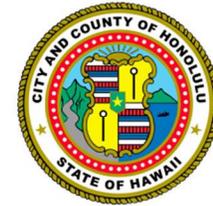
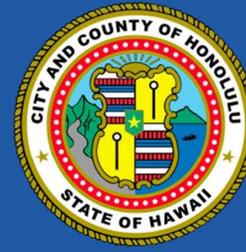


July Construction Stormwater Quality Workshop

July 16–19, 2018





How to Implement Successful Inspections and Corrective Actions into Your Project

Jennifer Little **JACOBS**

Lead 3rd Party Construction Inspector

Learning Objectives

- ❑ Understand the Inspection Process
- ❑ How to Inspect BMPs and using Resources
- ❑ How to Determine Deficiencies
- ❑ How to Implement Corrective Actions to Deficiencies
- ❑ How to Determine which Corrective Actions Meet you Site Specifications

Why conduct construction inspections?

- ✓ Pollution prevention to the City's MS4
 - Improve quality of runoff into the City's storm drain system and reduce pollutants into our streams and ocean
- ✓ Ensure that **Best Management Practices** (BMPs) are:
 - in place, installed properly and working as intended.
- ✓ Comply with the City's water quality rules (WQR) requirements
- ✓ Avoid notices of violations and fines

Think:
Rain and Stormwater



Where is Stormwater going?

The first step in inspecting BMPs for a new development is to understand the site topography and impacts during construction.

In particular, when it rains, the volume of stormwater and its velocity. This can differ based on storm events and phasing of your project.

- Perform a pre-construction site visit to determine runoff locations **during rain**
- Assess Volume
 - How much runoff are we trying to manage?
- Assess Velocity
 - Where is it going and how fast is it moving?
- Remember: the **ESCP** and **SWPPP** are living documents

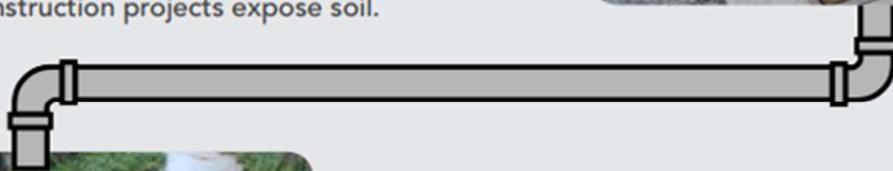




When it rains, or water is used on site, dirt can run off the site with the water into storm drains.



Construction projects expose soil.



Dirt and other wastes travel down stream.



Dirt and waste flow into the ocean.

