Green Infrastructure Retrofits on Private Land

New York City Soil & Water Conservation District
New York City Stats

• 305 Square Miles
• Population ~ 8.4 million
• Manhattan
  ▪ Residential population ~1.5 million
  ▪ Commuters ~1.6 million
  ▪ Tourists ~ 800,000
New York City Stats

• 1.3 billion gallons per day of waste water
• 14 waste water treatment plants
• >400 CSO outfalls
• Annual CSO discharges 27 billion gallons
• 1/10” rain can trigger discharge
NYC GI Plan

- Only in CSO areas
- Right-of-Way bioswales
- Interagency collaboration & coordination
- Green Infrastructure Grants Program
- Greenroof Tax Abatement Program
District’s GI Program

- Implementation projects
- Policies
- Education and outreach
- Partnerships
PROJECT CONSTRUCTED
June, 2010

AFTER
ramp down to play area

existing tree pit

existing downspout to be diverted

3” dia. feed line

3” dia. drain line

seating area

invert of overflow to be 1” above top of rain barrel inlet, location of overflow U to be determined on-site

non-toxic paint for asphalt floor, tiled wall, and plastic barrels

Wally planters attached to trellis that is anchored in tree pits

series of 20 detention barrels connected in parallel

low-flow overflow line back to downspout

3” dia. feed and drain lines stacked and located behind barrels
LID MAXIMUM STORAGE VOLUME = 900 gallons

STORMWATER FALLING ON 4,000SF IMPERVIOUS ROOF CATCHMENT AREA WITHOUT LID DURING ONE-INCH STORM = 2,493 gallons

LID MAXIMUM STORAGE VOLUME = 900 gallons

% OF STORMWATER DETAINED DURING ONE-INCH STORM = 36%
W150th Street, Manhattan

BEFORE
LID MAXIMUM STORAGE VOLUME

= 4,040 gallons

STORMWATER FALLING ON 2,648SF IMPERVIOUS ROOF CATCHMENT AREA WITHOUT LID DURING ONE-INCH STORM

= 1,651 gallons

% OF STORMWATER DETAINED DURING ONE-INCH STORM

= 100%
AFTER

PROJECT CONSTRUCTED
August, 2011
Wetland Planter
Storage = 300cf

Roof Catchment Area = 3,600sf
STORMWATER FALLING ON 3,600SF IMPERVIOUS ROOF CATCHMENT AREA WITHOUT LID DURING ONE-INCH STORM = 2,244 gallons

LID MAXIMUM STORAGE VOLUME = 3,638 gallons

% OF STORMWATER DETAINED DURING ONE-INCH STORM = 100%
Feed line from roof downspout
Overflow return line to sewer
Low-flow return line to sewer
Feed line to wetland planters
Home Street, Bronx

BEFORE
AFTER

PROJECT CONSTRUCTED
May 2014
RAIN BARREL SCHEMATIC

TOTAL CATCHMENT AREA = 1,820 SF
TOTAL RUNOFF FROM 1” STORM = 1,135 GALLONS
STORAGE VOLUME CAPACITY = 795 GALLONS
1” STORM MANAGED = 70%

NOTES:
1. THIS IS A SCHEMATIC REPRESENTATION AND DOES NOT REPRESENT ACTUAL ELEVATION OR POSITION IN THE FIELD.
2. ALL PIPE CONNECTIONS TO THE BARRELS SHOULD BE MADE WITH THREADED BULK HEAD FITTINGS AND GASKETS.
3. CONNECT THE CAST IRON PIPE TO THE PUMP SUCTION LINE USING FLEXIBLE CONNECTOR (FERNCO).
4. RAIN BARRELS TO BE SECURED USING A WOODEN FRAME OF 1X1s AROUND IT SCREWED AGAINST THE WALL.
5. RETENTION WATER TANK SHALL DRAIN TO THE SIDEWALK.

RAIN BARREL INLET

1” PUMP DISCHARGE DUCTILE IRON PIPE
TREADLE PUMP (PROVIDED BY OTHERS) SECURELY FASTENED TO CONCRETE
1” FLEXIBLE PVC PIPE TO THE PUMP INLET
1” PUMP INLET DUCTILE IRON PIPE
DRAIN VALVE
ELEVATION OF THE EXISTING PLANTING BED ALONG THE SIDES OF WALKWAY
RETENTION TANK INLET FROM THE COURTYARD DRAIN PIPE (LP 0300RT)
RIM ELEVATION OF WATER TANK TO BE 3” BELOW DRAIN INLET ELEVATION
EL ~6.25

T- CONNECTION FROM MANIFOLD TO THE SPIGOT MOUNTED ON EXTERIOR OF THE WOODEN BOX
BARRELS CONNECTION USING ½” PVC PIPE (INSIDE THE BOX) AS CLOSE TO THE BOTTOM AS POSSIBLE
WOODEN BOX FOR STORAGE OF GARDENING SUPPLIES
PAVED COURTYARD SURFACE
4” GRAVEL LAYER FOR FOUNDATION
EMERGENCY ½” DUCTILE IRON DRAIN PIPE TO BE DRILLED AS CLOSE TO THE BOTTOM OF THE TANK AS POSSIBLE.
PIPE TO BE FITTED WITH A KEYED HOSE BIBB MOUNTED TO EXTERIOR OUTWALL

EL ~15.25
Challenges

• Limited opportunities
• Difficult access
• Harsh environmental conditions
• Bureaucracy
• Residents’ involvement
• Maintenance
GI Policies

• Coalition & partnerships
• Policy analyses
• Public participation
GI Outreach & Education

- Tours of GI sites
- Workshops
- School visits
- Educational materials