Topics

- Construction Overview
- Facility Operations/Dredging Contract
- CDF Dam Safety
- CDF Groundwater Gradient Control
- Air Monitoring Update
Indiana Harbor & Canal

- Federal Navigation project in East Chicago, Indiana
- Identified as an Area of Concern under the Great Lakes Water Quality Agreement of 1978
- CDF has 4.8 Million CY Capacity—1.8 Million CY of this is Backlog Dredging, Remainder is future Maintenance Dredging
- Not dredged since 1972 due to a lack of suitable disposal facility for sediment
ECI Site Background

- Petroleum products refinery from 1918 to 1981.
- Produced propane, leaded and unleaded gasoline, fuel oil, kerosene, grease, oils, asphalt, paraffin wax, phenols, sulfur, and insecticides.
ECI Site Background

- In 1981 the owner Energy Cooperative Incorporated (ECI), filed for bankruptcy.
- In the late 1980’s, by court order, all buildings and above ground structures were razed. Clean topsoil covered the site.
- In 1989, the City of East Chicago became the owners for back taxes owed by ECI.
IHC CDF Site in the mid 1900’s – an active refinery
Indiana Harbor CDF

Layout consists of two cells within clay dikes.

Space on the south end for support facilities.
Previously Completed Construction Contracts

- Obstructions Removal – Pipe Removal in the Lake George Canal
- Slurry Wall – 30 ft depth around 3 sides of the site.
- Phase I and II Dikes – Perimeter Dike System
- South Cutoff Wall – Steel Sheet Pile Wall installed in the canal. Sheets vary from 50’ - 75’ in length.
Recently Constructed: Phase III Dikes

- Constructed a 1630' long exterior clay dike to enclose the CDF to current height (21')
- Constructed an interior dike to create 2 disposal cells
- Constructed two decant structures to dewater the CDF
- Installed an access road on top of the exterior dike
Recently Constructed: South End Features

- Construction included site security
- Administrative building
- Maintenance and Storage Facilities
- Parking Lot, Access Roads
- Decontamination Station
- Water main, sanitary tank, storm sewer installation.
IHC Facility Operations and Dredging

- Contract was awarded on September 30, 2011
- Joint Venture between Kokosing (Durocher Marine) and O’Brien & Gere.
- Currently doing administrative start-up. Onsite activities anticipated in Spring 2012
Contract consists of:

- Dredging up to 400,000 CY/year based on funding.
- Operation of the Gradient Control System
- Site maintenance
- Water Treatment
- Air Monitoring
- Project website for reporting air and dredging activities
Dredging and Placement

- Mechanical dredging with environmental bucket
  - Turbidity monitoring up and downstream
  - Oil booms around dredging operation

- Hydraulic off-loading with water recirculation from the CDF
  - Real time air monitoring, dockface air monitoring
  - Emissions controls at the CDF as needed
Mechanical Dredging
Close shot of Liberty offloader shows Liberty snorkel as it is lowered into scow 6 to begin offloading operations.

Hydraulic off-loading
IHC CDF Operation

- **Ponded** CDF (not dewatered during dredging seasons)
  - Reduces volatile emissions
  - Eliminates particulate emissions
  - Improves quality of water in CDF
  - Reduces amount of water to be treated
Tentative Schedule

- First dredging event in summer 2012
- Each dredging event may be 2 – 6 months depending on funding
- Year round activities at site: water treatment, air monitoring, gradient operation
Technology Issues Update
Dam Safety Overview

- USACE oversees over 650 dams nationwide
- The USACE Dam Safety Program ensures all dams are designed, constructed, and operated safely and effectively under all conditions
- USACE works with a variety of federal, state, and private dam safety officials to build and maintain the Dam Safety Program
- Emphasizes training local personnel on the issues specific to their dam
- This holds the CDF accountable to stringent inspection and operational standards
On Site Dam Safety Activities at CDF

- Weekly Inspections by Contract Personnel
- Monthly Analysis of Project Instrumentation
- Annual Inspections by USACE Personnel
- Communication Plans
- Site Training
Dam Safety Communication

- Communication plans should an emergency occur
  - Emergency Action Plan – an internal notification plan to quickly transmit information from the site to USACE officials
  - Coordinated with local emergency responders (East Chicago EM, Police, & Fire Dept.)
  - Practiced internally so all on site personnel are familiar with emergency procedures
Preventing/Controlling an Environmental Emergency

- Regular inspections of CDF condition
- Frequent monitoring and surveillance of instrumentation
- Staff training
- Controlled inflow of water
- 2 cells provide easier water management
- Ditches on surface drain water towards the canal
- Cline Ave support wall prevents flow to north
- Site topography would direct water to the south
CDF Groundwater Gradient Control
Gradient Control System

- The Gradient Control System is a mechanical system to draw groundwater to the CDF.
- System of wells, pumps, and piping all below ground surface.
- Required to keep groundwater on site 2 feet below groundwater off site to contain existing contamination.
How the Gradient System Works

Step 1- Trap Groundwater on Site
Step 2- Pump Water from Wells
Step 3- Monitor Water Levels
Where does Groundwater Go?

- Wells direct water into pipes around the site
- The pipes lead to two large pump stations
- The pump stations pump water to a treatment facility on site
- The treatment facility treats the water and releases it in the canal
What do the groundwater levels look like now?
Gradient Control Statics

- Working since June 2010 to lower groundwater
- 144 million gallons of groundwater pumped and treated from June 2010 – September 2011
- Average daily pump rate is 160 gpm
Air Monitoring Update
Ambient Air monitoring

- Was 2 locations (south side and high school)
- Going back to 5 locations:
  - All four sides of CDF, on top of dikes
  - High school (same location)
- Same monitoring parameters: volatile compounds, particulates, metals, semi-volatile compounds
- Data still to be posted on Argonne website:
  https://web.ead.anl.gov/inharbor/data/analysis/publicTables/index.cfm?p=1

Or access through project website:
Ambient Air Monitoring Station
New Air Monitoring Activities

- Real Time Air Monitoring
  - Purpose is to determine what is emitted from the CDF, and what controls are needed
  - Naphthalene (surrogate for all volatile compounds)
  - Particulates
  - Data will be posted on a website (in development)
  - Anticipated to start in the spring (will start prior to dredging)
New Air Monitoring, Continued

- Dock face monitoring using a Photo-ionization detector (PID)
  - Intended to determine if there is any impact from barges parked along the south side of the site during sediment handling
  - Will measure total volatile compounds (from all sources in the area)
  - “Point” measurements (not continuous), measurements will be posted on website with real time measurements
Photo-ionization detector (PID)
Questions? Comments?

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