Use BMPs to protect our streams and ocean

The Point- to Avoid Polluting our Waters

- ☐ North Shore
 - Stream pollution
 - Bay pollution
 - Ocean pollution



*Waimea Bay, North Shore Oahu
Tropical Storm Darby 2016*



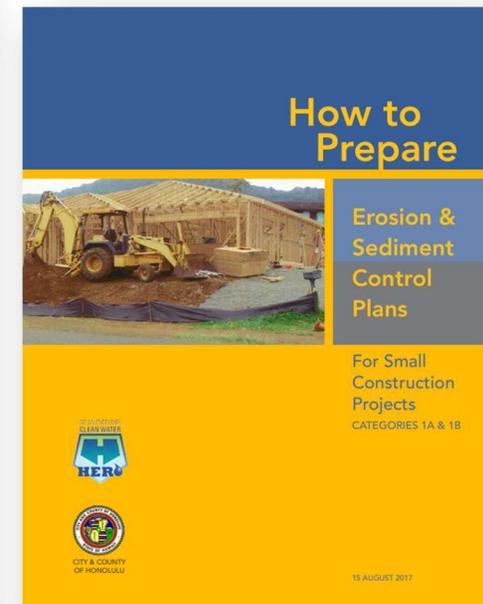
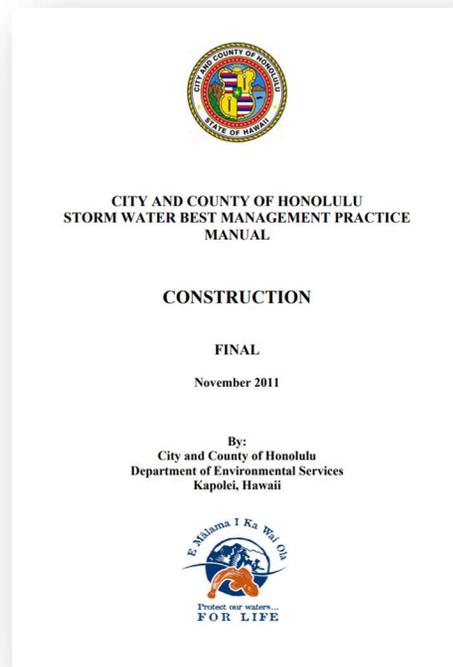
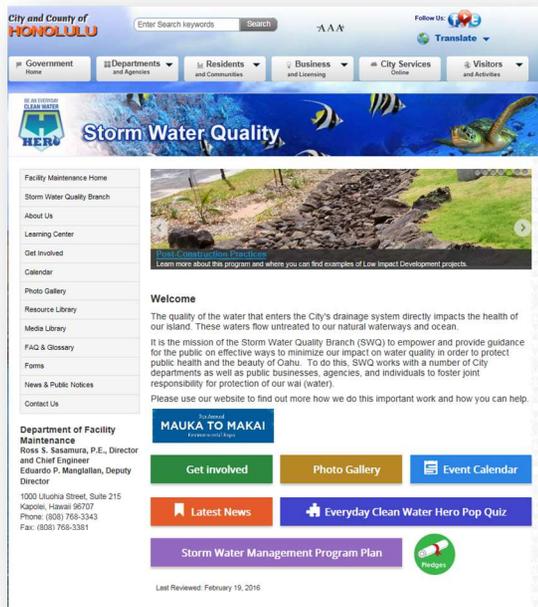
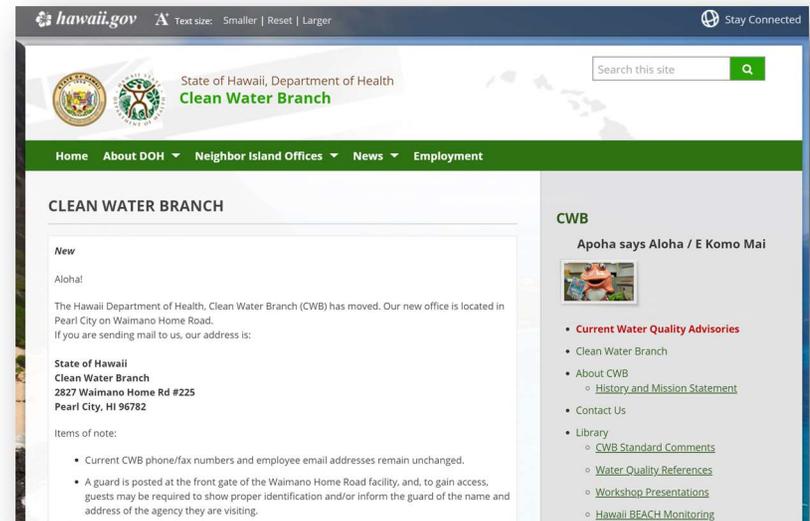
*Kaukonahua Stream, North Shore Oahu
December 2013*

Useful Resources:

❑ www.cleanwaterhonolulu.com

❑ www.health.hawaii.gov/cwb/

❑ City and County of Honolulu BMP Manual (2011)



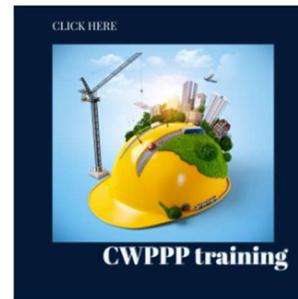


Online Training

☐ <http://www.honolulu.gov/dfmswq/rules-relating-to-water-quality.html>

Web-Based training certification

- **Erosion and Sediment Control Plan** or “**ESCP**” **Coordinator**: Designee responsible for the implementation, inspection and oversight of an approved Erosion and Sediment Control Plan (ESCP) during construction who has a current ESCP coordinator certificate from the City’s Department of Planning and Permitting. This person can be a homeowner, contractor or authorized representative approved by the property owner
- **Certified Water Pollution Plan Preparer** or “**CWPPP**”: 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’s Department of Planning and Permitting. This licensed professional is responsible for developing any post-construction Best Management Practices (BMP) plans that are approved by the department that addresses any source, treatment and Low Impact Development (LID) design requirements in accordance to the Rules Relating to Water Quality. CWPPPs are also responsible for conducting site observation(s) to attest that post construction BMPs and source control BMPs appear to have been installed in general conformance according to the approved construction plans and certifying as part of the Certificate of Completion prior to closing of any applicable building or grading permits.



