



2019-2020

Volume 1, Issue 1



**Stormwater Runoff**

**Pollution Protection**

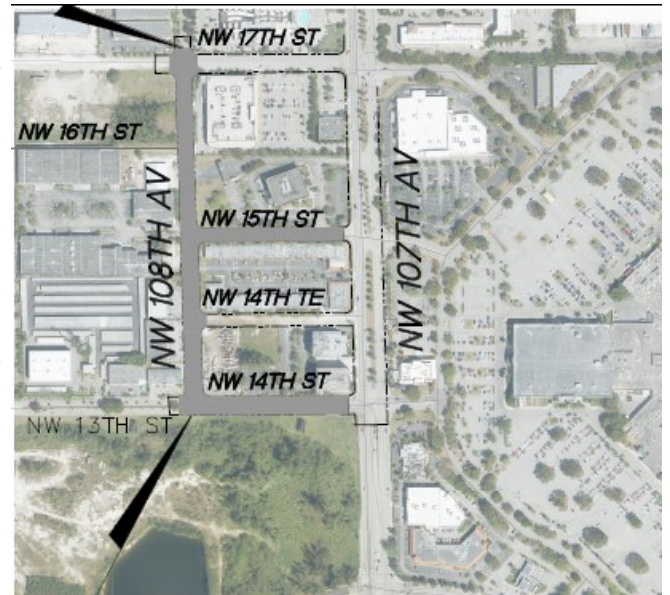
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**Stormwater Improvements Northern Area**

In response to an extensive and well-documented history of damage and losses caused by stormwater flooding dating back to 1999, the City of Sweetwater has been actively constructing a comprehensive stormwater drainage system to mitigate disastrous flooding and property damage throughout the City. The City finalized installing the last section of drainage structures in its Southern half, which completed the comprehensive stormwater drainage project on that section.

The City is presently phasing into sotrmwater drainage improvements to its Northern end, which also experiences serious flooding. Annexed by the City in 2010, Northern Sweetwater is home to the Dolphin Mall, Ikea and several other highly-frequently frequented businesses. It is a heavily commercial, industrial area with some residential units – including hundreds of small businesses that range from logistics carriers to concrete plants. This area is, however, plagued by severe flooding due to a lack of adequate drainage infrastructure. This is a great hindrance, which ultimately stagnates local commercial, industrial, cargo and freight, businesses activities, as vehicles cannot leave their commercial lots as a result of flooding. Residential properties also face the peril of damages. This project, which is a phase of this system, consists of the installation of a gravity stormwater system and stormwater pump station along with accompanying piping structures, catch basins, junction boxes, a stormwater forcemain, manholes, conflict structures and inlets, drainage pipe, asphalt overlay, and swale restoration.



The completion of this project will result in mitigation of floods, reduction of the duration of standing water, prevention of property damage and loss, and improved traffic and public safety for businesses and individuals who visit this highly-frequented area.

The proposed storm water system would be comprised of a collection of catch basins and structures, installed at the lowest gade elevation within the road right-of-way, and connected by a series of drainage pipes. The pipe network would be instlled “water-tight” to prevent any infiltration of groundwater into the collection system. The proposed system would be designed to collect surface runoff within the City right-of-way on NW 108th Avenue, from NW 14th Street north to NW 19th Street. The design area also incorporates NW 14th Terrace, NW 16th Street, NW 17th Street, NW 18th Street, and it opens up NW 19th Street.

**Please report environmental violations to 305-455-6585 or to Miami Dade County at "311"**



Did you know that because of impervious surfaces like pavement and rooftops, a typical city block generates more than 5 times more runoff than a woodland area of the same size?



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The drainage collection system would flow by gravity to the proposed storm water pump station located on NW 108th Avenue, near NW 17th Street. The collected storm water would then be pre-treated through a water quality structure and then pumped into the NW 108th Avenue stormwater force main to an outfall at the NW 25th Street Canal. The NW 108th Avenue storm water pump station, force main and collection system will be sized in order to accommodate future storm water improvements within the drainage basin from NW 107th Avenue west to NW 109th Avenue and from NW 14th Street north to NW 25th Street. In addition, pump operation is authorized based on an interim pump operating schedule of all pumps off when the stage in the C-8 Canal exceeds 5.0' NGVD. The pump operating schedule may be modified in the future, when the operational plan establishes basin-wide pump operating conditions.

