

# Presentation Overview

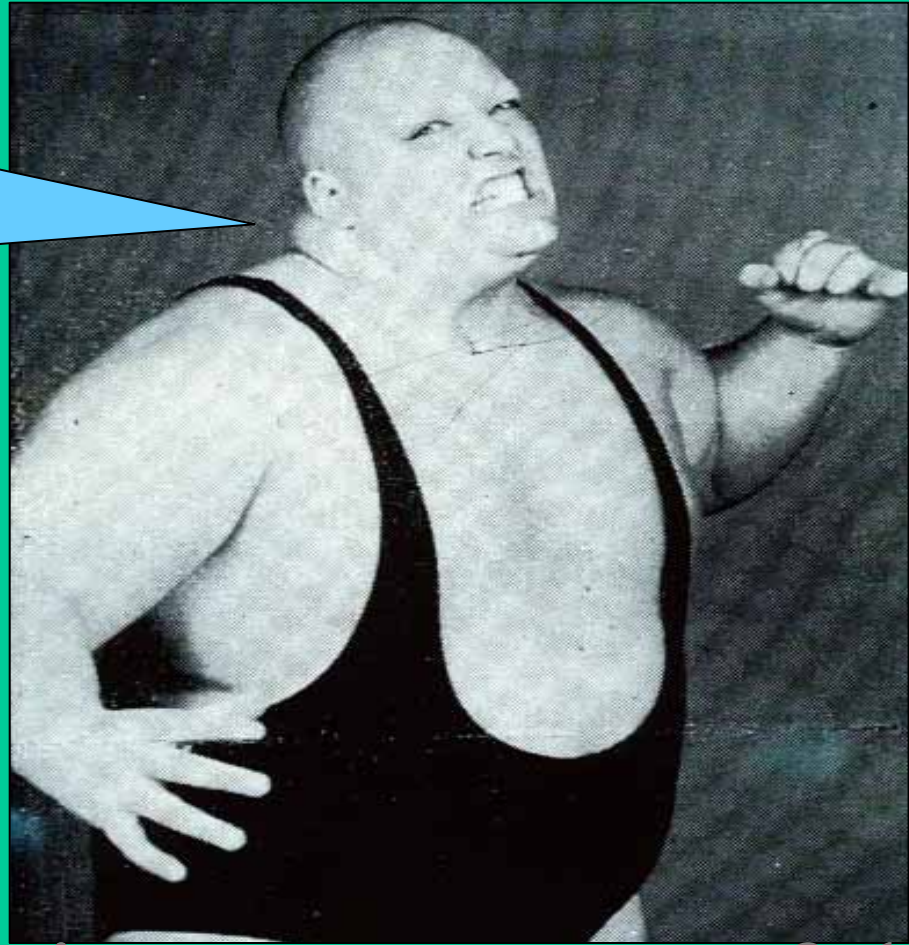
- Terminology
- RIPDES IDDE Requirements
- RIPDES Field Survey Forms
- Resources

# 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

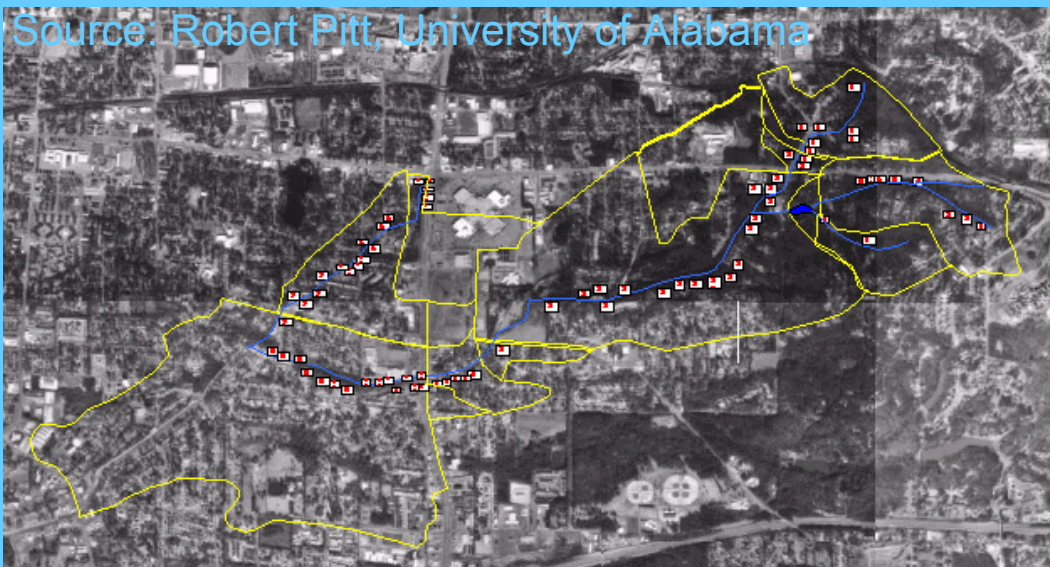
# Common IDDE Program Mapping Elements

- 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





# 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.





Look, Look!  
Signs of flow!

**Cross-Train Your Staff**

1964

# Resources

- Illicit Discharge Detection And Elimination, A Guidance Manual for Program Development and Technical Assessments (CWP and Robert Pitt, 2004)
- 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