Good Housekeeping

Southeast Stormwater Association
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Good Housekeeping – What is it?
Good Housekeeping

- All day to day municipal activities can influence water quality – can either be positive or negative
- Includes activities and functions at:
  - Parks
  - Roads
  - Fueling facilities
  - Vehicle/fleet maintenance shops
  - Landscaped areas
  - Physical plants
- Good housekeeping is an integral part of all stormwater management programs
- Many items related to good housekeeping are common sense
Why is good housekeeping necessary?

• Permit required – EPA and/or state enforcement
• Protect water quality and minimize negative impacts
• Good service to citizens
• Set the right example – can’t expect others to do it if we won’t
Poor housekeeping can discharge pollutants

- Sediment – poor or failed erosion control
- Nutrients – fertilizer application or sewage
- Metals – vehicle/equipment maintenance
- Hydrocarbons – fueling or maintenance
- Toxins – pesticides
- Bacteria – pet waste or sewer leakage/spills
- Trash
Some of the main components of Good Housekeeping:

• Control structure inventory
• Inspection program
• Maintenance program
• Roadway, bridge and parking lot management
• Employee training
• Materials management
• Spill response
• Flood management
• Municipal facilities
• Vehicle/Fleet Maintenance
History

• City of Dunwoody Incorporated on December 1 of 2008.

• Stormwater Utility Established on March 23rd of 2009.

• Adopted a System needing Significant Maintenance
Who is Dunwoody Stormwater?

- **Overview Statistic**
  - 10,800 Structures
  - 11,600 Conveyances
  - 213 Miles of Conveyance
  - Average System Age of system is 40 years
  - 51% of improved conveyances are CMP
  - 93% of immediate repair needs are CMP

- **Young Utility dealing with Aged System**
  - Budget 2.1 Million
  - Roughly 60% Invested in Capital Improvements
Control Structure Inventory

• Develop Inventory
  • Catch basins
  • Ditches
  • Ponds
  • Conveyances

• Annual Updates
  • New Structures
New City’s Motivation For GIS Development

• No Data provided from predecessor
• What is the extent of our needs?
• Governmental Accounting Standards Board (GASB) Statement 34
• MS4 Requirements
• Make the data accessible!
1. Receive picture or video

2. Place in folder
   - swC 4328-78-0069
   - swC 4328-77-4809
   - swC 4328-76-6237
   - swC 4328-75-6057
   - swC 4328-75-4294
   - swC 4328-54-8269
   - swC 4328-43-2179
   - swC 4328-42-5715
   - swC 4328-42-3996
   - swC 4328-32-5709

3. Mirror (copy) to web server which only copies changes = quick

4. Run GIS model to update web server hyperlink
Inspection Program

• A useful MS4 Requirement!
• Inspect on a 5 year cycle (100%)
• Required to inspect structures maintained by Utility
• Required to inspect all BMPs / Ponds
• Draft Permit requires that the method of documentation is specified (Georgia)
Average Change in Structure and Conveyance Condition Assessment per Drainage Basin

**BALL MILL CREEK**
- Structure Condition: +0.48
- Conveyance Condition: +0.43
- 65.7% Inspected
- 41.4% Inspected
- Average Years Between Inspections: 6.1

**CHATTahooCHEE**
- Structure Condition: +0.30
- Conveyance Condition: +0.37
- 70.6% Inspected
- 56.9% Inspected
- Average Years Between Inspections: 3.7

**CROOKED CREEK**
- Structure Condition: +0.53
- Conveyance Condition: +0.50
- 70.6% Inspected
- 59.9% Inspected
- Average Years Between Inspections: 4.2

**NANCY CREEK TRIBUTARY A**
- Structure Condition: -0.16
- Conveyance Condition: -0.16
- 65.7% Inspected
- 68.7% Inspected
- Average Years Between Inspections: 2.5

**NANCY CREEK #2**
- Structure Condition: +0.17
- Conveyance Condition: +0.14
- 69.0% Inspected
- 57.3% Inspected
- Average Years Between Inspections: 4.2

