Illicit Discharge Detection and Elimination Program

Prepared for:

Doylestown Township and Citizens

Doylestown Township, Pennsylvania

February 17, 2009

Purpose

- What is the Illicit Discharge Detection and Elimination (IDD&E) program?
- Overview of Program Implementation at Doylestown
- Findings
- Conclusions
- Recommendations

Previous Presentations

- February 2006
- November 2006
- August 2007
- February 2008
- Tonight (February 17,2009)

2007 & 2008 presentations available on the Township Website http://www.doylestownpa.org/

Public Information

Local

- http://www.doylestownpa.org/Stormwater.htm

State

- http://www.depweb.state.pa/us Keyword-Stormwater

Federal

- http://cfpub.epa.gov/npdes/stormwatermonth.cfm

What is the IDD&E Program?

- EPA program to monitor non-point source pollution
  - Reduce adverse impacts to water quality
- Doylestown Township
  - Urban Area
  - Small Municipal separate storm sewer systems (MS4s)
- Requirements include:
  - Public education and outreach
  - Public participation and involvement
  - **Monitoring**
  - Construction site runoff control
  - Post-construction runoff control
  - Pollution prevention and good house keeping
  - Best Management Practices (BMPs)

What is an Illicit Discharge?

Definition - Any discharge that is not stormwater runoff

Examples:

- Broken sanitary sewer lines - Fecal Coliform
- Poorly maintained or installed septic systems - Fecal Coliform
- Improper oil, paint, and solvent disposal - chemicals
- Radiator flushing - chemicals
- Spills from roadway accidents - chemicals
- Improper disposal of household toxics - chemicals
- Car washing waste waters – phosphates

How to distinguish between stormwater runoff

- Dry weather flow - No rainfall for previous 72 hours

Dry Weather Inspection – Flow / No Flow

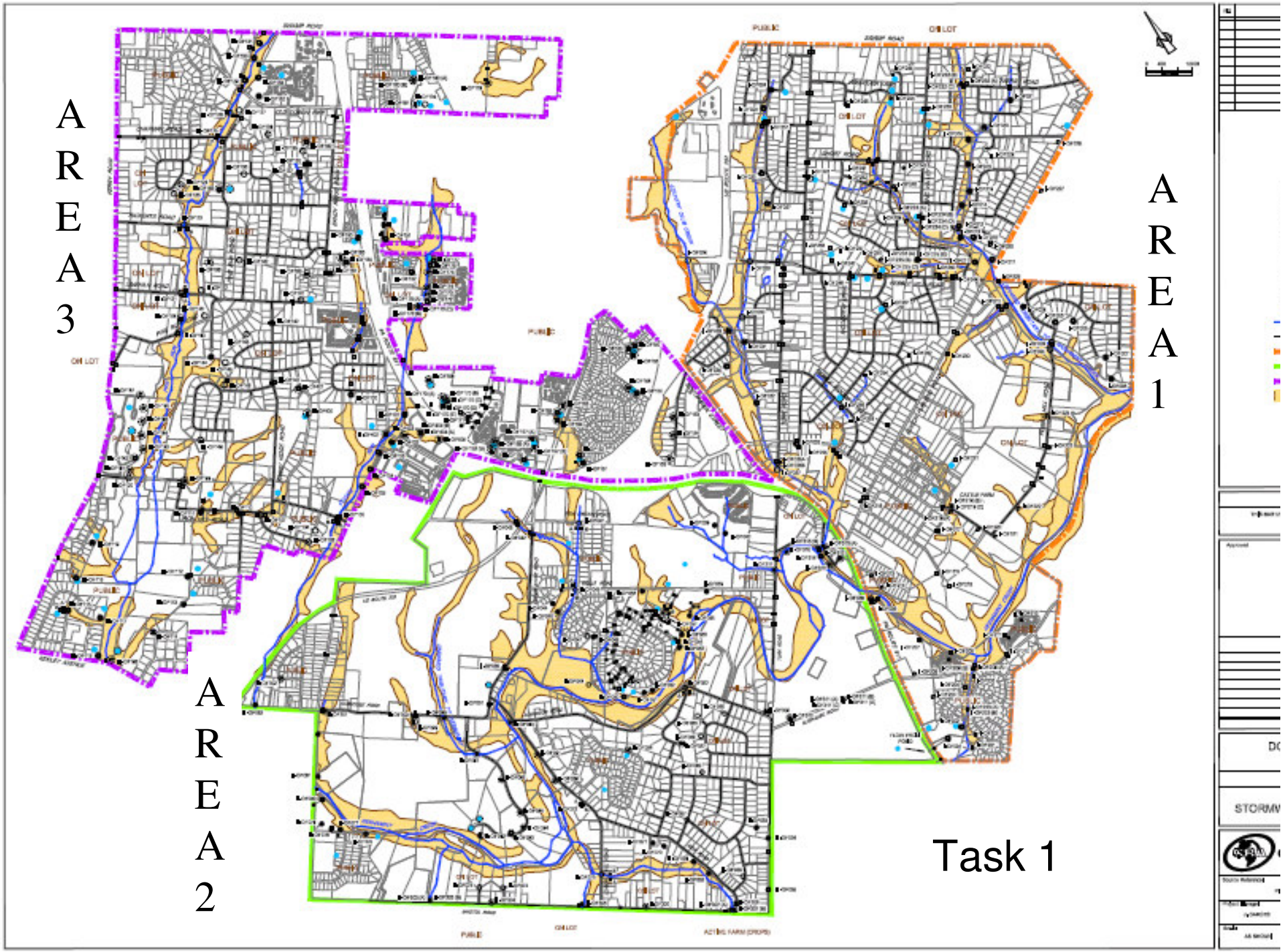
Dry Weather Inspection
Indicators of Illicit Discharge

