

Mock Site Assessment & Mapping Site BMPs



Welcome to the Storm Patrol!

As storm water managers it's important to develop a Storm Water Pollution Prevention Plan (SWPPP). A SWPPP outlines storm water management practices and ensures compliance with applicable regulations. The first step to creating a plan is to define the area you will manage and the dynamics of how water flows through the various features within your site. In this worksheet we'll explore a hypothetical small High School Campus "mock" site and create a facility map that identifies potential pollution sources. Then you'll use what you learned about Best Management Practices (BMPs) to consider effective control measures for the site to mitigate pollutant discharge during storm events.

We'll start by exploring topographic maps to understand how elevation impacts water flow across the landscape.

1. Begin by identifying high and low points on the *Mock Site Map*, as these features determine where rainwater will accumulate during rainfall events.

As you consider how the land contours according to the topographic lines, pay close attention to areas where water is likely to gather.

2. Draw arrows that indicate the direction of rain flow based on terrain features.

Look over the Surface Types of Mock Site. Take note of what kinds of surfaces are evident such as asphalt in the parking lot, concrete along the sidewalks, and where there is evidence of plants and bare dirt.

3. Use your observations of the surface types to draw and fill in the areas on the *Mock Site Map* using the color legend presented.

Now that you have the different types of surfaces drawn over the flow arrows, consider the permeability of each of the surfaces and if they will influence the flow of water.

4. Adjust your flow arrows as needed to account for how water will flow over different surface types.

The site pictures present common infrastructures used in storm water management, including drainage systems and retention basins.

5. Have you seen similar examples in your local community or even on your school campus? Consider how these might operate in the context of storm water management and pollution prevention.

Utilizing the Images of Mock Site Areas which depict similar infrastructures at our mock site:

6. Mark the different types of infrastructure on the *Mock Site Map* using the provided symbols. Correlate the marked areas on the map (A, B, C, D) with the corresponding images.

Now that you have the site mapped out, consider potential sources of pollution at our mock site, such as storage areas, vehicular impacts, and loading docks.

7. Discuss the various types of pollution that may be present in these areas.

Next, review the BMPs covered in the previous activity and consider strategies for reducing runoff while enhancing overall water quality.

8. Collaborate to brainstorm effective solutions, utilizing the components identified within the mapped site to create approaches that aim to minimize pollution impact.

Labels in the image include: DRAINAGE AREA, STORM DRAIN OUTLET, GATE, GRAVEL, GREASE OUTLET, CO2, CONCRETE, COOLER, PROCESS, RECEIVING DOCK, and GUTTER OUTLET. Blue arrows indicate the flow of water or wastewater through the system.

SOURCE: <https://www.snyder-associates.com/npdes-permitting-requirements-for-industrial-stormwater-discharge/swppp-map-industrial/>

LEGEND:

- Knox Box
- Gas Main
- Electric Main
- Water Main
- Fire Extinguisher
- Exit
- Evacuation Route
- Storm Drain
- Outfall
- Stormwater Flow Direction
- Stormwater Sample Location
- Polygrass
- Polygrass and Fiber Roll

Drains to Line SE

Gravel Used to Stabilize Access Road

Office

Restroom

Break Room

First Aid Kit and Disaster Supplies

Mechanic Shop

Diesel Fuel

Power Panel

Water Tower

Cooling Tank

OUTSIDE STORAGE AREA

CONCRETE LADING DOCK AND TRAILER PIT

Propane

Drains to Street

Underground Pipe

EVACUATION ASSEMBLY AREA

PARKING LOT

Rollout Gate

SW-1

SW-2

SW-3

SW-4

0 20 40

Scale (Feet)

Acme Scrap Metal Recycling Yard Site Map
 110 Willowbrook Road, Anywhere, USA 00011
 SWPPP Contact: John Doe (111) 999-0000

Symbols:

- Spill Bund
- Concrete Curbing
- Approximate Facility Operation
- Area Boundary
- Storm Sewer
- Sanitary Sewer
- Flow Path

Acronyms List:

- SD Storm Drain
- DI Drop Inlet
- SWC Solid Waste Can (General Location)
- WOT Waste Oil Tank
- ETS Empty Tank Storage
- AST Above Ground Storage Tank
- MSA Municipal Separate Storm-Sewer System

Authorized Non-Stormwater Discharges:

- HPH Hot Water Heater Pressure Relief Pipe (potable water)
- AC Air Conditioning Condensate
- TS Sump Station / Sump Station Test Discharge (potable water)

Spills:

- Minor fuel spill on fuel island - July 20, 2007

Potential Pollutant Source:

- Vehicle and Fuel, oil, antifreeze, grease, hydraulic fluid, brake fluid, solvents, transmission fluid, parts washer, and paint
- Maintenance Garage
- WOT Waste Oil Tank
- ETS Empty Tank Storage
- SWC Solid Waste Can
- AST Above Ground Storage Tank
- ETS Empty Tank Storage
- MSA Municipal Separate Storm-Sewer System

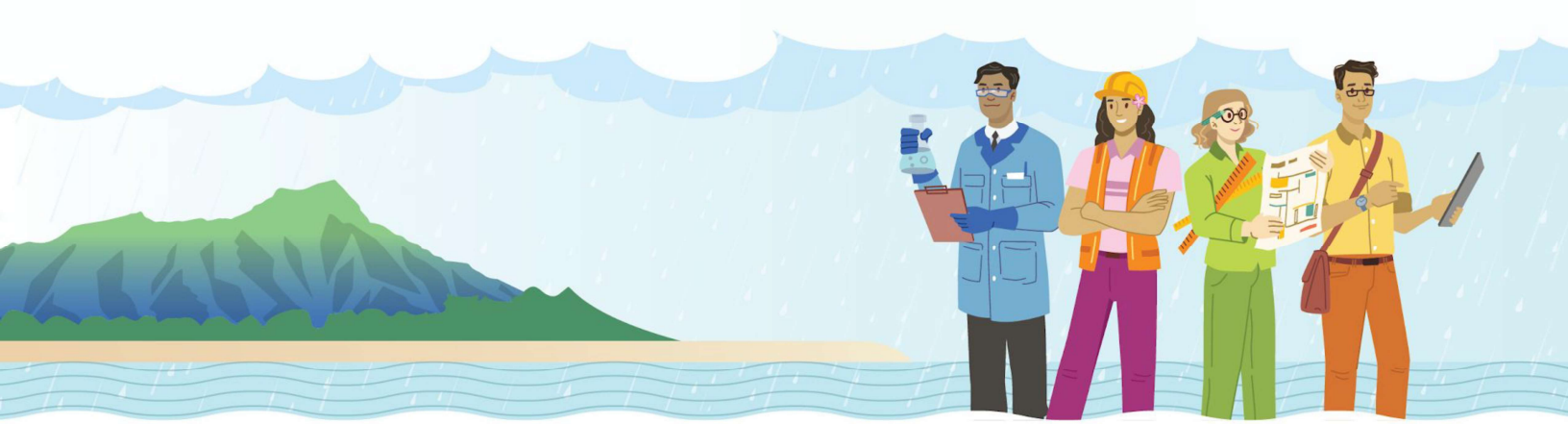
Potential Pollutants:

- Fuel, oil, antifreeze, grease, hydraulic fluid, brake fluid, solvents, transmission fluid, parts washer, and paint
- Aboveground 500-gallon waste oil tank
- Residual oil, lubricants, hydraulic fluid
- Two 1000 gallon ASTs, Diesel and Gasoline
- Aluminum
- Plastic
- Hydraulic fluid, grease, aluminum, plastic
- Ferrous metal storage pile
- Non-Ferrous metal storage bins
- Oil, grease, fuel

Map Notes:

- All interior floor drains, including the vehicle washarea and fuel island, discharge to the municipal sanitary sewer system.
- All SDs are part of the MSA. Contact the City of Anywhere Public Works Department, Stormwater Management Division at (111) 999-0001 concerning significant inspection findings associated with these storm drains.