**NANCY CREEK #1**
- Structure Condition: +0.39
- Conveyance Condition: +0.50
- 67.3% Inspected
- 57.3% Inspected
- Average Years Between Inspections: 3.6

**NORTH FORK NANCY CREEK**

**MARSH CREEK**

**PERIMETER CREEK**
Maintenance Program

• Prioritization

• Draft Permit requires that the method of documentation is specified (Georgia)

• Provide number assets maintained

• Good maintenance records can help in other ways
  • Demonstrate your utilities progress
  • Demonstrate responsible management
Work Management Software
Work Management Software
Street and parking lot cleaning

• Street sweeping is done to remove sediment buildup and large debris from curb gutters
• Factors affecting street sweeping
  • Sweeper technology
  • The condition of the street
  • Location
  • Operator's skill
  • Presence of parked cars
Street / Parking Lot Cleaning

• Follow procedures in SWMP
• Document miles/area swept and amount of litter/debris removed/disposed of
• Snow Treatment
• Increasing Demand
Roadway, bridge and parking lot management

- Changes in the methods used for maintaining road surfaces, removing debris and sediments from roads, and cleaning of runoff control structures can help improve the overall storm water quality discharging from roads and bridges.
Roadway, bridge and parking lot management

- Pave only in dry weather
- Proper materials staging to reduce spillage during repair of potholes
- Sweep and/or vacuum heavily traveled roadways and/or parking lots
- Regularly clean off runoff control structures
- Restrict use of pesticides and herbicides on roadside vegetation
- Allow roadside ditch vegetation to grow taller than typical turf grass height
- Use rip rap or turf reinforcement mats (TRM) at pipe outlets & in ditches to minimize erosion
Employee Training

• Typically required at least annually
• Different topics to keep employee attention
• Recommend more frequent trainings – some folks do monthly at safety meetings
• Different training for new employees
• Consultants will often do free lunch-n-learns
• Commercially available training videos
• Document type of training and who was trained
• Evaluate and revise training as needed – use anonymous employee awareness surveys
Materials Management

• Proper handling of materials based on job function
• Management of chemicals such as
  • Pesticides, Herbicides, Fertilizers, - PHFs
  • Solvents
  • Fuel
  • Oils
• Proper handling of products in all stages of useful lives
• Select proper product for job
• Correct storage and use
• Proper disposal
Materials Management

• Identify all hazardous and nonhazardous substances present in the facility

• Label all containers with:
  • the name of the chemical
  • unit number
  • expiration date
  • handling instructions
  • health or environmental hazards

• Make note of chemicals that require special handling, storage, or disposal

• Safety Data Sheets (SDS) – formerly known as Material Safety Data Sheets or MSDS – needed for each chemical used or stored at a location
Materials Management

- Improper storage of materials dramatically increases the probability that they will end up in waterways
- Ensure sufficient aisle space
- Store materials well away from high traffic areas
- Stack containers in accordance with the manufacturer’s directions
- Store containers on pallets (spill pallets suggested) or equivalent structures and/or with secondary containment
- Delegate the responsibility for management of hazardous materials to trained personnel
- Hazardous materials must be handled & stored to prevent contact with stormwater
- Look into alternative products
Alternative products

• The promotion of safer alternative products should be coupled with other programs designed to reduce the presence of hazardous and toxic materials

• Examples of commonly used products and safer alternatives:
  • Aerosols - pump type or non-aerosols
  • Batteries - rechargeable batteries
  • Chemical fertilizers – compost
  • Gasoline - electric engine
  • Diesel - bio diesel
  • Motor oil - re-refined motor oil
  • Pesticides – insecticidal soaps, garlic oil, and marigold plants
Spill Prevention and Response
Spill Prevention and Response

- Spill prevention and control plans - may be needed
  - Measures to stop source of a spill
  - Contain the spill
  - Clean up the spill
  - Properly dispose of contaminated materials
- Public and employee safety is always number one
- Plan for a spill before it happens
- Train in spill response
Spill Prevention and Response