Solids

Suds

Overview of IDD&E Monitoring

- Task 1 - Township divided into 3 areas
- Task 2 - Locate outfalls through inspections
- Task 3 - Inspect outfalls during "dry weather" and sample those with flow
- Task 4 - Review lab results and submit data in annual report to PADEP
- **Task 5 - Attempt to locate sources of illicit discharge**


AREA 3
AREA 1
AREA 2
Task 1

IDD&E Monitoring Efforts

- **2005 – 2007 (Tasks 2 – 4)**
  - Areas 1, 2, & 3 - Outfall Inspections, Sampling, Source Tracing
  - Sample Analysis and Review
  - Reports submitted to PADEP

- **2008 (Task 5)**
  - Focused inspections/sampling in previously identified problem Areas 2005-2007
  - Sample Analysis (includes Fecal Coliform and Fecal Strep)
  - Review of Data
  - TV inspections of storm lines upstream of identified problem outfalls

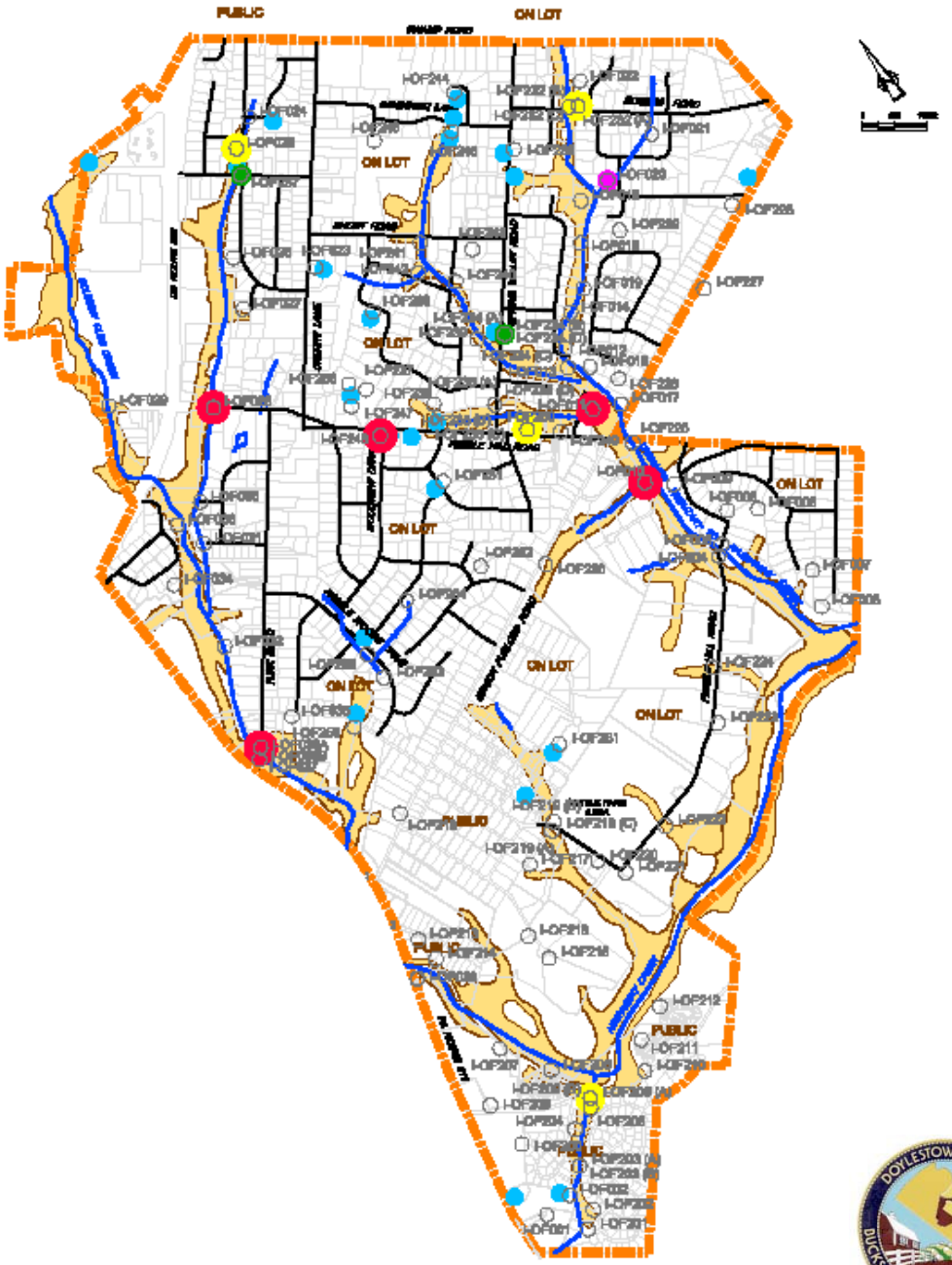
What are Fecal Coliform Bacteria?

- Microscopic organisms that live in the digestive tract of humans and other warm-blooded animals
- They also live in the waste material excreted from the intestinal tract
- Fecal coliform bacteria may indicate the presence of disease-carrying organisms
- Common Sources
  - Humans (typically from failing septic systems or sewage)
  - Pets (especially dogs)
  - Livestock and agricultural practices (e.g., spreading manure as fertilizer on fields during rainy periods)
  - Birds (especially in lakes and ponds)

Is Fecal Coliform a Good Measurement?