[ESCP and CWPPP Annual Web-Training INSTRUCTIONS](#)

WARNING: Do not use the "Certificate" function at the end of the CWPPP training course. Please follow the instructions to print your certificate

Some functions do not work with Internet Explorer, recommend using a different browser

If you experience difficulties with the online training, call 440-0207

For questions about ePlans visit Department of Planning and Permitting's [website](#)

Prior to Your Inspection

- ❑ Review Site Specifications or “BMP Plans”
 - Erosion and Sedimentation Control Plans (ESCP) and/or
 - Storm Water Pollution Prevention Plan (SWPPP)

- ❑ Perform a preconstruction inspection to determine site topography and current conditions

- ❑ Questions to ask yourself:
 - Where the stormwater is going?
 - What type of BMPs are designated in the plans?

- ❑ Resources: Who are your City Inspectors, PM, ESCP Coordinator, and Contractor site contacts?

Mobilization

- ❑ Review your site ESCP and/or SWPPP (if NPDES permitted)
- ❑ **Tip-** Make a copy and carry with you during inspections
- ❑ Check the site for BMP installation
 - Are all BMPs installed?
 - Are all BMPs installed per the ESCP or SWPPP?
 - Are all BMPs installed correctly?
 - If unsure of installation requirements, review the CCH BMP Manual for guidelines
- ❑ Discuss any BMP installation concerns with Contractor
- ❑ Check scheduling- BMPs may change over time depending on site conditions and construction constraints
- ❑ Be prepared for changes or large rain events- Extra BMPs handy

Required Construction Inspections

- ❑ Inspections must be performed by the ESCP Coordinator
- ❑ Pre-construction inspection required for all projects
- ❑ Regular Inspections:

Project Category	Frequency of Inspection	Checklist
Category 1A, 1B, & 2	Once every 30 days*	Appendix C
Category 3, 4, & Trenching	Once every 7 days	Appendix C
Category 1C & 5	Once Every 7 days	Appendix D

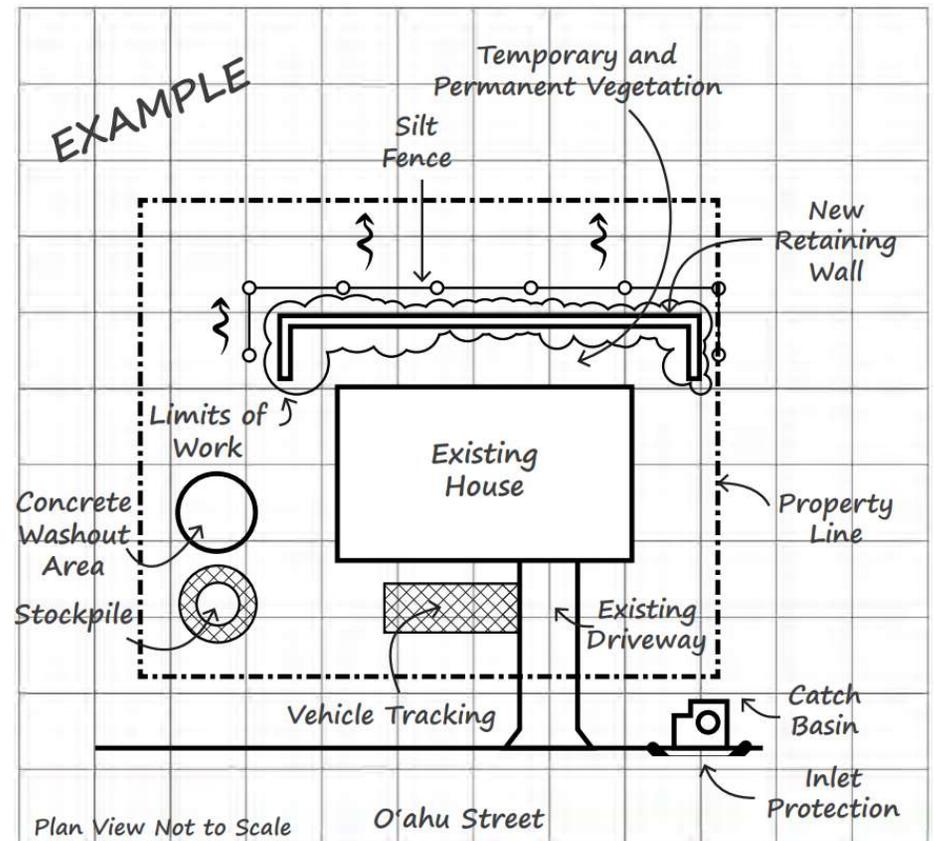
* if the Project will be completed in less than 30 days, inspection shall occur midway through the Project