- Documentation and spill response equipment at every facility where a spill could occur
- Step by step instructions for spill response
- Spill response plan can be a handbook or even a sign
- Place spill kits in locations where easily accessible and in close proximity to where materials are stored or used
- Ensure spill kits are labeled
Applying too much lawn fertilizer can significantly contribute to water quality problems.
Landscaping and vegetation care

• Do not overuse chemicals
• Follow all prescribed rates of application for pesticides, fertilizers, and herbicides
• Document applications
  • Date applied
  • Amount used
  • Location of application
• Use native vegetation – minimizes need for chemicals and water
• Proper vegetation prevents erosion
Flood Management

• Require flood management BMPs (detention/retention ponds) include water quality in the design
• Retrofit old detention/retention ponds to add water quality component
Flood Management

• Flood plain buyout program – FEMA funding
  • Provides wildlife and plant habitat
  • Recharge groundwater
  • Filter impurities
  • Protects people and infrastructure
  • Maintain, enhance, and restore the natural functions of the floodplain
Municipal Facilities

• Up to date inventory of all facilities – including maintenance yards, parks, public golf courses, schools, fire/police stations, wastewater facilities, landfill or solid waste facilities, and any municipally owned industrial facility

• Industrial facility - ensure Stormwater Pollution Prevention Plan (SWPPP) is being followed

• Evaluate all facilities for potential to impact water quality

• Prioritize for inspection – all at least once per permit cycle, high priority once per year or possibly more frequently
  - Inspections by someone other than at the facility – stormwater manager or even 3rd party inspections

• All high priority facilities probably need a facility specific SWPPP, spill response plan, and/or other stormwater planning documents
Municipal Facilities
More Facilities
Vehicle/Equipment Maintenance

• Most effective way to minimize the impacts of waste is by preventing its production
• Run a dry shop  
  • Clean up spills immediately and water should not be used for clean up  
  • Floor drains are not connected to storm sewer and even if connected to sanitary sewer, they should be sealed off or at minimum connected to oil water separator with valve to isolate it from the sewer if needed  
• Solvent service to supply parts cleaning materials and to collect spent solvent
Vehicle/Equipment Washing
Vehicle/Equipment Washing

• Wash in wash bay tied to sanitary sewer with an oil water separator
• Wash vehicles at a commercial car wash
• Wash vehicles on gravel, grass or other permeable surfaces when washing
  • **DO NOT CLEAN ENGINES**
• Use only bio-degradable cleaners
• Clean parts in parts washer – proper handling/disposal of cleaning fluids via a disposal contractor
• Do not ever assume a floor/building drain is tied to the sanitary sewer
• Wash racks and floor drains should connect to a oil water separator prior to discharge to sanitary sewer
Documentation
Take-A-Ways

- If you don’t document it then in a regulator’s eyes it never happened
- Asset management systems can help with maintaining inventory, inspection, and maintenance performed
- Inspection by someone not at the facility – look at every part of the site and all activities
- Training is key
- Audits – do an internal audit or bring in a 3rd party
  - Better to get your “house” in order prior to a state or federal audit
- Document everything
References:

- https://assets.entrepreneur.com/content/3x2/1300/1412721888-2-chart-goals-create-road-map-success.jpg
- https://mrmagazine.files.wordpress.com/2012/11/good-housekeeping.jpg
- http://www.chinadaily.com.cn/m/hubei/images/attachment/jpg/site1/20120319/0023ae98970110d1205e02.jpg
- http://media.dentalcompare.com/m/25/article/123596-400x300.jpg
- https://www.denios-us.com/media/catalog/product/cache/40/image/9df78eab33525d08d6e5fb8d27136e95/f/l/Flammable_Cabinet_M31-5320-W/pesticide-storage-cabinet-pe47-fm-3.jpg
- http://www.carbonicsystemsinc.com/hazmat.gif
- https://rationalopinionsblog.files.wordpress.com/2013/10/spraying-chemicals-on-food.jpg