This project will be carried out in the following area: between NW 19th St to the North, NW 14th St to the South, NW 109th Ave to the West, and NW 107th Ave to the East. The area to benefit will encompass all of Sweetwater between NW 25th Street down to SW 8th Street (north to south boundaries), and 117th Avenue to 107 Avenue (west to east barriers), as it



is directly connected to the project site, and these City residents commute daily throughout this project area.

The area to benefit is mostly developed, primarily consisting of commercial/industrial development with residential development on its eastern border. Additionally, many local and international businesses operate in the project site and they will directly benefit from the service as they will no longer experience flooding, which shuts down their businesses for detrimentally long periods of time. Moreover, the City of Sweetwater Public Works Department is located within the project site. It is vital that this project be successfully completed because it serves key city staff who provide critical services to the public including, maintenance of city roads, sidewalks, trees, and the pump stations.

The services of the project will be provided any time that flooding occurs, particularly during seasons of heavy rains and hurricanes. The project will be carried out and overseen by the construction managers, prime contractor, Project Manager, Mayor's Office, Police Department, and the product manufacturer. The City will consult with the City Engineer ("Engineer on Record") and the product manufacturer for advanced technical problems.



## Stormwater Pollution Prevention

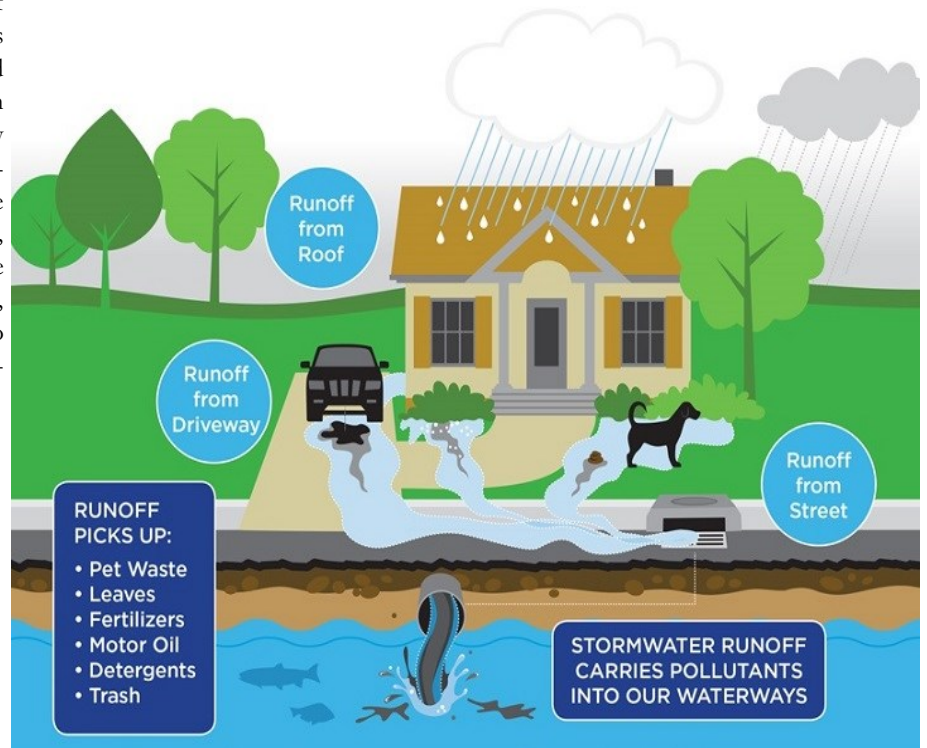
Everything that goes onto our streets or down any interior or exterior drain has the potential to end up in our waterways. With so much of our economy, our quality of life and our ecosystem dependent upon clean water, it is essential that we do everything possible to prevent water pollution.

