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MS4PY5 STORMWATER PROGRAM

FACT SHEET # 1
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SUSTAINABILITY OF OUR WATER RESOURCES

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1. SUSTAINABILITY OF OUR WATER RESOURCES

Water, our most precious commodity, is brought to us in the forms of rainfall, snow and ice melt. Sustainability of this precious commodity is increasingly being impacted by:

1. Nonpoint Sources of Pollution: since the passage of the Clean Water Act in 1977, the United States has made tremendous advances to clean up the environment by controlling pollution from industries and sewage treatment plants. Unfortunately we are not doing enough to control pollution from nonpoint sources of pollution (NPS). NPS pollution occurs when rainfall, snowmelt, or water used for irrigation and farming runs over land or through the ground, picking up pollutants and discharging them into our rivers, lakes and coastal waterways, or into our groundwater

1. Increasing Water Demand: as our populations continue to grow; people, farms, business, agriculture and industry utilize more water for their needs. As reported by USEPA, Americans use large quantities of water inside their homes. A family of four (4) typically can consume about 400 gallons of water per day. The City of New York consumes about 300 million gallons of water on an average day and up to 600 gallons at peak times. An approximate breakdown of how much water we use follows:

- **Toilets:** older toilets use 3.5 to 7 gallons per flush whereas newer toilets use 60% less water. A leaky toilet can waste 200 gallons per day (gpd)
- **Clothes Washers:** high efficiency washing machines can conserve large amounts of water. Older models use about 50 gallons or more per load, but newer front-loading machines use less than 27 gallons per load

- **Showers:** a ten minute shower can utilize 50 gallons of water. By reducing the shower duration and/or changing the shower head, you can save a considerable amount of water
- **Faucets:** a bathroom faucet runs about 2 gallons per minute. By turning off the tap while brushing your teeth or shaving, a person can save 200 gallons of water per month
- **Leaks:** pipeline and fixture leaks account for 13 to 15 gallons of our daily water consumption
- **Outdoor Water Usage:** we typically can use up to 50% or more of our daily consumption on lawns and outdoor landscaping, depending on the size of your yard, location and landscaped areas

2. Climate Changes: Other factors that stress our water supplies, that are more difficult to control, include:

- **Severe Drought Conditions:** many states, especially in the west, continue to experience severe multi-year drought conditions
- **Global Warming:** as recently reported worldwide, the climate change is affecting excessive rainfall in parts of the globe and dwindling supplies in other parts due to global warming
- **Reduction in Snow Melt:** melting snow provides much of the water for many homes and farms. Snowpack surveys conducted in California in 2014, which relies on the annual snowpack for a third of its water, showed the water content from melting snows at its lowest levels.

4. Hydraulic Fracking: hydraulic fracturing, or fracking for short, is a drilling process that uses enormously high pressure to inject a mixture of water, chemicals and sand into dense rock formations, to crack the rock open and release natural gas. According to reports from the National Resources Defense Council (NRDC) shale gas fracking has serious adverse impacts on our water supply and public health:

- **Water Usage:** It takes millions of gallons of water to frack a single well, which can draw down local water supplies and dry up nearby creeks
- **Groundwater Contamination:** some of the fracking chemicals can remain underground and could potentially seep into groundwater and contaminate drinking water aquifers
- **Migration of Methane Gases:** well failures can cause methane to migrate into nearby household wells and drinking water. Methane gas, because of its explosive nature, has the potential to cause fires, explode pipelines and cause serious injuries, loss of property, and sometime even death
- **Fossil Fuels and Climate Changes:** methane gas released from leaking wells is a potent greenhouse gas and poses risk to our atmosphere. Continuing to burn fossil fuels will adversely impact climate changes and will not encourage industries to pursue alternative, renewable clean energy options
- **Public Health Concerns from Fracking Chemicals:** reportedly fracking chemicals contained in the fracking fluid can potentially affect the brain, nervous system and the immune system. The Colorado School of Public Health and Brown University found an association between the density and proximity of natural gas wells,

within a 10-mile radius of the maternal residence and the prevalence of congenital heart defects, as well as the possible links to defects of the brain and spinal cord.