- Fecal Coliform multiply quickly
- Fecal Coliform do not live long
- Dry Weather sampling increases the chance that the Fecal Coliform measured is from sewage
- **Sampling for Fecal Coliform is the single best measurement available at this time.**
- **Sampling for Fecal Streptococci provides additional supporting evidence.**

2007 Results
Area 1 - Round 2

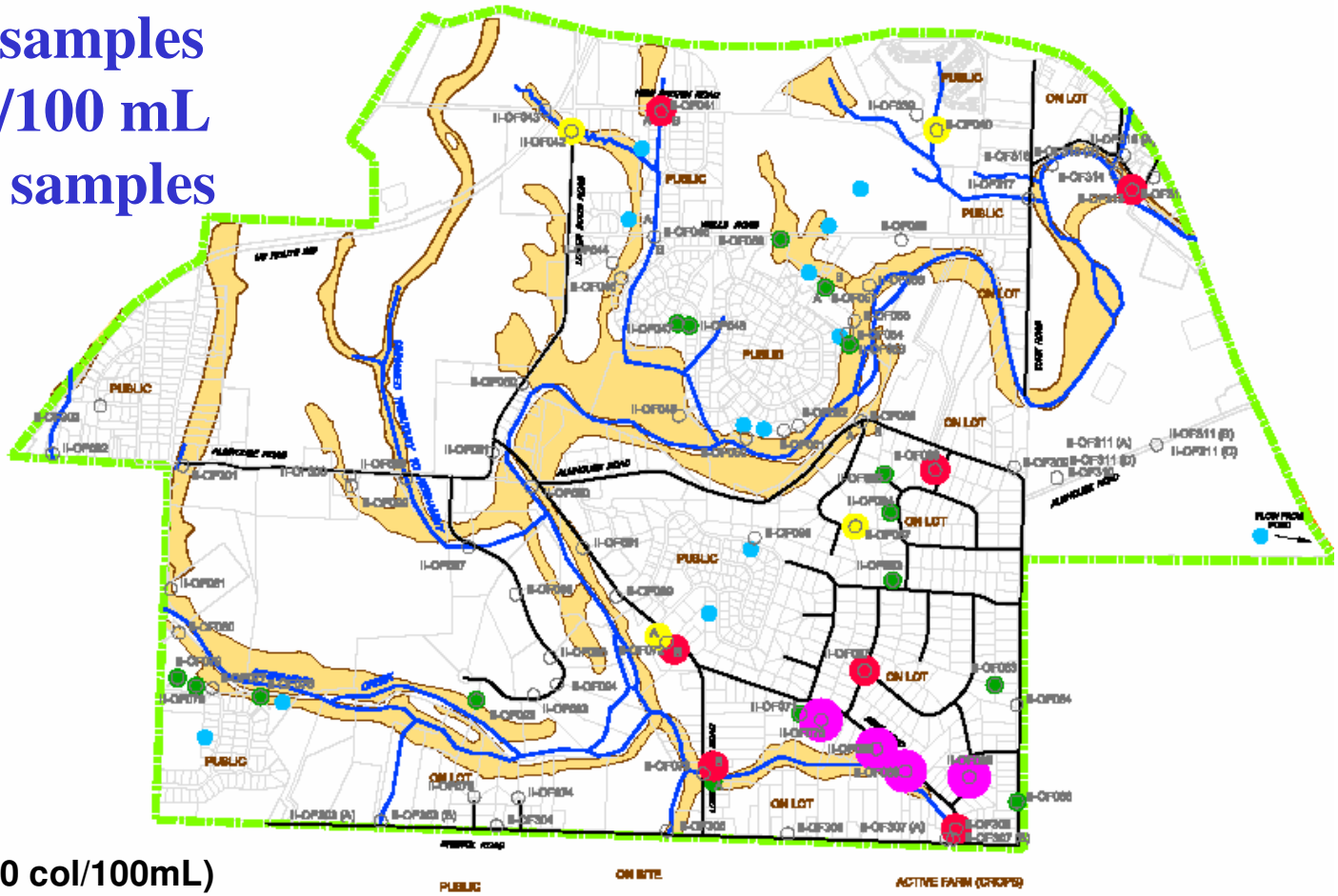


34% of all 2007 samples had FC >100 col/100 mL
17 of 50 total samples

- Fecal Coliform (0-10 col/100mL)
- Fecal Coliform (10-100 col/100mL)
- Fecal Coliform (100-1,000 col/100mL
- Fecal Coliform (>1,000 col/100mL)
- Not Sampled