Not to Scale



SWPPP Site Assessment

In your designated area, observe what's around you. Use the colored markers/pencils to mark these observations on your map.

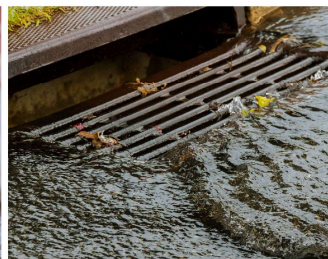
1. Look for places where water travels. Use a purple square (■) to show these places on your map. For each place, add purple arrows to show where water travels from and leaves.



Gutters



Down Spout



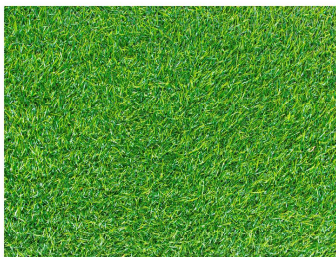
Catch Basin



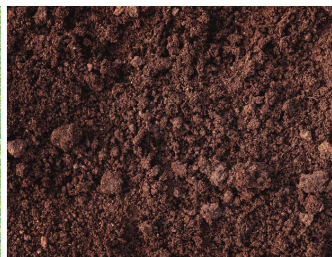
Drain

What other places did you find? _____

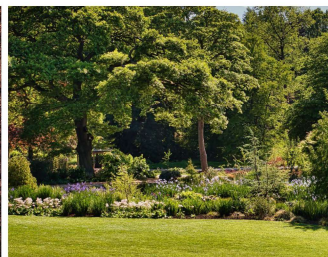
2. Look for places where water can permeate into the ground. Use green dots (●●●) to show these places on your map.



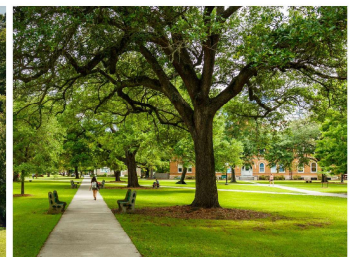
Grass



Bare Dirt



Gardens



Tree Wells

What other places did you find? _____

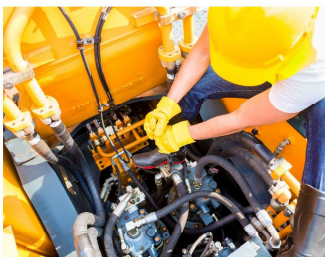
3. Look for activities exposed to storm water. Use a red triangle (▲) to show these items on your map.



Material Storage



Equipment Fueling



Equipment Maintenance



Equipment Cleaning

What other sources did you find? _____

Next, create a table with each of the activities identified above and the materials associated with each, whether they are or have the potential to be exposed to stormwater, and any pollutants associated with these materials based on how they are stored, handled, disposed, etc.

4. Look for areas with evidence of spills or leaks or that have the potential. Use a black triangle (▲) to show these items on your map (outline a red triangle in black if it is the same place as in the previous step).



