Indiana Harbor & Canal
PROPOSED
Air and Water Quality Monitoring
During Dredging/CDF operation
Public Presentation
August 13, 2008
East Chicago, Indiana
Monitoring Guidance Document
Purpose and Goals

- **Purpose**
  - An aid for the USACE to help in this and future projects.
  - Not incorporated directly into contracts.
  - Each contractor to prepare and implement an EPP consistent with Guidance Document.

- **Goals**
  - Provide framework for water monitoring program.
    - Verify dredging not negatively impacting water quality.
  - Provide framework for air monitoring program.
    - Verify air quality at CDF perimeter is not negatively impacted.
Two Types of Media Monitored

- Air Monitoring
  - Long Term (Chronic)
  - Short Term (Acute)

- Water Monitoring
  - Oil & Grease
  - Turbidity
Water Monitoring - Turbidity

● Action Levels
  - >50 NTU above background initiates response actions
  - Monitor 600 ft upstream & downstream.
    ● Turbidity Meter or Data Sondes

● Responses
  - Increase monitoring frequency
  - Optimize dredging operation
  - Shutdown dredge operations
Relative Locations of Water Monitoring

600’ upstream

Dredge

600’ downstream
Water Monitoring – Oil & Grease

- Oil boom in place during dredge operations
- Primarily by visual observation
  - Conducted minimum of every two hours.
  - Log maintained of observations.
  - Oil collected by sorbents and disposed of at appropriate facility
Air Monitoring
Air Monitoring

- Long Term
  - Demonstrate that local air quality not adversely impacted by CDF operation.
  - Evaluate trends to make adjustments to CDF operation.
  - Similar to background ambient air monitoring

- Short Term
  - “Real-Time” monitoring
  - Data available to aid in:
    - Managing daily operation to avoid impacts,
    - Determining if air monitoring or operation should be adjusted.
Long-Term Air Monitoring

- Compliance with IDEM limits demonstrated with emissions model.
  - Air Emission Standards
    - 25 Tons per year for PM
    - 25 Tons per year for Total VOCs
    - 10 Tons per year for individual compounds
Long-Term Air Monitoring

- High Volume Sampler
  - 62 organic compounds, Metals and Particulate Matter
  - Air Monitoring Stations on CDF dikes
    - Measurements made within CDF property fenceline
    - positioned between emission sources and community
  - 24-Hour Sample Every 6 Days
  - 300 m³ of Air Sampled
Short Term Air Monitoring
Short Term Air Monitoring
Particulate Emissions

- Action Levels
  - IDEM limit of 50 μg/m³ above background for 60 minutes.
  - More stringent than the 25 ton/year limit.
  - Continuous monitor to record 15 minute averages.

- Response Actions
  - Initial exceedance triggers source investigation.
  - Second exceedance activates control measures.
    - Physical barriers
    - Chemical suppressants
    - Water spray systems
Short Term Air Monitoring
Particulate Emissions

- **Selected Monitor**
  - Thermo-Scientific Model 5030
  - Range – 0 to 10,000 μg/m³.
  - Detection Limit - <0.5 μg/m³.
  - Updated every 4 seconds.
Short Term Air Monitoring
Naphthalene Emissions

- Action Level Development
  - Based on USEPA SRA report.
    - 25 tons/year naphthalene emissions.
  - Used 5-year average wind speed of meter/second.
  - Used “breathing zone” of 2 meters.
Short Term Air Monitoring
Naphthalene Emissions

- Action Levels (Above Background) at CDF dikes
  - 24-Hour Action Level (24 hour average)
    - $< 150 \mu g/m^3$ – No Action Required.
    - $> 150 \mu g/m^3$ – Heighten awareness, use best management practices for CDF.
  - 5-Day Action Level (24 hour average)
    - $300 \mu g/m^3$ for 5 consecutive days – emission control measures required.
  - 1-Hour Maximum Action Level
    - $5,000 \mu g/m^3$ (1 hour average) – CDF disposal activities cease.
Short Term Response Action Levels

Naphthalene Concentration (ug/m³)

- USDOE: 78,645
- ACGIH: 52,430
- OSHA Limit: 50,000
- 1-Hour Maximum Action Level: 5,000
- 5-Day Action Level: 300
- 24-Hour Action Level: 150

USDOE ACGIH OSHA Limit 1-Hour Maximum Action Level 5-Day Action Level 24-Hour Action Level
Responses & Control Measures

- Applied in proportion to concentration and duration.

- May include but not limited to:
  - Notification of IDEM, ECWMD, USEPA.
  - Increasing emission control measures.
    - Physical or chemical covers
    - Powdered activated carbon
  - Modifying CDF operation to minimize emissions.
  - Temporarily ceasing dredging and disposal activities.
DOAS

- Advantages
  - Monitors Several Compounds Simultaneously
  - No Calibration Required
  - Rotates Automatically to Measure at Various Locations

- Disadvantages
  - Only Provides Average Concentration
  - Dependence on Unobstructed Line-of-Sight
  - Does Not Work Well in Heavy Fog
Selected Monitor

- **UV Sentry (UV-DOAS System)**
  - Pathlengths from 10 to 1,000 meters.
  - Detection limit in the single digit μg/m³.
  - User-friendly Microsoft-Excel based software.
  - Lightweight and easy to deploy.
ArSLID Demonstration
Thank You!

Questions?