Green City, Clean Waters Steering Committee Update:
GSI Operations & Maintenance

Gerald Bright
Supervisor – Green Stormwater Operations Unit
• GSO Existing Scope
• Practices and Lessons Learned
• Current Practices and New Ideas
• Peer City & External Partner Coordination
Fiscal Year 2020 Overview
FY2018 Overview: Work Order Count

- Subsurface Contract (650)
- MPO (882)
- CCTV (1,117)
- PowerCorps (1,329)
- Grounds (1,471)
- Pre-maintenance Inspections (3,568)
- Surface Contract (4,819)
- Pretreatment (3,611)
- Shop II (104)
- Emergency Excavation & Repair (91)
- Porous (15)
- Pipe & Inlet (46)

Total Work Order Count: 17,703
PHILADELPHIA WATER DEPARTMENT

- GSO Existing Scope
- Practices and Lessons Learned
- Current Practices and New Ideas
Program Development Overview

Identifying Challenges

- Car accidents
- Pollution
- Heat and exposure
- Size constraints
- Public interaction
- Vandalism
Critical Considerations

GSI is not universal – cost and performance are context-dependent!

- Setting
  - Public ROW vs. Off-street

- Maintenance Regime
  - Routine vs. On-call
  - Repairs and Retrofits

- Design Motifs
  - Surface Expression Only
    - Surface conveyance
    - Vegetation palette
    - No catch basins or piping
    - Below-ground storage
  - Subsurface Only
    - Single or multiple catch basins
    - Pretreatment maintenance
    - Piping & WL control structures
    - Below-ground storage
  - Both Surface and Subsurface

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Program Development: Protocols & Frequencies

Surface Maintenance
- Remove trash, sediment, and organic debris from all SMP surfaces
  - Clean pretreatment devices
- Winterize SMP
- Remove non-target/invasive vegetation
- Apply mulch
- Prune trees
- Water trees

Subsurface Maintenance
- Jet Pipes
- Vacuum clean structures (i.e. inlets, water-level control structures, overflow structures
Difference between GSI vs. Traditional Stormwater Maintenance?

- **Assets**
  - Inlets & Chambers
  - Pipes

- **Tools & Equipment**
  - “Clam-shell” or “Vactor”
  - CCTV cameras & software

- **Tasks**
  - Inlet cleaning
  - Pipe flushing
  - Pipe inspection

- **Frequencies**
  - Traditional
    - Annual inlets cleaning
    - Pipe flushing as needed
  - GSI
    - Monthly → annually
Green Stormwater Infrastructure Maintenance Manual

PHILADELPHIA WATER
Staff On-Boarding

Green Stormwater Operations

CITYWORKS USER’S GUIDE

JULY 2018
Relational Asset Management
CityWorks WO Management Platform
Kemble Park

Maintenance Standard: Formal

Notes:
### WET & DRY WEATHER INSPECTIONS COMPLETED

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= No Maintenance  = Maintenance

### WORK ORDERS RESULTING FROM PRE-MAINTENANCE INSPECTIONS

- No Maintenance: 3,391
- Maintenance: 461
Asset Protection and Impact Avoidance
PLUMBERS AND CONTRACTORS:

Call Before You Dig

Avoid damaging City-owned Green Storm Water Infrastructure (GSI):
Call PA One Call at 8-1-1 before you dig

You might be damaging City property when you dig.

Green Stormwater Infrastructure (GSI) is surface and/or subsurface infrastructure that manages stormwater runoff. It is located throughout Philadelphia in (and under) sidewalks, streets, parks, and community centers.

If you damage GSI, you may have to pay.

**REPAIR COSTS**
You will be responsible for any damage your work causes to GSI.

**FINES**
State and City law requires the city to manage stormwater runoff discharged into our rivers.

Avoid the damage. Know what's below the surface.

- Call PA One Call at 8-1-1
- Get GSI drawings from PWD Records: (215) 685-6271

Philadelphia Water will provide record plans showing locations, type of GSI, GSI footprint area/extent, and critical elevations (top of storage, bottom of storage, invert elevations of connection points, etc).

Look for markings like these. We will mark out the extent of GSI during field one-calls. Purple is the newly designated color for GSI.

To schedule work near GSI, or to report damage:
Call Philadelphia Water’s GSI Maintenance Team at (215) 300-9070