- ❑ **Final Inspection** at the conclusion of the project
 - Note that CWPPP to certify post-construction BMPs (if applicable)

During Inspections

❑ Walk through all project areas!!!

- ✓ Exposed soils/Existing Vegetation
- ✓ Site perimeter Controls
- ✓ Storm Drain Inlet Protection
- ✓ Entrance/exit BMPs
- ✓ Sidewalk and roadway
- ✓ Dust control
- ✓ Equipment & vehicle parking
- ✓ Housekeeping practices
- ✓ Material storage areas
- ✓ Stockpiles
- ✓ Designated Concrete Washout
- ✓ Other liquid waste materials
- ✓ Spill Prevention



During Inspections

- ❑ Ask questions like:
 - Is it the right BMP for the application?
 - Is the BMP installed correctly?
 - Is the BMP maintained?

- ❑ If answer is “NO”, make necessary BMP adjustments
 - BMP not working as desired
 - Improper installation
 - Damaged BMP
 - Make prompt fixes and repairs

- ❑ Note any BMP changes/modifications in your ESCP and SWPPP



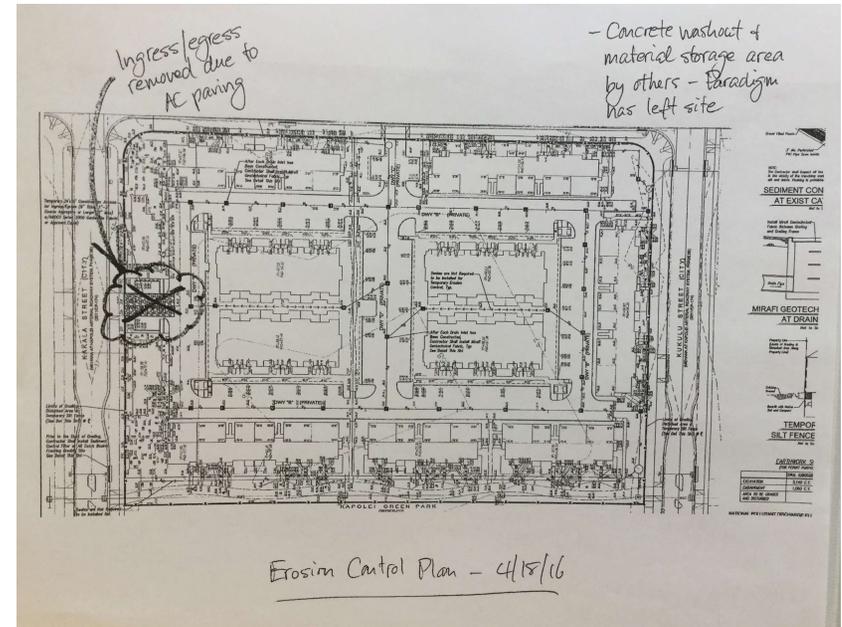
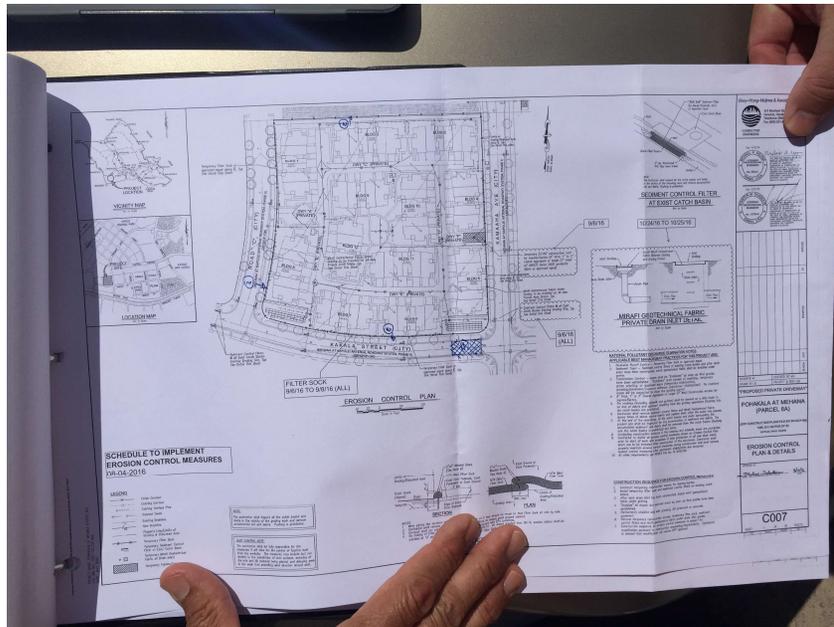
ESCP and SWPPP- Living Documents

