Presentation Overview

- Terminology
- RIPDES IDDE Requirements
- RIPDES Field Survey Forms
- Resources
What is a Storm Sewer?

• Enclosed pipe or open channel
• From a regulatory standpoint (RIPDES Regulations Rule 3):
  – Major outfall = enclosed storm drain pipes 36 inches or greater in diameter & open channels that drain more than 50 acres
  – For industrial land uses, major outfall = enclosed storm drain pipes 12 inches or greater in diameter & open channels that drain more than 2 acres
• Minor storm outfalls are smaller than these thresholds
I said we will be counting outfalls < 6” in diameter!

Both major & minor storm outfalls can be a source of illicit discharges & both merit investigation.
Outfall
What is an Illicit Discharge?

- A discharge to an MS4 that is **not composed entirely of storm water** except permitted discharges and fire fighting related discharges RIPDES Rule 3
  - Unique frequency, composition & mode of entry
  - Interaction of the sewage disposal system & the storm drain system
  - Produced from “generating sites”
IDDE RIPDES Requirements

• IDDE Ordinance development, introduction and adoption
• Outfall location determined using GPS technology to be completed by December 2006
• Two Dry Weather Surveys of all Outfalls to be completed by December 2007
• Illicit Discharges Detection and Elimination
Common IDDE Program Mapping Elements

- Storm sewers (96%)
- Waters of the US receiving discharges from outfalls (83%)
- Outfalls (79%)
- Open channels (71%)
- Land use (67%)
- Sanitary sewers (63%)
- Industrial discharge permit holders (33%)

- Building connections to storm sewers (25%)
- Connections to adjacent systems (25%)
- Building connections to sanitary sewers (21%)
- Watershed, outfall drainage area boundaries (13%)
- Hotspot areas (13%)
Outfall Reconnaissance Inventory (ORI)
Map, Mark & Photograph Outfalls

- Assign unique ID to each outfall
- Physically mark each outfall
- Use a GPS unit to record outfall locations
- Take a photograph

Source: Robert Pitt, University of Alabama
Outfall Reconnaissance Inventory (ORI)
Record Basic Characteristics

- Dimensions
- Material
- Whether or not outfall is flowing
Outfall Reconnaissance Inventory (ORI)  
Physical Indicators for Flowing Outfalls

- Odor
- Color
- Turbidity
- Floatables
- Temperature
- Changes in flow
- Vegetation change
- Structural damage
- Grease / oil
Outfall Reconnaissance Inventory (ORI)
Physical Indicators for Flowing and Non-Flowing Outfalls

- Outfall Damage
- Deposits/Stains
- Abnormal Vegetation
- Poor Pool Quality
- Pipe Benthic Growth
Outfall Reconnaissance Inventory (ORI)
Simple Monitoring at Flowing Outfalls

- Flow
- pH
- Temperature
- Conductivity
- Bacteria
- Other recommended
The ORI Cannot:

- Find all discharges (can sometimes lead to a “false positive” as well)
- Detect intermittent flows that leave no trace
- Quantify impacts definitively (no direct measure of relative problem)
- Define sources (except for some obvious indicators)
Outfall Reconnaissance Inventory (ORI) Data Management and Quality Control

• Field Quality Control
  – Binder containing field sheets
  – Crew leader:
    • Confirm all reaches and outfalls surveyed
    • Consistency of forms

• Office Quality Control
  – Data entered into spreadsheet
  – Check quality of data
Indicator Monitoring

• More detailed sampling to:
  – ID problem outfalls not apparent from physical indicators alone
  – Test suspect or problem outfalls to confirm if illicit discharge
  – Determine flow type
  – Analyze intermittent discharges
  – Choose specific indicators depending on local “fingerprints” or based on land use in area
Primary Conclusions

• Effective and comprehensive legal authority is critical.

• **A good program starts with good mapping.**

• Much of the field equipment is commonly available in various municipal departments.

• Experienced field staff is a valuable asset.
Cross-Train Your Staff

Look, Look! Signs of flow!
Resources

- Illicit Discharge Detection And Elimination Manual (NEIWPPC, 2003)
- A Guidance Manual for Identifying and Eliminating Illicit Connections to Municipal Separate Storm Sewer Systems (Galveston County Health District, 2002)
- The Rouge River Project Illicit Discharge Elimination Program