2007 Results Area 2 - Round 2

42% of all 2007 samples had FC >100 col/100 mL
28 of 66 total samples



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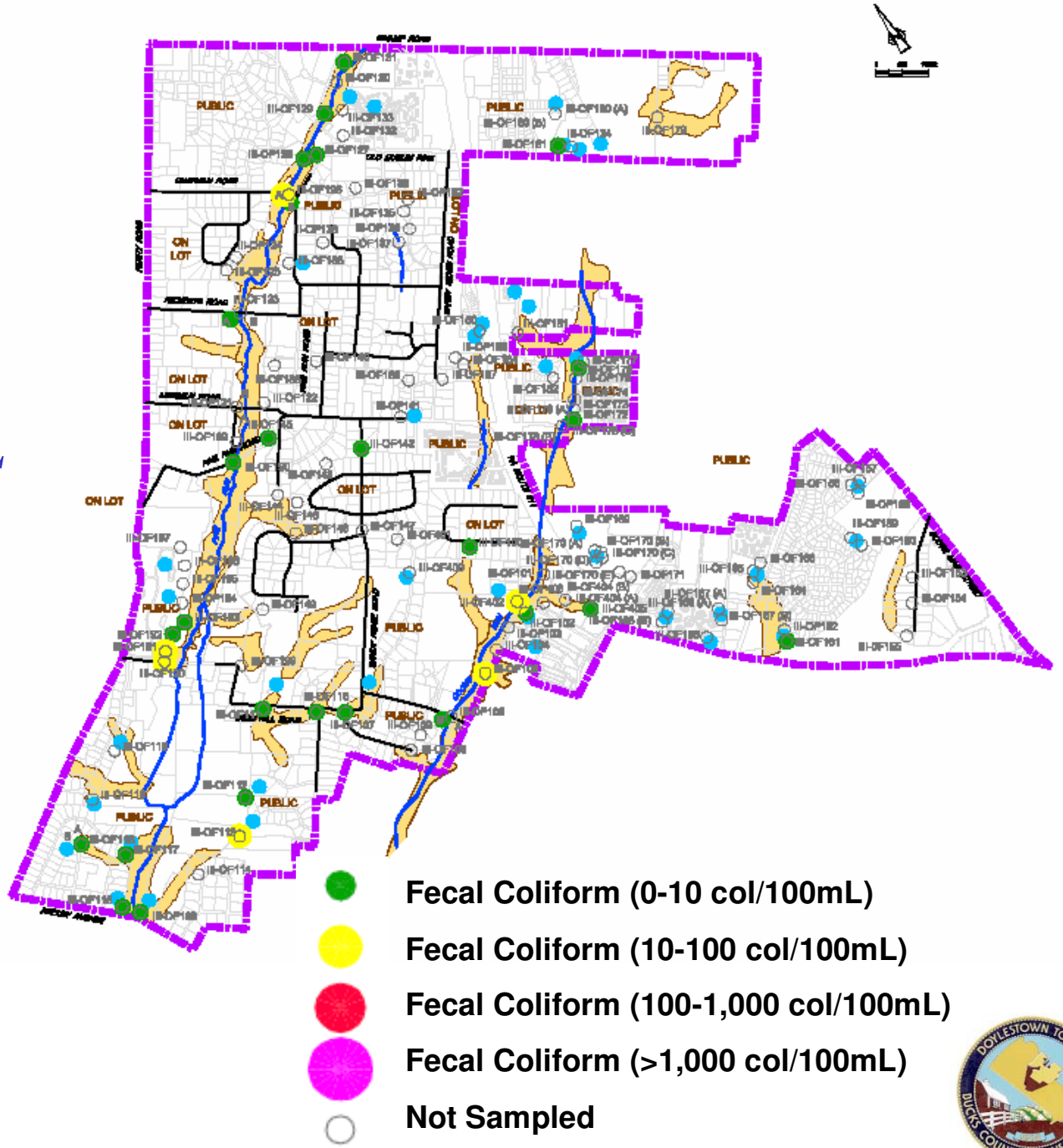
- Fecal Coliform (10-100 col/100mL)
- Fecal Coliform (100-1,000 col/100mL)
- Fecal Coliform (>1,000 col/100mL)
- Not Sampled

2007 Results
Area 3 - Round 2

No samples had FC >100 col/100 mL



2007-08 Source Investigations

- Sampling (Areas 1 & 2)
  - Samples were collected at outfalls previously exhibiting elevated Fecal Coliform concentrations

- Source investigations involved visual tracing of dry weather flow back to a potential source and, if found, a sample was collected

Example of tracing a discharge back to a source

2008 Sampling Results

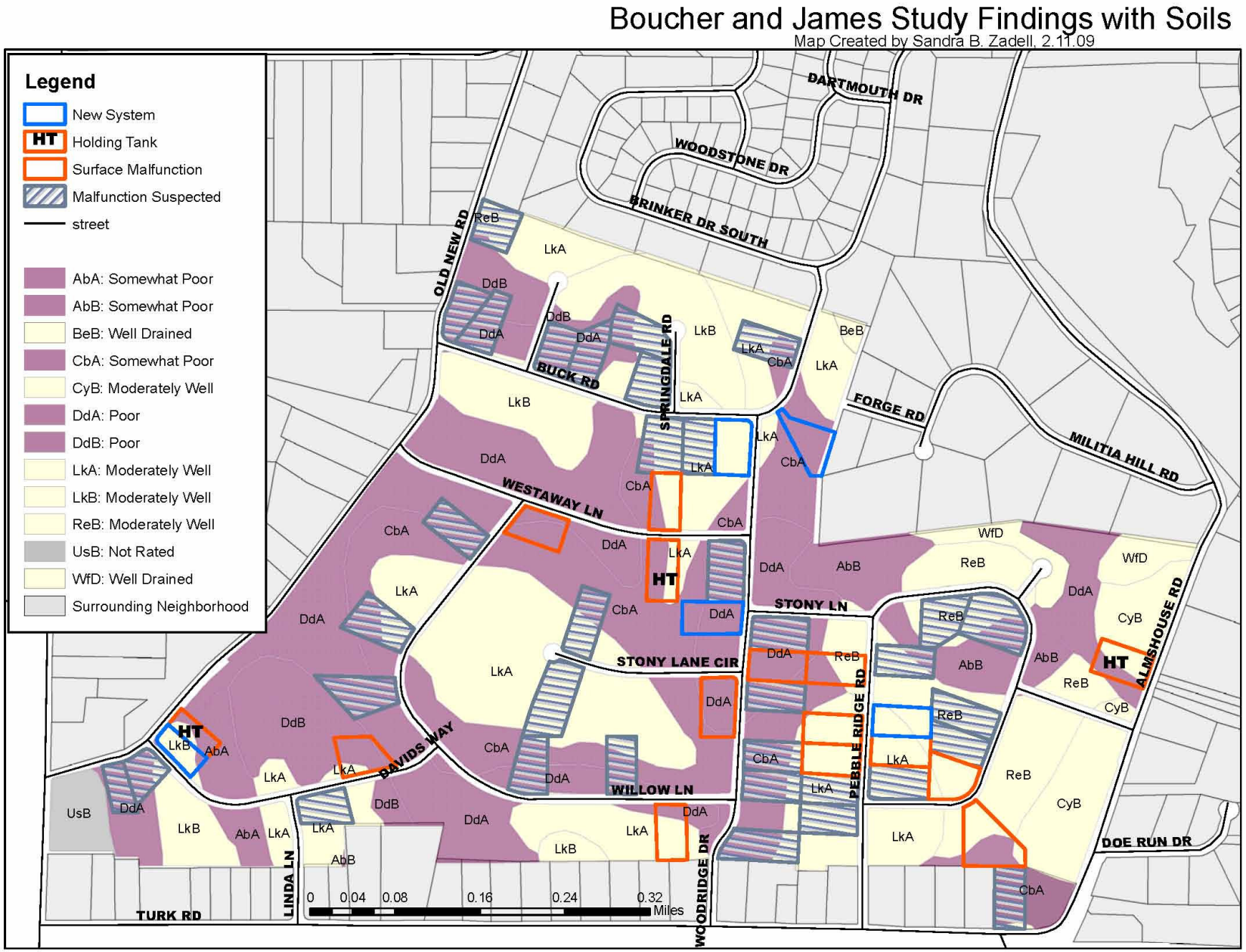
Area 1

- 6 confirmatory samples at 5 problem outfalls
- 17% (1 of 6 samples) = >200 col/100 ml
- Maximum FC = 900 col/100ml