Trash Bins



Cleaning Area/Soapy Water



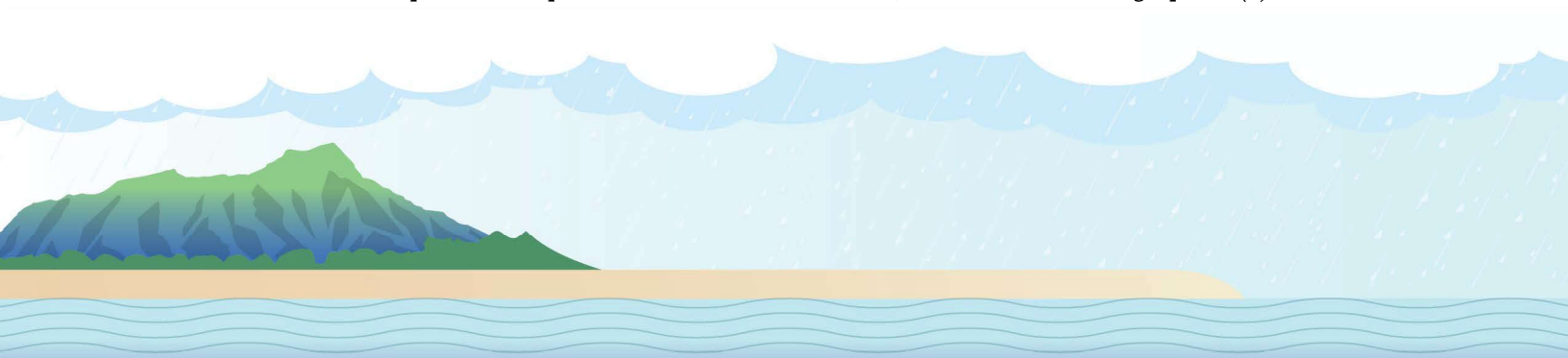
Motor Oil



Lawn Care Products

What kinds of harmful items did you find in your area? _____

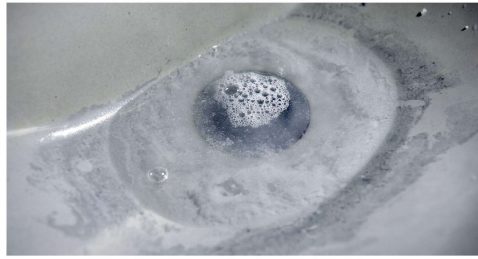
Mark where potential spills and leaks could occur, and their discharge point(s).



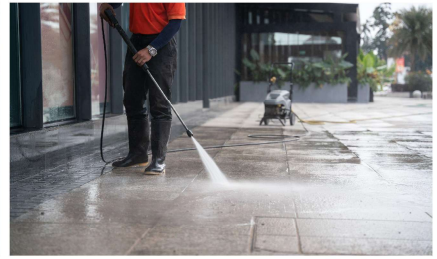
5. Look for the presence of non-stormwater discharges. Use a black star (★) to show these areas on your map.



Leaky Faucets/Sprinklers



Clogged Drains



Water Sprayed on Concrete

What other areas did you find? _____

Walk your site during dry weather and identify any locations with flowing or stagnant water or discharging liquid; these would be indicative of a non-stormwater discharge.