### What is stormwater?

Stormwater is untreated water that drains from the surface of roofs, lawns, streets and other paved surfaces of the City's storm drain system. This includes water from rain, irrigation, car washing and even that cooler of ice that you may empty.

### What is stormwater pollution?

Rainwater and water from hoses and sprinklers can wash loose trash down storm drains and into our waterways. Living in Sweetwater means that there are plenty of opportunities for storm water to pick up floating debris due to our frequent summer rainstorms. Along the way to the City's storm drains, this water picks up pollutants and floatables, including street debris like cigarette butts, Styrofoam cups, and fastfood wrappers. The moving water can also become mixed with chemicals, pesticides, fertilizers, motor oil and car fluids which runoff from homes and businesses, as well as grass clippings and pet waste. Leaking and improperly maintained septic systems can also disperse to the stormwater on its way to a drain. Even water that starts out inside can cause pollution. That's because what you wash down your sink or shower, or flush down your toilet could cause blockages, which can cause broken pipes, resulting in water free flowing back to waterways. The result is polluted stormwater.



### Where does stormwater go?

Storm systems are designed to recycle water. That is, they are designed to put clean rain water back through the water cycle in other words, into the waterways. Unfortunately, this means that any debris in the stormwater gets swept along through the drain system and also ends up in our waterways. So, unmonitored and unstopped, this debris will end up in the same water where we boat and fish, where marine mammals live, where shore birds nest, and that tourists view. The good news is that it can be stopped.

### What are the costs of stormwater pollution?

Stormwater pollution poses a health risk, harms marine life, closes beaches, contaminates the ocean, impacts the economy, harms the environment, affects neighborhoods and property values, clogs gutters and catch basins, attracts rodents, creates unpleasant odors, and adds to the City's operating expenses.

### How does the City stop stormwater pollution?

During rainstorms, the City is able to channel rainwater to catch basins and storm drains in order to prevent flooding. Our Public Works Department works diligently to set conducts waterway maintenance and participates in and supports waterway clean up events.





### Stormwater facts

Americans generate an estimated 1.6 tons of HHW per year and the average home can accumulate as much as 100 pounds of HHW in the basement and garage and in storage closets.

One quart of used oil can pollute an acre of surface water.

## Pollution Prevention at Home

Even what you do inside can affect our water outside. That is because everything that you put down a drain, flush or throw away has the potential to get into our waterways. By updating a few everyday routines, you can help to reduce the chances of inadvertent contamination. Follow these simple best management practices to produce a healthier environment. Use hazardous chemicals sparingly and follow the instructions on the label. Clean up spills immediately and properly dispose of haz-

ardous waste. Hazardous waste can be found throughout a home in the form of cleaning fluids, solvents, paints, adhesives and more. Purchase and use nontoxic, biodegradable, recycled and recyclable products when possible. These are specially formulated to be gentler on you and also on the drain systems they enter. Never pour grease, oils or fats down your sinks, nor flush them in your toilets. Grease has a way of forming nasty clogs that can wreak havoc with our pipes. Minute cracks

can let undesirables into our water system; major clogs can cause system outages. Please dispose of all fats, oils and grease, whether kitchen related or not, according to the instruction described in the attached links. Store and dispose of all medications and medical waste properly.



## Pollution Prevention for Business Owners

United States Congress added section 402 (p) to the Clean Air Act in 1987 to establish a comprehensive framework for addressing stormwater discharges associated with industrial activity. Facilities subject to Federal effluent limitations or new source performance standards are as follows: Hazardous waste facilities. Heavy manufacturing (e.g., ship building and repair, chemical manufacturing, wood products manufacturing) Landfills and open dumps Light industry (e.g., printing, warehousing) Mining/oil and gas exploration

Recycling facilities (e.g., salvage yards, auto junkyards, battery reclaimers) Steam electric power generation facilities Transportation facilities (e.g., trucking, airports, marinas) Treatment works (e.g., domestic wastewater treatment plants) Vessels larger than 70 feet long. National Pollution Discharge Elimination System (NPDES) Permitting for Industrial Activities. Most stormwater point source discharges related to industrial activities are required to obtain an NPDES permit. This may be accomplished by filing a No-

tice of Intent (NOI) for industrial activities. However, some facilities are eligible for the "no exposure" exemption. Facilities subject to a point source discharge NPDES permit are also required to prepare a Stormwater Pollution Prevention Plan (SWPPP). Existing environmental management plans must also be evaluated for consistency to determine which, if any, provisions can be incorporated into the SWPPP.