Area 2

- 22 confirmatory samples at 15 problem outfalls
- 68% (15 of 22 samples) = FC >200 col/100ml
- One outfall (OF313) = FC & FS >600,000 col/100ml

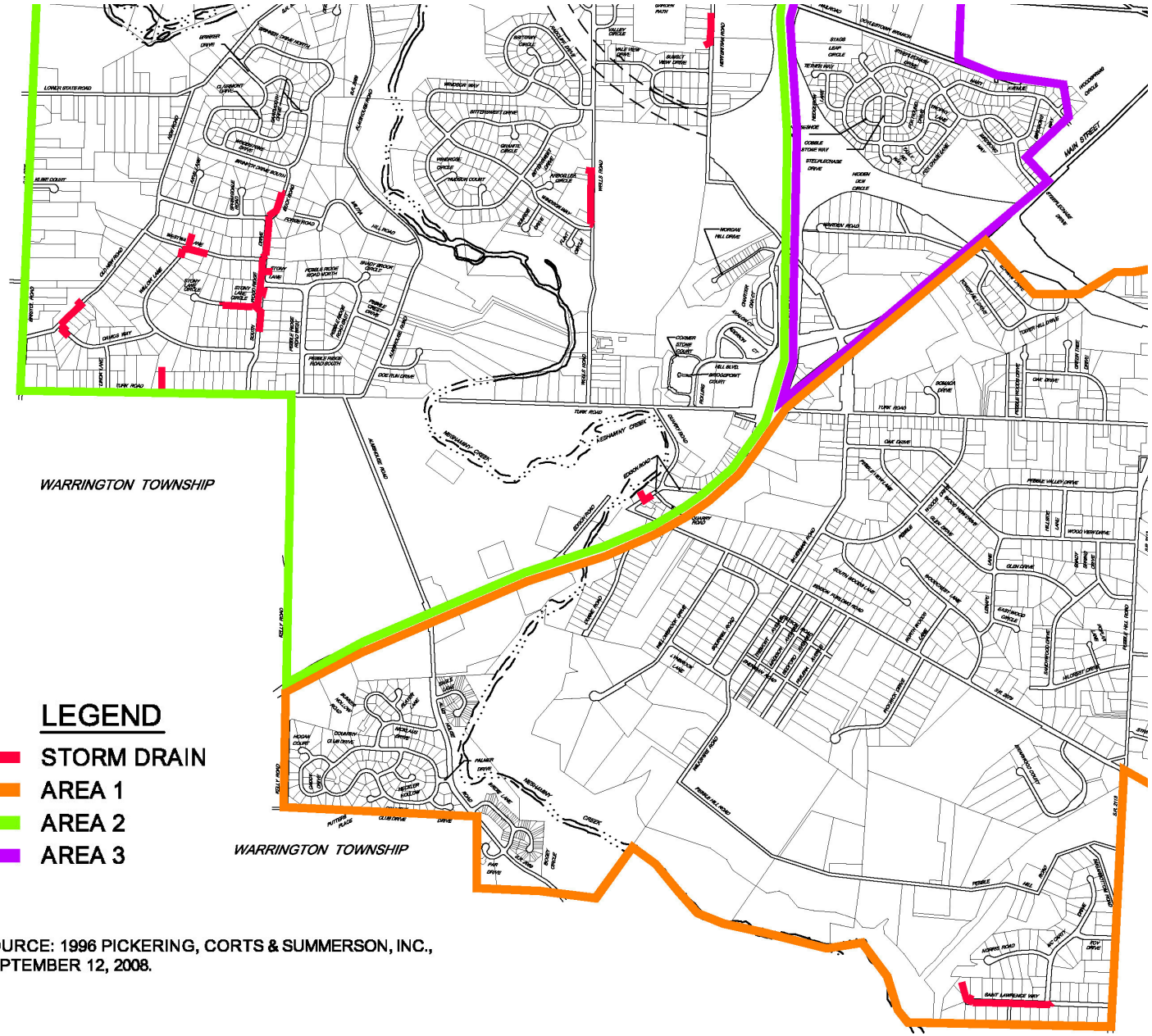
Soil Survey - 2008



Television Studies

- To further identify the ultimate source, television studies of select storm sewer pipes were conducted
- Storm sewer lines for 9 outfalls were televised based on elevated sampling data (e.g. Fecal Coliform) or visual observations (e.g. soap suds):
  - Area 1 – 1 outfall
  - Area 2 – 8 outfalls