6. Look for trash and other things that could be harmful to water.



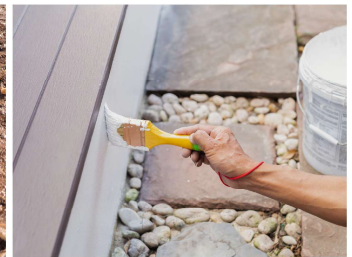
Lunch Trash



Candy Wrappers



Dirt/Sediment

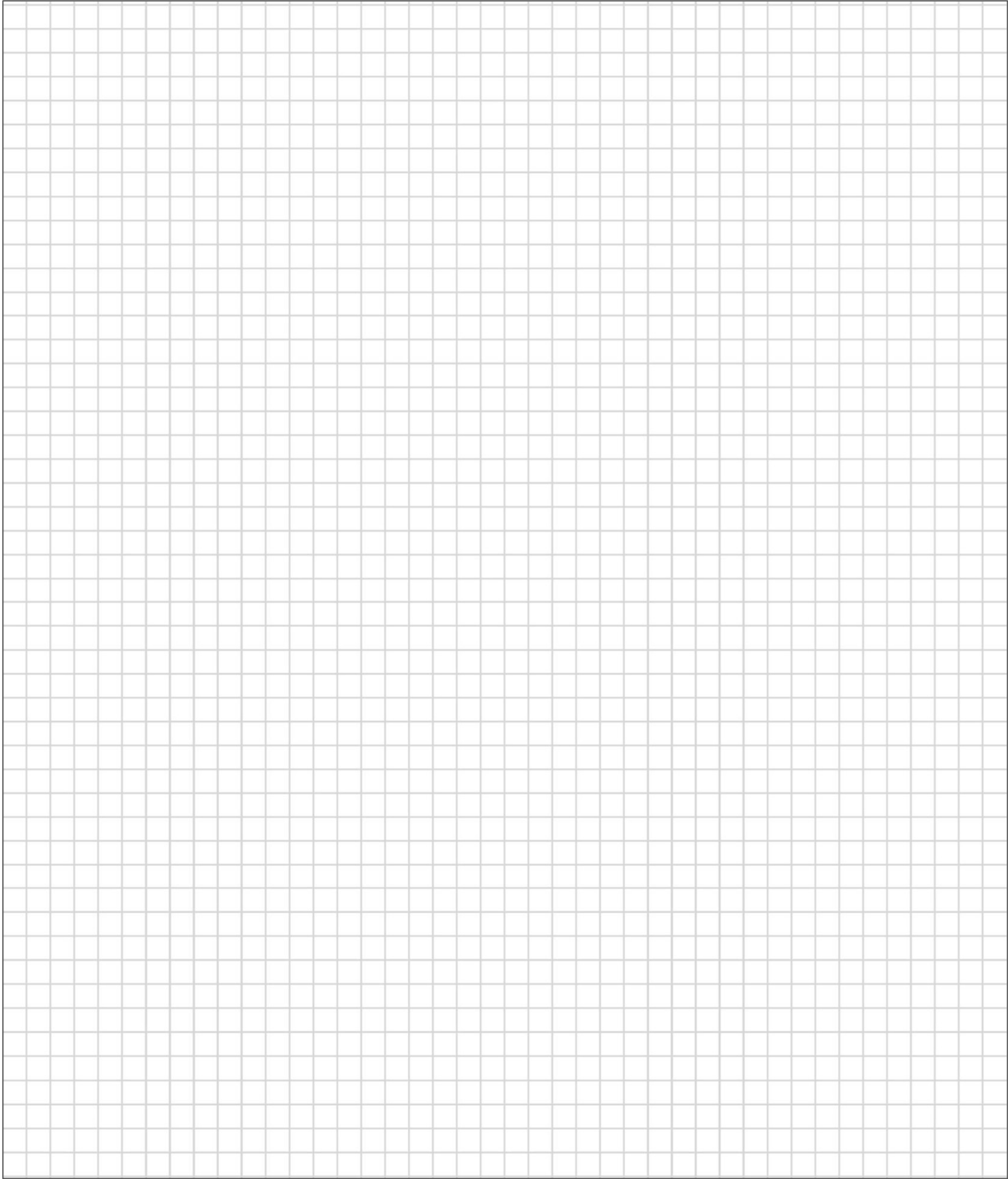


Paint

What kinds of trash and other harmful items did you find in your area?



Project Site Assessment: Making a SWPPP Map



Project Site SWPPP Map Checklist

Develop a detailed site map of your facility which includes the items below:

- ☐ Boundaries of the property and the size of the property in acres
- ☐ The location and extent of significant structures and impervious surfaces
- ☐ Directions of storm water flow (use arrows), including flows with a significant potential to cause soil erosion
- ☐ Locations of all storm water control measures
- ☐ Locations of all receiving waters, including wetlands, in the immediate vicinity of your facility
 - (BONUS) indicate which water bodies are listed in My Waterway as impaired
- ☐ Locations of all storm water conveyances including ditches, pipes, and swales
- ☐ Locations of potential pollutant sources
- ☐ Locations where significant spills or leaks may occur
- ☐ Locations of storm water inlets and discharge points
- ☐ Municipal separate storm sewer systems (MS4s) and where your stormwater discharges to them
- ☐ Locations of the following activities where such activities are exposed to precipitation:
 - Fueling stations
 - Vehicle and equipment maintenance and/or cleaning areas
 - loading/unloading areas
 - Locations used for the treatment, storage, or disposal of wastes
 - Liquid storage tanks
 - Processing and storage areas
 - Immediate access roads and rail lines used or traveled by carriers of materials
 - Transfer areas for substances
 - Machinery
 - Locations and sources of run-on to your site from adjacent properties