□ Minor Changes

- Changes must be noted on the Site copy and initialed by City inspector

□ Major Changes

- Changes must be proposed to DPP Director in writing and approved before work resumes



When In Doubt? Talk to your resources

- ❑ DPP Site Development Inspectors (CCH) and Building Inspectors
- ❑ 3rd Party Stormwater Construction Inspectors (Jacobs)

Onsite Training



- Walking together = Learning.



Erosion Control BMPs

Exposed Soils During Construction



What BMPs to stay compliant?

Vegetation Preservation

The best way to prevent erosion is to not disturb the land. Keep natural vegetation buffers, especially nearby a watercourse.

Erosion control is the FIRST LINE OF DEFENSE.

More land disturbance = More BMPs you must maintain.



Ask yourself:

- Is work Completed or Temporarily Inactive?
- Can completed areas be stabilized permanently?
- Do I need temporary coverage on soils while inactive?
- Other options?

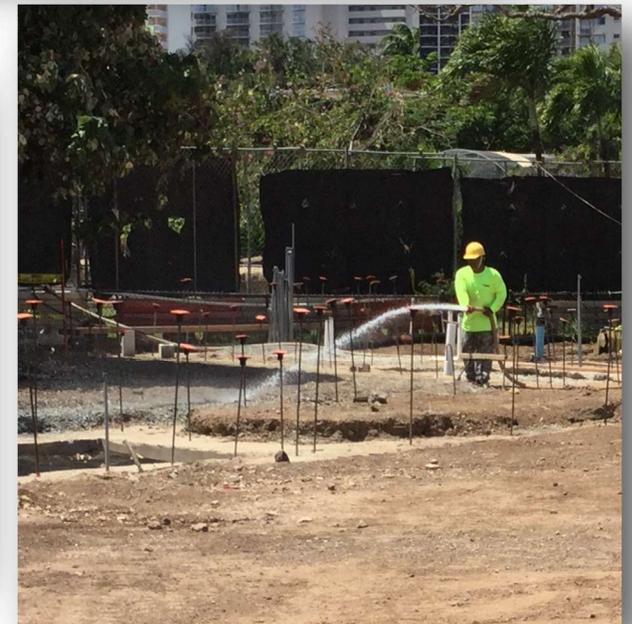
Soil Stabilization

- Hydromulch
- Hydroseed
- Wood mulch
- Geotextile
- Jute Matting
- Plastic
- Coconut Fiber Mats