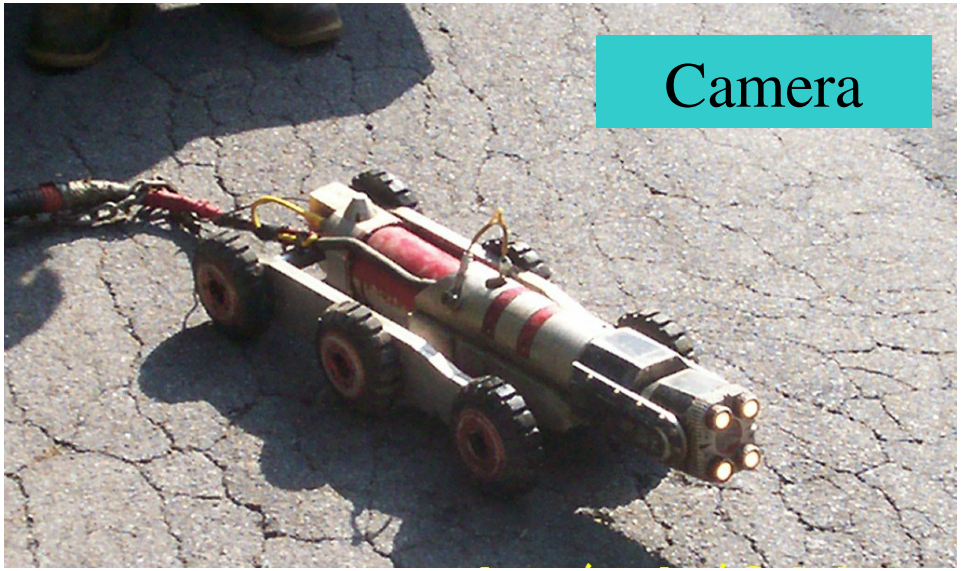
Storm Drain Inspection Map



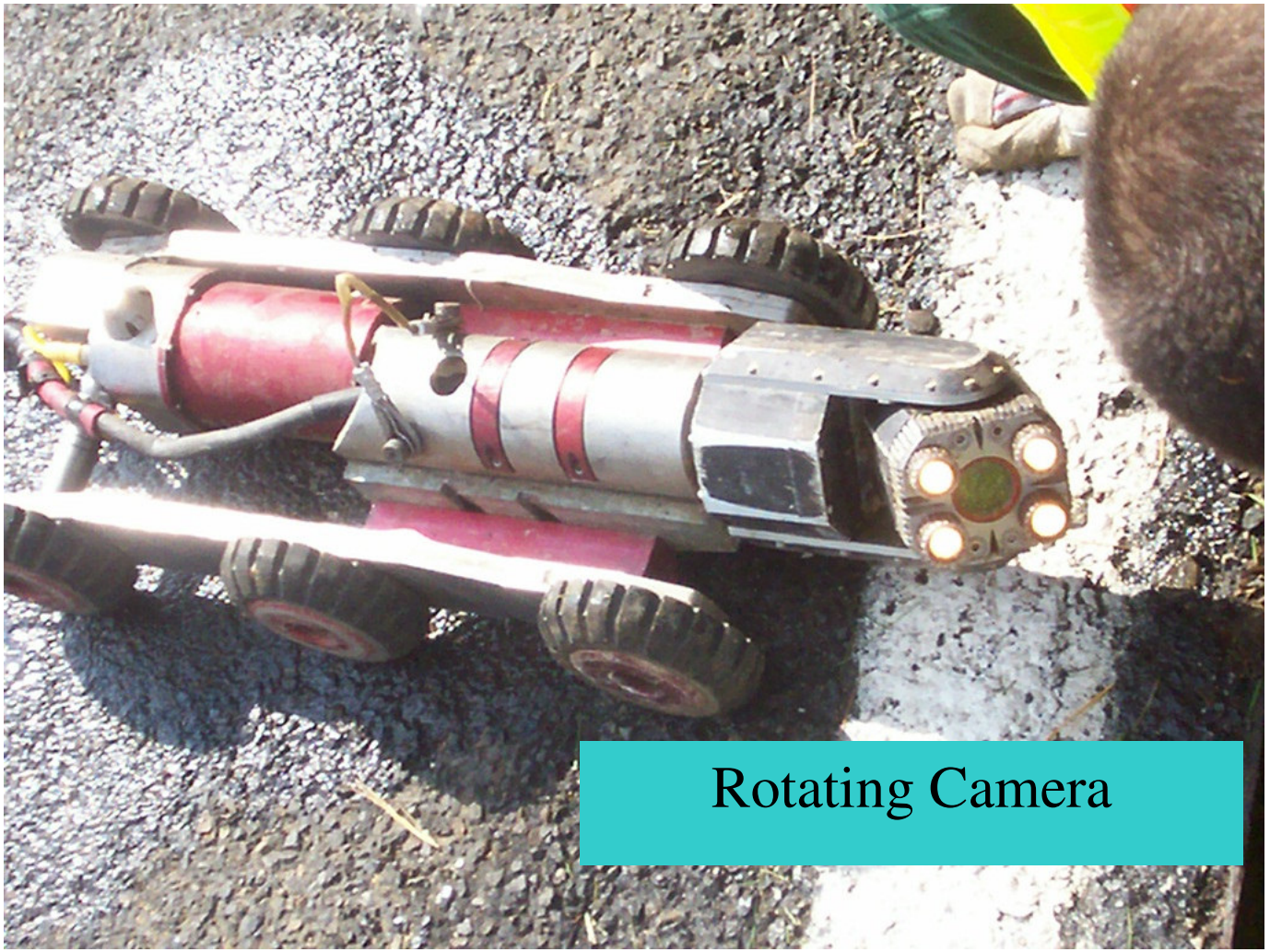
SOURCE: 1996 PICKERING, CORTS & SUMMERSON, INC., SEPTEMBER 12, 2008.