## Pollution Prevention for Developers

The City of Sweetwater requires that all construction activity disturbing more than one acre to submit a Stormwater Pollution Prevention Plan (SWPPP) to the City's Building Services Department. The Building Services Department will examine the SWPPP to determine whether it meets all of the requirements. If approved, the project will be subject to inspections by the City. Any violations of the SWPPP shall be corrected through a Notice of Violation or Stop Work Order issued by the City, and will be subject to any appropriate fines. For more information on permitting with the City, please visit Building Services. City Ordinance #4006 March 2, 2015.



## Pollution Prevention for Restaurants

The food service industry generates materials such as grease, oil, food wastes, litter, and leaning agents that can be major contributors to stormwater pollution. It is especially important for restaurant owners and managers to implement best practices. Practicing responsible stormwater pollution prevention will help ensure a restaurant earns a stellar review and will protect the City's waterways. Storm drains are not connected to the City's sanitary sewer system. As a result stormwater is untreated before being discharged directly into our waterways; the same waterways that are inhabited by marine life, enjoyed for recreational activities, and visited by hundreds of thousands of visitors each year. One of the most environmentally respon-

sible practices that restaurants should follow is properly managing food grease. Implementing best practices for grease reduction and disposal reduces the amount of fats, oils, and grease (FOG) that can potentially enter the sewer system from your restaurant or food service facility. Grease traps must be installed in restaurants to collect, contain, or remove food waste, debris, and grease to prevent it from being deposited in sewer lines. The grease trap separates liquid waste from floatable materials that may contain grease, oil, and soap that accumulates on the surface, and heavy solids, such as food particles, paper, and plastics that settle on the bottom of the trap.

**General BMPs** Dispose of grease properly. Do not pour it

down the drain. Recycle oil and grease. Do not hose down spills. Sweep or wipe them up and dispose as solids. Sweep and dispose of in the trash.. Cover and contain grease bins. Dispose of dirty water in a mop sink or floor drain. Do not pour it on the ground outside. Use environmentally friendly products that are free of ammonia phosphate, dyes or perfumes, and those that are nontoxic, biodegradable or recycled. Store chemicals inside. Have a spill prevention plan and review it with employees. Provide proper training for new employees and review guidelines with all employees on a regular basis. Implement mock inspections to identify potential problems. Make sure all trashcans have lids and are covered at all times



A single quart of oil can pollute 250,000 gallons of drinking water. (Source: Natural Resources Defense Council )

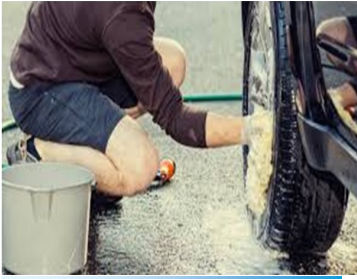
## Pollution Prevention in your Garden & Outside

Stormwater runoff is directly affected by what you do outside. How you handle landscape maintenance, washing your car, keeping patios and pavers clean, directing your downspout and even walking your dog can all affect our ability to prevent pollution to our waterways. Follow these links to access complete information on greening your routine outside. Take care of your swale. Keep it free of debris, don't park cars on it, and look for clogged storm drains. Your swale is not an accidental hill; it is an essential part of our stormwater management infrastructure. It works by filtering water as it moves back towards the aquifer. Storm drains in a swale

catch watch the land cannot naturally absorb. Blocking drains could increase your risk of flooding. Dispose of all household hazardous wastes appropriately, and especially take care in using fertilizers, herbicides and pesticides. Any chemical used outside can be washed onto pavers and then run with the next rainfall into our drains. Chemicals in our waterways throw off the balance of native and nonnative plants, promote careless species growth and kill off essential smaller animals in the food chain. Paints, solvents, corrosive agents and other hazardous wastes can do the same. Keep them in their place. When disposing of bulk trash,

be sure that you do not place bulk waste trash piles near or on top of a storm drain. Blocking your storm drain could lead to flooding. Blocking larger storm drains could lead to pieces of the waste falling in and blocking our water management equipment. Vehicle Routine tips that will help save you money and make your car run better. Scoop the poop! Disposing of pet waste properly prevents bacteria from entering our waterways. It may be natural, be it's not what we want to drink or swim in, and neither do the millions of fish and marine animals who live in those waters. Please scoop and discard doggie waste in the nearest trash can.





