

Weston & Sampson
ENGINEERS, INC.

Presentation

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Reducing and Preventing Beach Closure in New England Communities:
Strategies for Detection, Correction, and Financing



Workshop for Southern Communities – Crowne Plaza Hotel, Warwick, RI
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Tracking Illicit Connections



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Preliminary Tasks

- Map storm drain system and outfalls
 - Include drainage swales, ditches, etc.
 - Field verification
- Sample outfalls to identify storm water pollution problem

Types of Illicit Connections

■ Direct Illicit Connections

- Building sanitary sewer connections to the storm drain
- Cross connections between the sanitary sewer and the storm drain

■ Indirect Illicit Connections

- Broken and leaking sanitary sewer pipe
- Surface runoff

Identifying Direct Illicit Connections

- Field Screening Program
- Smoke Testing
- Television Inspection
- Dye Testing
- Optical Brighteners

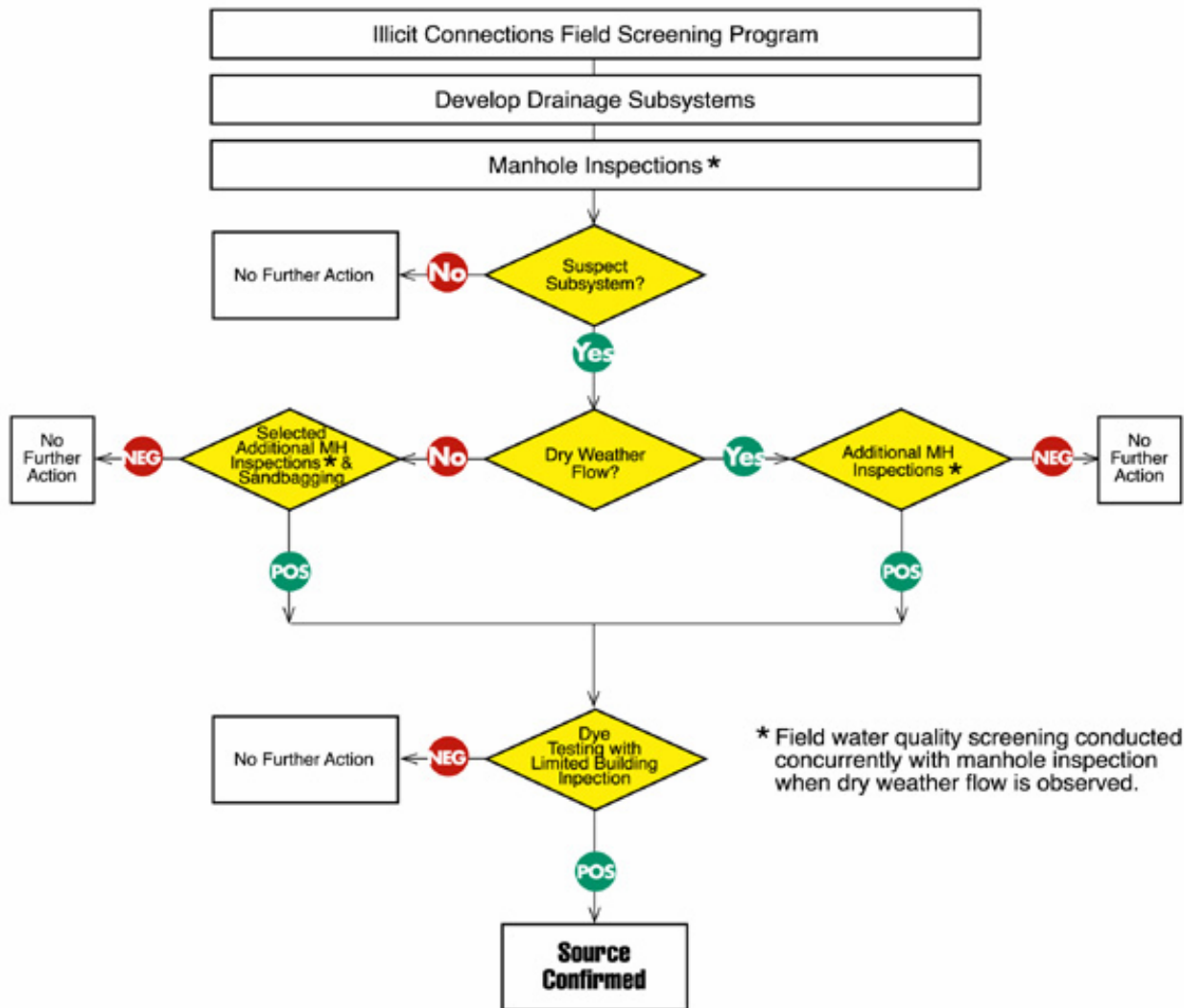


Identifying Direct Illicit Connections

■ Field Screening Program

- Help narrow down suspect areas for further evaluation
- Divide drainage system into small subsystems
- Manhole inspections and water quality screening for signs of pollution
- Investigation during dry weather
- Field water quality screening indicators
 - Ammonia – found in household cleaners and wastewater
 - Surfactants – found in shampoo, cleaning products

Identifying Direct Illicit Connections



Identifying Direct Illicit Connections

- Smoke Testing
 - Smoke Test Storm Drains to Identify:
 - Cross connections between sanitary sewer and storm drain
 - Building sewer services connected to the storm drain
 - Unmapped drainage swale/ditches tied into storm drain



Identifying Direct Illicit Connections

- Television Inspection
 - Television Inspection is used to identify and locate connections to the storm drain
 - Need to determine if the connection is illicit
 - Additional benefits
 - Can assess condition of pipe
 - Can determine amount of debris in the pipe



Identifying Direct Illicit Connections

■ Dye Testing

- Dye Testing is used to confirm suspect source
- Pour dye in fixture in house
- Inspect sanitary sewer manholes and storm drain manholes



Identifying Direct Illicit Connections

■ Optical Brighteners

- Fluorescent white dyes used in laundry detergents
- Indicates an illicit connection to the storm drain
- Labor intensive, but low materials cost
- Good project for local watershed group
- Person familiar with drainage system should be involved to identify proper locations
- Install untreated cotton pad in flow path
- Under UV light, pad will glow if OB is present
- Avoid cross contamination with OB from hands and clothes

Identifying Indirect Illicit Connections

- Television Inspection
 - Clean and television inspect the sanitary sewer system to identify pipe defects
 - Can be a significant source of pollution
 - Most costly to fix



Identifying Indirect Illicit Connections



Identifying Indirect Illicit Connections

- Visual Inspection of Drainage Area
- Walk drainage area to identify locations in the community that could contribute pollution to the storm drain system via surface runoff
 - Parks where dogs are walked
 - Water bodies with geese and ducks
 - Farms with livestock

Final Comments and Questions