Storm Sewer Television


TV Truck



Storm Sewer Television



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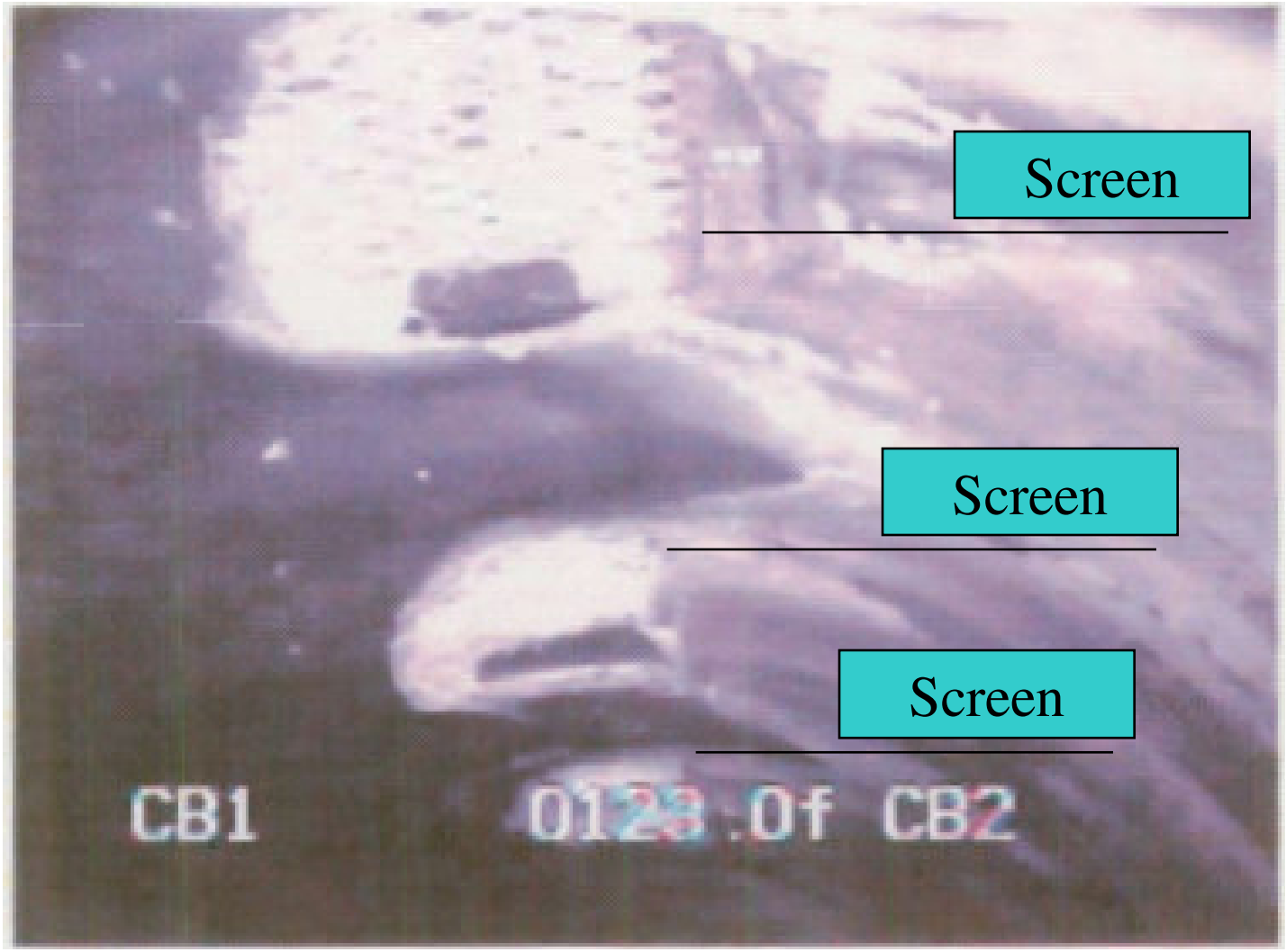