## *Car Washing & Maintenance*

The Environmental Services Division encourages residents to help prevent stormwater pollution and practice responsible water conservation when washing their vehicles, including boats and watercraft. Runoff from washing vehicles in private driveways or on the street can carry harmful pollutants into the City's stormwater drainage system. The stormwater catch basins all lead to surrounding waterways such as canals and rivers. Pollutants create unpleasant odors, reduce water quality, and pose serious health and environmental is-

ssues for humans and wildlife. Listed below are some tips to help reduce runoff and pollution into stormwater drains when washing vehicles:

Use a trigger or twist style hose nozzle to shut off water when not using the hose. An opened hose left running wastes gallons of water. Rinse minimally. Lightly rinse the vehicle, wash with a sponge and bucket, then do a final rinse. Park your vehicle on the lawn or swale when washing it. Rinse water will be absorbed into the grass instead of pooling up in your driveway or on

the street. Consider using "waterless" car wash solutions. Retailers now carry cleaning products that can be applied to your vehicle even when it is dry. Most products also double as a wax and can be wiped or buffed off. Bring your car to a commercial car wash that recycles its water. Download Stormy's Vehicle Maintenance Tips Card To avoid polluting the environment you can: Practice proper automotive maintenance. Check all vehicles and motorcycles for leaks. Properly clean up any spilled fluids immediately with an absorbent

Car washing is a pollution problem because many metals and automotive fluids are washed off along with the soapy water. Water does not disappear when it goes down the street. It usually enters a storm drain inlet, and then flows to a waterway. Even odegradable soap can be toxic to aquatic habitats. Just one gallon of liquid soap will pollute 200,000 gallons

## *Swale Maintenance*

Tropical storms, hurricanes and an overall active rainy season can create flooding in many areas of South Florida. Stormwater management is particularly challenging during this time of year and the need to minimize flooding, conserve water and reduce pollution increases. One of the major contributors to good stormwater management is a properly designed and functioning swale. A swale is a long narrow depression, which varies in depth from six inches to a few feet and is typically wider than it is deep. You will find swales in grassy areas alongside sidewalks and streets, but also aside parking lots, long driveways, and near other heavily paved surfaces. Swales are designed to provide water quality treatment naturally to reduce pollution and also to control flooding during storm events. Swales: Collect rainwater and

filter pollutants through the sievelike action of roots, rocks and soil, Control flooding by absorbing water like a sponge and directing it back into aquifers underground, Prevent erosion by holding our sandy soils in place, and Provide a drainage area for stormwater so that it does not pool in the street or push debris into the drain system. In order for swales to function as designed, maintenance is essential. Swales that have been filled with debris will hamper the movement and conveyance of stormwater and may actually cause flooding. However, swales that have been maintained will provide storage, filtration and conveyance of stormwater for a cleaner, safer and more efficient stormwater management system. A properly maintained swale helps prevent stormwater pollution and

flooding. The following information will assist you with ensuring your swale area manages stormwater runoff efficiently: Mow and maintain swale areas to promote healthy grass growth. Minimize the use of lawn and garden chemicals.

Avoid over watering the swale area. If water is standing in the swale when it has not rained, reduce irrigation. Keep swales free of litter, branches, leaves and limbs so water can soak into the ground. Avoid parking cars on swales. This compacts the soil and prevents stormwater from soaking into the ground. Swales located in or partially in the City of Sweetwater's Right of Way may not be altered by regarding or filling with concrete, rock, dirt, landscaping, trees or anything other than grass unless a City permit has been obtained.



*Example of a "healthy" swale*