitted to the Department of Facility Maintenance before closure of building and/or grading, grubbing, or stockpiling permits.

VARIANCES

Petitions to vary from any requirements as prescribed in the City's Rules Relating to Water Quality may be submitted in writing to the Department of Planning and Permitting Director. Unique site conditions for which a variance might be warranted include a high groundwater table, contaminated soils, archaeological artifacts or geotechnical concerns. Petitions must include the name and contact information of the petitioner, the specific sections for which the variance is sought, a narrative explanation, engineer certified plans, illustrations and/or calculations in support of the petition. The petitioner must also establish all of the following:

1. The variance is necessary to prevent a hardship caused by unique Site conditions not ordinarily found in other areas within the City;
2. The unique Site conditions are not the results of the petitioner's actions or the actions of his or her agents, contractors, consultants, or tenants;
3. The variance will not adversely affect the rights of abutting property owners;
4. The variance will not result in an unreasonable threat of Pollutant Discharge to the MS4 or State Waters; and
5. The variance is the minimum accommodation needed to overcome the hardship caused by naturally occurring conditions on the property.

STORM DRAIN CONNECTION LICENSE

A drain connection license is required for private drain connections to the City storm drain system. Connections include concentrating and directing storm water runoff from private property and discharging directly to City right-of-way (e.g. grassed sidewalks, concrete sidewalk, curb and gutter). If the discharge point is on private property, setback from the property line (at least 5 ft.), a storm drain connection license may not be required. Application with a non-refundable fee of \$200 is required to obtain a storm drain connection license.

ABBREVIATIONS AND DEFINITIONS

ABBREVIATIONS AND ACRONYMS

BMP	Best Management Practice
CPR	Condominium Property Regimes
CWPPP	Certified Water Pollution Plan Preparer
DCIA	Directly Connected Impervious Area
DPP	City & County of Honolulu Department of Planning and Permitting
LID	Low Impact Development
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
SWQC	Storm Water Quality Checklist
SWQR	Storm Water Quality Report
WQV	Water Quality Volume

CITY AND COUNTY OF HONOLULU ADMINISTRATIVE RULES §20-3 DEFINITIONS (PORTION):

Best Management Practices or **BMPs** means schedules of activities, prohibitions of practices, maintenance procedures, management practices, treatments, and temporary or permanent structures or devices that are intended and designed to eliminate and minimize the Discharge of Pollutants, directly or indirectly, to Receiving Waters, to the Maximum Extent Practicable.

Biofiltration means a pollution control technique that uses living material to capture and absorb or biologically degrade Pollutants.

Certified Water Pollution Plan Preparer or **CWPPP** means an Architect, Engineer, Land Surveyor, or Landscape Architect licensed in the State of Hawaii who has a current Water Pollution Plan Preparer Certificate from the City Department of Planning & Permitting.

City means the City and County of Honolulu.

DEFINITIONS (Continued)

Department or DPP means the City & County of Honolulu Department of Planning and Permitting.

Design Engineer means a licensed Civil Engineer in the State of Hawaii who stamps or certifies plans that are submitted to the Department for review and approval.

Developer means the owner of Real property subject to Development and includes any person that causes, contributes to, or participates in the actions necessary to accomplish Development.

Development means the sum of all actions undertaken to alter the natural or existing condition of Real property or improvements on Real property if a building, electric, grading, grubbing, plumbing, stockpiling or trenching permit is required for the project.

Development does not include: the installation of signs and traffic control devices, emergency work necessary to repair surfaces that are in immediate need of stabilization, and the marking of improved surfaces with striping or signage.

Impervious Surface means a surface covering or pavement of a developed parcel of land that prevents the land's natural ability to absorb and infiltrate rainfall/storm water. Impervious surfaces include, but are not limited to rooftops, walkways, patios, driveways, parking lots, storage areas, impervious concrete and asphalt, and any other continuous watertight pavement or covering.

Industrial Facility means an area of land used or zoned for Industrial use as set forth under the City Land Use Ordinance, ROH Chapter 21.

Infiltration means practices which capture and temporarily store a design storm volume of water before allowing it to infiltrate into the soil.

Land Disturbing Activity or Land Disturbance means any action, activity or land use that alters the integrity, structure, texture, density, permeability, contents, or stress conditions of soil or ground surfaces if a building, electric, grading, grubbing, plumbing, stockpiling or trenching permit is required for the project.

Land Disturbing Activities include actions that result in the turning, penetration, or moving of soil, the resurfacing of pavement that involves the exposure of base course or subsurface soils, and the use of portions of a project site as staging areas or base yards.