Dust Control

- ❑ Dust Control Fence
- ❑ Dust Control Watering
 - Water truck
 - Water hose



Example: Removed Vegetation



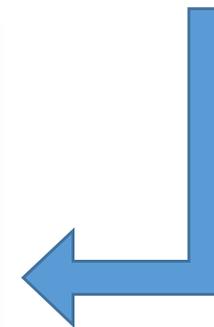
Existing vegetation



Removed existing vegetation



Covered soils with geotextile

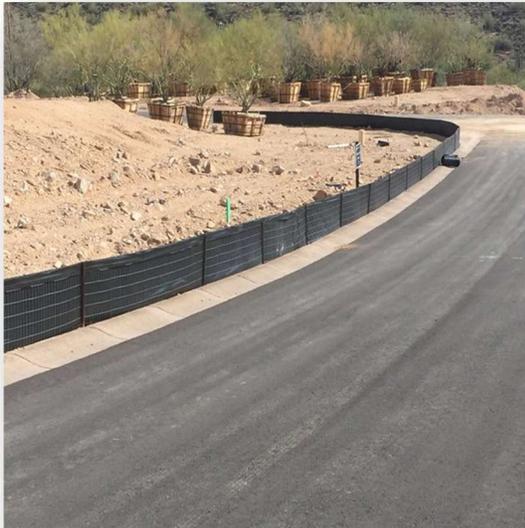


Erosion Control BMPs

- Soil Binders
- Geotextile and Mats
- Wood Mulch
- Earth Dikes and Drainage Swales
- Velocity Dissipation Devices
- Slope Drains
- Streambank Stabilization
- Seeding, Planting, and Sodding
- Slope Roughening and Terracing
- Topsoil Management

Sediment Control BMPs

Perimeter Controls



- Silt Fence
- Biosock or compost sock



Storm Drain Inlet Protection



Gravel bag surrounding



Filter fabric under grate



Silt fence surrounding



Maintenance



Gutter buddies



Witches hat

Stabilized Construction Entrance

- Install per ESCP
- Refresh as needed
- Clean as needed
- Replace as needed
- Sweep street regularly



- Keep existing pavement if possible (ex. Single Family Dwelling)

Example: Entrance/Exit BMP Failure. During Rain Sediment Trackout



What to Do?

- Never Wash the Road
- Never pull BMPs at storm drains
 - Unless a safety hazard

- Add BMPs along the road to catch sediment
 - Gravel or sandbag check dams

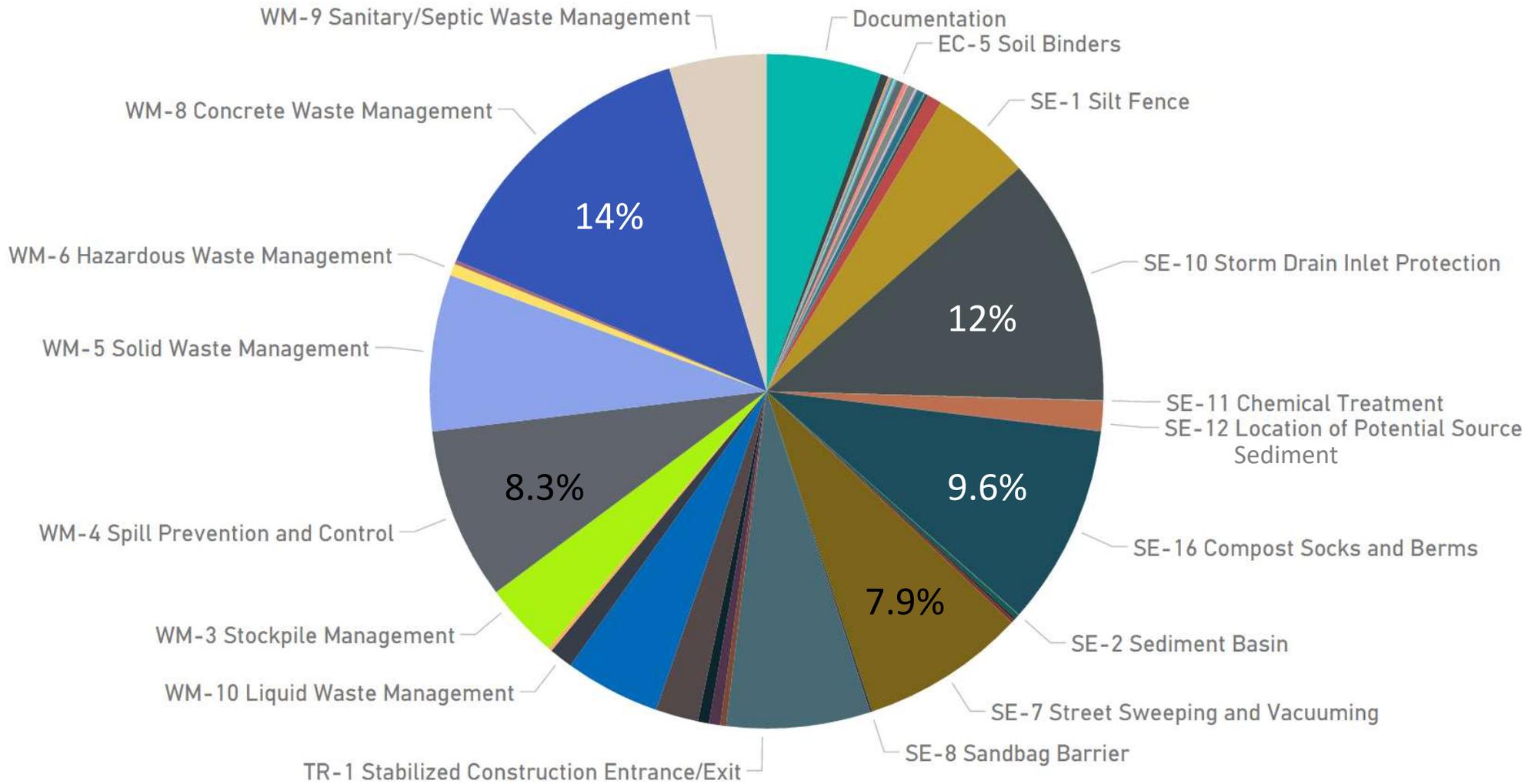
- Clean Road- Sweep/shovel by hand
- Deploy Street Sweeper

