PUTNAM VALLEY CENTRAL SCHOOL DISTRICT PUTNAM VALLEY, NY

MS4PY2 STORMWATER PROGRAM

FACT SHEET # 2
FEBRUARY 2012

ONSITE STORMWATER TREATMENT: GREEN INFRASTRUCTURE MANAGEMENT PRACTICES

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1. STORMWATER POLLUTANT REDUCTION AT THE SOURCE

The traditional stormwater management practices have focused on end-of-pipe systems, which collected stormwater and discharged the runoff to a nearby drainage ditch or to an offsite municipal stormwater conveyance system. As reported by USEPA, testing has shown significant amounts of pollutants are being discharged offsite. Therefore USEPA and state agencies, under Pollution Prevention (MCM6) require MS4s to adopt onsite treatment practices (green infrastructure management practices**)** that not only reduce the quantity of offsite stormwater runoff but also minimize the off-site long-term impacts of stormwater pollutants.

2. GREEN INFRASTRUCTURE MANAGEMENT PRACTICES

Summarized in this document are typical green infrastructure management practices.

1. PRESERVATION OF NATURAL RESOURCES:

This practice includes the protection of wetlands, vegetated buffers, natural ecosystems and other environmentally sensitive resources.

Site Constraints include:

- Once adopted by the MS4s, natural area boundaries (streams, wetlands, and conservation areas) should be defined and accurately delineated, so that these areas are not disturbed
- All future construction and grading activities and any disturbances should be are kept out of these areas
- Natural areas should be protected and managed by legally enforceable deed restrictions

2. REDUCTION OF IMPERVIOUS COVER:

This practice is applicable to roadways, sidewalks, driveways and parking lots. Impervious cover reduces offsite stormwater runoff. Impervious cover may include:

- Porous or dense-graded hot-mix asphalt, that includes large stone aggregate base course, with uniformly graded half inch stone to fill the void of large stone while maintaining the porosity of the structure

- Porous concrete, where sand and fines have been removed

Practice Limitations include:

- This practice has been used since the 1970s to permit infiltration of stormwater runoff from low volume roads, sidewalks, driveways, & recreational areas such as basketball and tennis courts, and playgrounds
- This practice is only appropriate for permeable soils with infiltration rates: > 0.27 inches/hr., if not, provide an undertrain system
- Special construction and operation and maintenance procedures apply to this practice.
- Consult manufacturer for applicability, specifications and limitations, before utilizing these practices

3. BIO-RETENTION AND RAIN GARDENS: Bio-retention and rain gardens provide onsite stormwater treatment of runoff from impervious surfaces and can be readily adapted into the landscaping areas, parking lots and traffic islands.

Site Constraints for this practice include:

- Minimum surface area of 50 to 200 square feet
- Minimum Length: 10 to 20 ft.
- Minimum depth: 2 to 4 ft.
- Permeable soils with infiltration rates: > 0.27 inches/hr., if not, provide an undertrain system
- Water table: 2 to 4ft. clearance above water table
- Proximity to building foundations: 10 ft. minimum

4. INFILTRATION TRENCHES: include trenches, basins, or leaching chambers that provide groundwater recharge and reduce runoff and pollutant discharge.

Site Constraints for this practice include:

- Minimum surface are of 8 to 20 square feet
- Minimum width: 2 to 4 ft.
- Minimum length: 4 to 8 ft.
- Permeable soils with infiltration rates: > 0.52 inches/hr.
- Water table: 2 to 4ft. clearance above water table
- Proximity to building foundations: 10 ft. minimum
- Maximum depth: 6 to 10 ft. depending on soil type

5. DIVERSION SWALES & DITCHES: This practice includes grass swales and stone-lined ditches that provide transfer of stormwater from a collection point to an onsite treatment system.

Site Constraints for this practice include:

- Bottom width 2 ft.
- Top width: 6ft.
- Side slopes: 3:1 or flatter
- Longitudinal slope: 1.0% minimum
- Proximity to building foundations: 10 ft. minimum

3. BENEFITS OF SOURCE REDUCTION

USEPA has discovered that stormwater structural Best Management Practices (BMPs), such as wet ponds accumulate more pollutants (such as chlorides & metals) over time. Ultimately these ponds must be dredged and pollutants from the dredging operations must be transferred to a suitable disposal site for final treatment and disposal. Accordingly, it is time to re-evaluate structural stormwater BMPs and consider source reduction in lieu of these practices. Source reduction, utilizing onsite green infrastructure management approaches, has several attractive attributes. Source reduction:

- Can be more effective for some pollutants, such as chlorides, heavy metals and soluble phosphorus, which are not removed by structural BMPs
- Could potentially reduce overall cost of stormwater pollution (such as for sediments) by reducing sediment inputs to stormwater ponds, especially in areas undergoing construction
- Distributes costs more equitably, as the responsible party, contributing pollutants to stormwater, is ultimately responsible for removing these pollutants
- Reduces runoff volume, peak flow and flow duration and associated flooding
- Maintains & restores natural hydrology
- Is the only solution for road salt, which is toxic at high concentrations both to humans and aquatic life