Low Impact Development or LID means systems and practices that use or mimic natural processes such as infiltration and evapotranspiration or use storm water to protect water quality and the aquatic habitat. At both site and regional scales, LID aims to preserve, restore, and create green space using soils, vegetation, and rain harvest techniques.

DEFINITIONS (Continued)

Maximum Extent Practicable or MEP means economically achievable measures that prevent or reduce the addition of Pollutants to the environment to the greatest degree achievable through the application of the best available pollution control practices, technologies, processes, siting criteria, operating methods and other alternatives.

Minor Development means development that requires a trenching, building, grading, grubbing or stockpiling permit where the total Project scope is limited to the following activities listed in §20-3-14(i). For reference §20-3-14(i) activities include:

- Work where Land Disturbing Activities are limited to incidental equipment and material staging for permitted work which is not land disturbing;
- The installation of temporary BMPs;
- Land Disturbing Activity that takes place completely under a roof or other enclosure and where existing conditions preclude storm water run-on to the Disturbed Area;
- The construction of individual bus shelters;
- The installation of footings or posts for the construction of fences, decks, roof, coverings, and trellises for single family or two-family dwelling use; and
- Trenching Project that takes place in the City right-of-way for laterals serving one property.

Municipal Separate Storm Sewer System or MS4 means the City's drainage infrastructure that is designed or intended to collect and convey storm water and includes, but is not limited to, City roads with drainage improvements, City streets, catch basins, curbs, gutters, ditches, man-made channels and storm drains.

Permanent BMP or Post-Construction BMP means a BMP that will remain on site after the completion of a project to prevent or reduce the Discharge of Pollutants to the MS4 and/or Receiving Waters.

Redevelopment means the creation, addition and/or Replacement of Impervious Surface on improved Real property. Redevelopment also includes changes in land use that may result in increased Pollutant discharges to the MS4 or Receiving Waters. Redevelopment does not include Minor Development.

Repair means activities to mend, fix, or restore existing Improvements on Real property to an acceptable operating or usable condition after damage has occurred.

Replacement of Impervious Surface includes any activity that is not part of Routine Maintenance and Repair and where impervious materials are removed, exposing underlying soil or base course during construction.

DEFINITIONS (Continued)

Retail Mall or Commercial Mall means one or more buildings that house or form a complex of retail stores with interconnecting walkways. Retail and Commercial malls include, but are not limited to, min-malls, strip malls, retail complexes, and enclosed shopping malls or shopping centers.

Routine Maintenance means activities performed for the regular upkeep of existing Improvements to Real property including recurring, preventative and on-going maintenance necessary to delay or prevent the failure of existing Improvements.

Self-Mitigating Area means a natural or landscaped area, including green roofs, which retains and/or treats rainfall within its perimeter without accepting runoff from other areas. Self-Mitigating Areas must retain all collected storm water or drain directly to the MS4.

Source Control BMPs means BMPs that are designed to prevent Pollutants from contacting storm water runoff and prevent their Discharge into the MS4 or Receiving Waters.

Treatment Control BMPs means engineered technologies designed to remove Pollutants from storm water runoff prior to Discharge to the storm drain system or Receiving Waters.

DEPARTMENT OF PLANNING AND PERMITTING CONTACTS

Storm Water Building Permit Related Questions	768-8230
Storm Water Grading Permit Related Questions	768-8216 or 768-8217

ONLINE INFORMATION AND TRAINING RESOURCES

City's Storm Water BMP Guide for New and Redevelopment and
Certified Water Pollution Plan Preparer Certification: q-r.to/DPP-SWQ



Forms/Templates:
www.honoluludpp.org/ApplicationsForms/StormwaterQuality.aspx

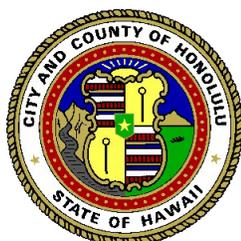
ENVIRONMENTAL HERO AND GOOD NEIGHBOR AWARDS

Every two years the City and County of Honolulu Department of Facility Maintenance, Storm Water Quality Branch identifies one construction contractor for the Environmental Hero Award and one developer for the Good Neighbor Award.

The City selects awardees based on site inspection data which demonstrates a business' outstanding efforts to comply with storm water regulations on their projects.

Previously recognized businesses not only took great care of their projects, but entire neighborhoods by creating effective systems to prevent site runoff, providing extensive training to personnel and demonstrating effective pollution prevention.

The chosen businesses are recognized in various advertisements and invited to a recognition ceremony where they are personally thanked by the Mayor's office.



BE AN EVERYDAY
CLEAN WATER