- Refresh or add Entrance/Exit BMPs
- Designate a tire wash area
- Talk to inspectors for recommendations

Sediment Control BMPs

- Silt Fence
- Sediment Basin
- Sediment Trap
- Check Dams
- Gravel Bag Berm
- Street Sweeping and Vacuuming
- Sandbag barrier
- Storm Drain Inlet Protection
- Chemical Treatment
- Location of Potential Source Sediment
- Level Spreader
- Rip-Rap Gabion Inflow Protection
- Vegetation Buffer Strips and Channels
- Compost Socks and Berms
- Wind Erosion Control
- Stabilized Construction Entrance/Exit
- Stabilized Construction Roadway
- Entrance/Exit Tire Wash

BMP Deficiencies FY2018



Spill Prevention - Be Prepared

- ❑ Keep “Spill Kits” with appropriate materials in all active work areas
- ❑ Secondary Containment
- ❑ Avoid placing liquid items on slopes
- ❑ Keep lids on materials
- ❑ Flammable cabinet if applicable
- ❑ Equipment precautions



Concrete Slurry on Soils



What to Do?

- BMPs not installed for prevention
- Never bury waste materials or slurry

- Shovel slurry and dried waste
- Place into containment

- Have BMPs in place prior to pour
 - Consider bermed plastic sheet
 - Kiddy pools

* Anticipate concrete pouring activities and be properly prepared!!

Concrete Waste Management



Discharge to a Storm Drain- What to Do?

- Stop construction activities that are contributing to the discharge
- Is the discharge a threat to Public Health or Safety?
- Report to DOH-CWB
- Report to MS4 owner (City and County of Honolulu)
- Isolate and contain discharge, implement BMPs
- Clean up discharge
- Investigate and determine the extent of discharge
 - Example: gallons/minute
- Inspect all BMPs and repair as necessary
- Document the discharge and corrective actions taken

In Conclusion:

- ❑ Erosion Control- **First** line of Defense to pollution prevention
- ❑ Sediment Control- **Secondary** Defense to pollution prevention and runoff into the City's MS4

Be Prepared- Prevention is key

- ❑ Know the Water Quality Rules for CCH and DOH CWB
- ❑ Don't Skimp on BMPs- They are in the ESCP for a reason
- ❑ Keep Extra BMPs onsite for rain events
- ❑ Don't Pull BMPs during rain unless safety concerns- Again, they are installed for rain purposes...LET them function as intended
- ❑ Update your ESCP as site conditions change
- ❑ Keep resources handy
- ❑ Talk to your inspectors

Questions?

Jennifer Little

Jennifer.little@Jacobs.com

808-440-0236