The Sweet Smell of Success: Finding and Eliminating Illicit Connections in Seattle
City of Seattle Illicit Discharge Detection and Elimination (IDDE)

Presentation Overview:
- City of Seattle IDDE
  - Parameters
  - Source Tracing Tools
  - Data Collection
  - Compliance Process
- Successes
  - New Holly Development
- Challenges
  - S. Bangor St

- Requirements:
  - Screen 12% annually: ~4,000 acres
  - Prioritize drainage basins
  - Develop an ordinance prohibiting illicit connections
  - Track and maintain records of the illicit discharge detection and elimination program
City of Seattle IDDE Program

- One full time employee and a seasonal temporary employee
- Dry weather screening program (June-September) with follow up work conducted in the fall and winter
- Approximately 20 investigations per year
- Intensive sampling
- Discovered approximately 100 individual illicit connections since 2009
Intensive sampling
Parameters

Field Parameters
Surfactants: >1.0 mg/l
Conductivity: >700 us/cm
pH: b/n 5.5-9.0
Temperature: >80 °F

Odor

Visual Observations

Lab Parameters
Fecal Coliform: >5,000 cfu/100ml
Potassium: >5.0 mg/l
Fluoride: >0.6 mg/l
Ammonia: >5.0 mg/l
Source Tracing Tools

- CCTV
- Dye Testing
- Solids Sampler
- Smoke Testing
- Data Loggers
- Situational specific sampling
CCTV

Dye Testing
1. Notify homeowner/business (who is at fault?)
2. Have the connection bypassed?
3. Determine where the outfall is and whether or not it is a public health concern. Work with King County Public Health
4. Sample the beach? Close the beach?
5. Send a Notice of Violation to the homeowner giving them 30 days to have the illicit connection repaired.

**WARNING**

**NO SWIMMING**

**NO WADING**

Health warning, high levels of bacteria have been detected. The current conditions at this beach are not suitable for recreational water activities.
Have the connection bypassed?
4) In addition to penalties, these violations and failure to complete the corrective work may result in responsible party liability for City costs of corrective action and abatement, investigation costs, costs to correct the violations or other cost expenses, and loss or damage incurred by the City, plus a surcharge of 15% for administrative costs, as set forth in SMC 22.808.050-.060 and -.070.
Working with Responsible Parties

- Have empathy!!!
- Educate responsible parties
- Give them resources and help them along in the process
- Interpreters
- Translate letters and/or NOV’s
- 15 (business)-30 (homeowner) day deadline to have repair made
- Extend NOV if necessary

Illicit Connection
Notable Finds: New Holly

- 2010: New Holly: 49 illicit connections!
- 620 low income units: Seattle Housing Authority
- 475 market rate homes:
- Renovated neighborhood
- Very diverse neighborhood: Letters translated into 8 languages
- Storm discharge from neighborhood to Pritchard Beach
- Handed to IDDE from a water quality complaint
- Large basin
- Began at outfall which conveys discharge for the entire basin: 1500 acres!
- Highly urbanized
- Traffic (Rainier Ave S and MLK Jr. Way S)
- Multiple investigations
Rainier Drainage Basin:
~1500 Acres
New Holly Discovery

- Source traced 2.5 miles
- Approximately 75 samples taken
- ~1.5 months to locate
- 8 additional cross connections discovered in Basin
Obstacles:
- Language barriers
- Scale: ~1000 homes!
- Coordination with homeowners
- Time
- Money

Solution:
- Smoke testing
  - Fast
  - Relatively inexpensive
  - Good results
New Holly Discovery: Smoke Testing (See Video)

Pros
• Relatively cheap
• Fast: Do not need access
• Good results
• Can be used on a large scale easily

Cons
• Notifications!!!!
• Highly visible
• Chance smoke can enter a business or home if pea trap is dry
Seattle Housing Authority owned 44 of the 48 homes with cross connections.

Absher Construction performed the work. ~$300,000

2 months to fix
Challenges: S Bangor St

- Single family home discovered in 2011
- Low income homeowner
- Unable to make repair
- City exhausted potential solutions

KOMO 4 Problem solver aired Monday March 12, 2012

Follow-up segment airing Monday March 19, 2012, KOMO 4 6:00 news
Lessons Learned

Problem

Get Connnie!!

Blame the Government

Didn’t Work

Get Jessie!!

Didn’t Work
Takeaways

- Take lots of samples at strategic points! If too expensive use 1 to 2 parameters:
- Low Cost Sampling Techniques: Data logger or solids sampler
- Smoke Testing: Cheap
- Use code language to get compliance and have a streamlined process
- Work WITH homeowners/businesses to gain compliance: Be a resource