- **Fracking Wastewater:** wastewater from the fracking process contains high levels of radioactivity that wastewater treatment plants are not equipped to remove. The exact chemicals used in fracking process are unknown because the industry claims its fracking fluid formulas are trade secrets and proprietary information
- **Federal Water and Air Regulations:** In 2005 Congress exempted fracking from federal and air regulations. The NRDC believes that fracking companies should be subject to new federal and air regulations. Regulations should require the fracking industry to disclose what chemicals they use to state environmental agencies, without disclosing the industry proprietary data. While fracking can produce sources of natural gases, the American people, and most especially local residents should be fully informed of all public health risks associated with fracking, including potential contamination to their drinking water supplies

2. RETHINKING THE WAY WE USE OUR WATER

If we work together, we can stretch our limited water supplies and ensure that the water is there when we need it. Instead of letting it drain off your property, we can conserve this precious commodity by utilizing green stormwater practices. Green stormwater practices include a range of soil-water plant systems that intercept stormwater, infiltrates a portion of it into the ground and evaporates a portion into the atmosphere. These innovative alternatives are not only attractive water-friendly alternatives to conventional stormwater management practices, but can also be a cost-effective means to protect our water resources. These alternative stormwater management techniques range from:

- Bio-Retention Structures
- Rain Gardens
- Green Roofs
- Infiltration Basins and Trenches
- Vegetated Bioswales
- Pervious Pavements
- Rain Barrels and Cisterns
- Natural Vegetative Landscaping
- Tree Planting
- Planters (container gardening)

The applications and limitations of these innovative stormwater solutions will be provided in forthcoming fact sheets.

3. WATER CONSERVATION MEASURES

According to the USEPA, water use has soared to all-time highs in recent years. In many parts of the US, especially out in the arid regions of the west, limited drinking water has made water conservation practices mandatory. Widespread reduction in water consumption will not only reduce the homeowner water utility bills directly, but could also reduce the community cost for expanded water and sewage use. According to many studies, home water usage can easily be reduced by 15% to 20% without major discomfort to the water user. About sixty percent of total household water supply is used inside the home in three main areas: the kitchen, the bathroom and the laundry room. The remaining 40% is used outside the home. Water conservation practices, that can readily be adopted, include:

In the Kitchen

- Run dishwasher only when full
- Consider water use when purchasing a new dishwasher: New water and energy efficient models use 20% less water
- Defrost food in refrigerator instead of using running water: A running faucet uses about a gallon of water per minute
- Use a dish pan or plug the sink when hand-washing dishes
- Do not pre-rinse dishes before loading into dishwasher
- Install water conservation fixtures or devices that reduce the total volume of water entering the system and repair leaking fixtures

In the Bathroom

- Install low flow toilets or toilet dams
- Test all toilets regularly for leaks: A leaking toilet could waste up 100 gallons/day
- Replace old showerheads: Low flow showerheads can save 3 gallons/minute
- Take shorter showers
- Turn off water when shaving or brushing teeth

In the Laundry

- Run full loads of laundry instead of many small loads
- Consider energy and water efficiency when purchasing new laundry machines: Newer models use 40% less water and can save up to 6,000 gallons/year

Landscape Irrigation

- Install efficient irrigation systems such as drip irrigation, soil soakers, and efficient sprinkler systems
- Set sprinklers properly, so that they do not water the streets or sidewalks
- Water the lawn only when the ground is dry and preferably no more than once a week
- The amount of water used by a sprinkler in one hour is equal to the daily water needs of a family of four
- Water during the coolest part of the day (preferably morning) and never water on windy days: As much as 30% of water used can be lost to evaporation by watering lawn during mid-day
- Pull weeds to decrease competition for water Increase mowing height to 2-3 inches and apply mulch to both reduce evaporation and prevent weed growth
- Limit grass areas and use trees, shrubs, and other plants that require less water to landscape your yard: Grass turf requires 30-50% more water than shrubs and other groundcover

Other Outdoor Use Tips

- Repair or replace leaking hoses and sprinklers
- Always use an automatic shut-off nozzle on hoses
- Use a broom not a hose to clean decks, sidewalks, and other paved areas: 5 minutes of running the hose uses 25 gallons of water
- Collect rainwater for reuse in the garden whenever possible
- Cover pools to prevent evaporation: An average uncovered pool loses about an inch of water a week from evaporation

Remember, any water conservation practice you adopt will help to protect and manage our water resources for future generations.