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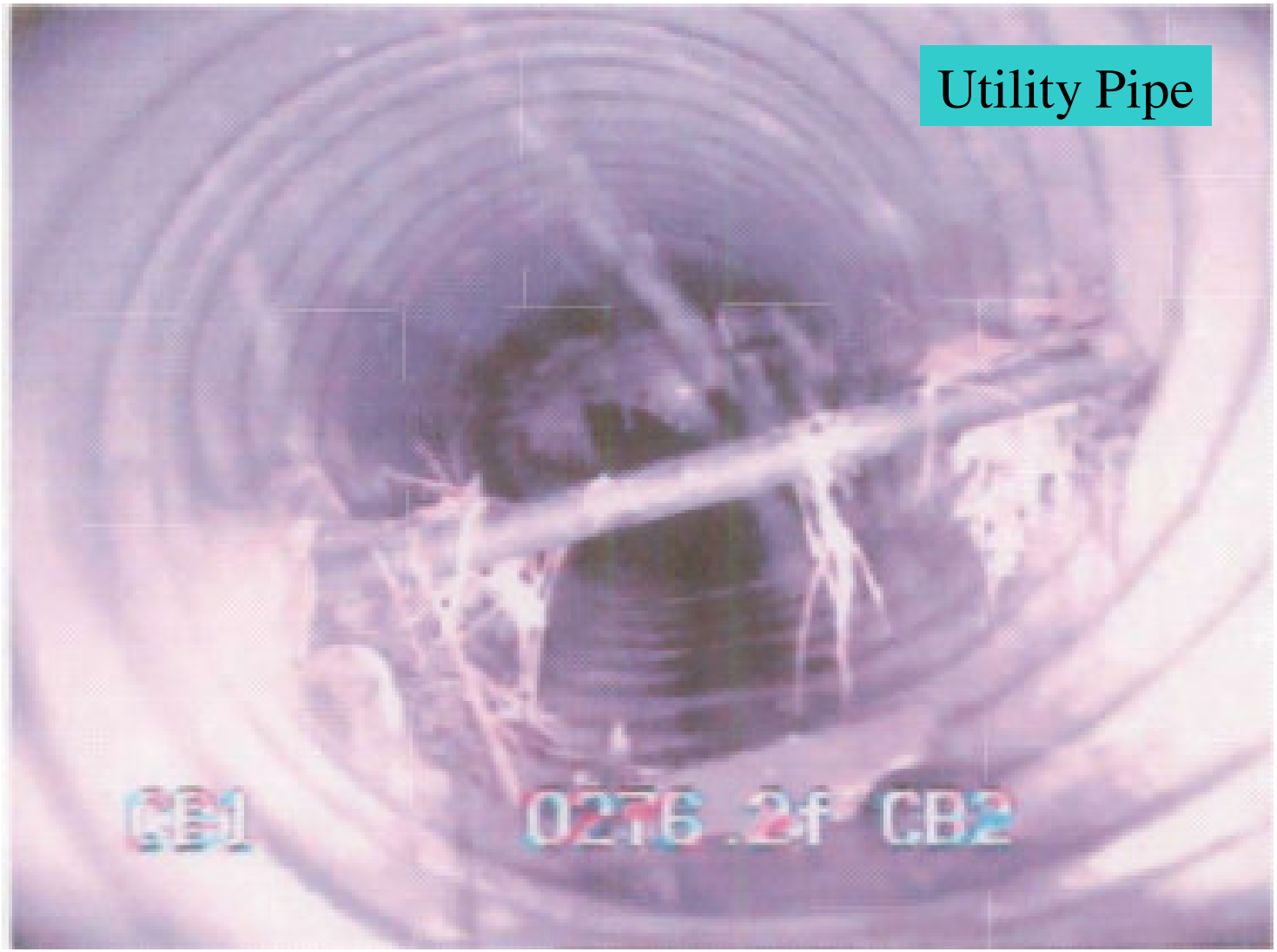
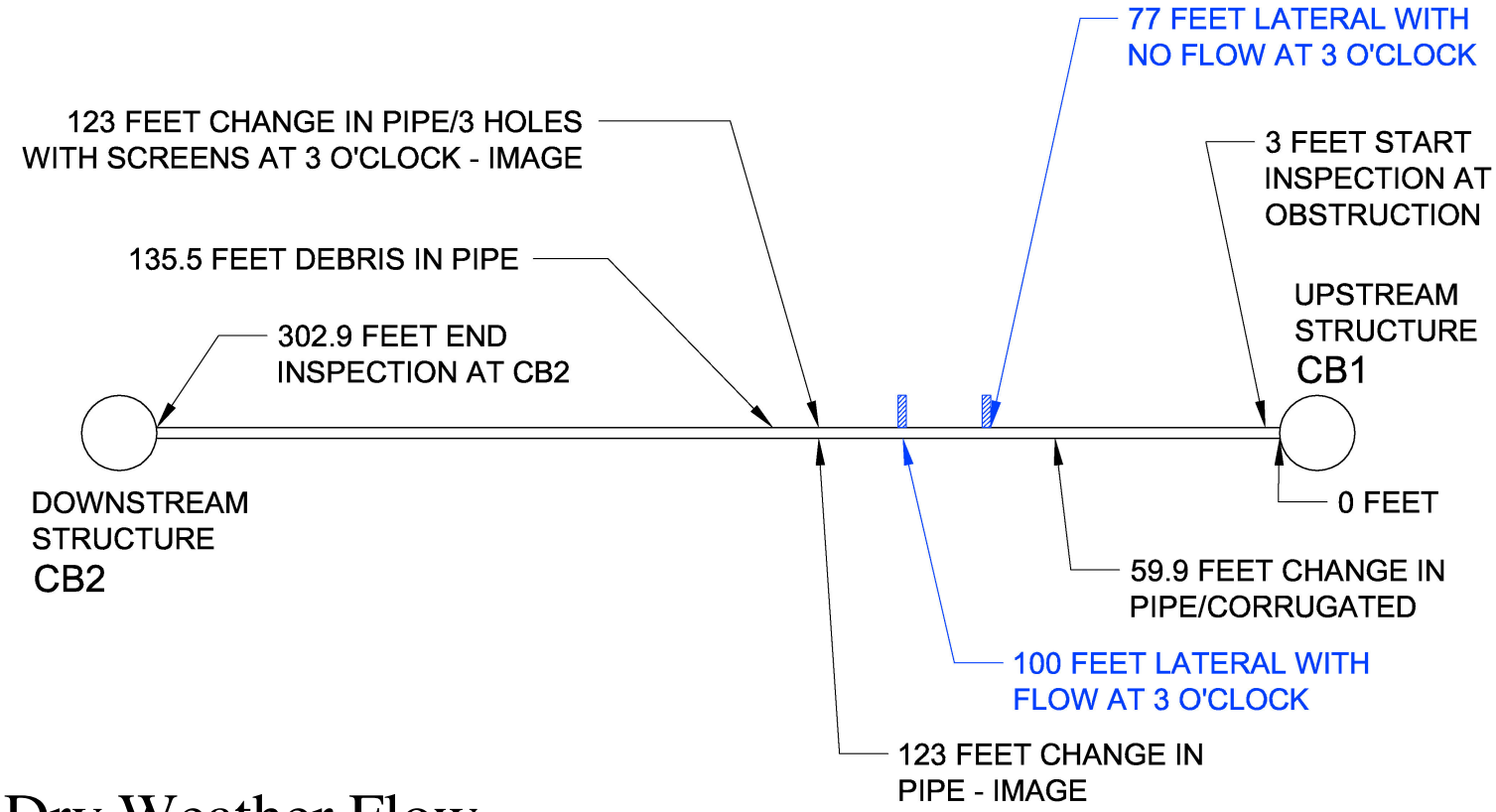


Storm Sewer Television Field Report



Dry Weather Flow

Summary of TV Findings

- Identified potential IDD&E sources at 7 of 9 outfalls
- Identified flow in several storm drain laterals

Going Forward

- Submitted questionnaires to residents in identified problem areas
- Narrow investigation of potential problem laterals through sampling and/or dye tracing
- Dye tracing of individual properties (with owner's consent)
- Sampling/analysis of select dry weather outfalls and source areas with historical impact
- Additional source investigations, if necessary
- Source Mitigation

Dye Tracing

- Purpose – Evaluate if septic system is leaking (or directly connected) to the Township storm water system
- Method - Flush bright dye through the septic system via toilet or sink. Observe surface area of septic system and storm water conduits in street
- Dye - Non-toxic. Material Safety Data Sheets (MSDS) will be provided to homeowners. Authorities will be notified
- EPA-recommended method to determine sources in IDD&E Program

Questions/Comments