Kingston Ash Recovery Project

Non-Time-Critical Removal Update

February 24, 2011

Then & Now

December 23, 2008

January 24, 2011

Major Accomplishments

- ✓ **Swan Pond Circle Bridge / Underpass & haul road construction complete**
  - Opened to local traffic 11/10/2010

- ✓ **Time-critical ash railroad shipments**
  - Complete 12/1/2010
  - 414 trains & more than 4 million tons

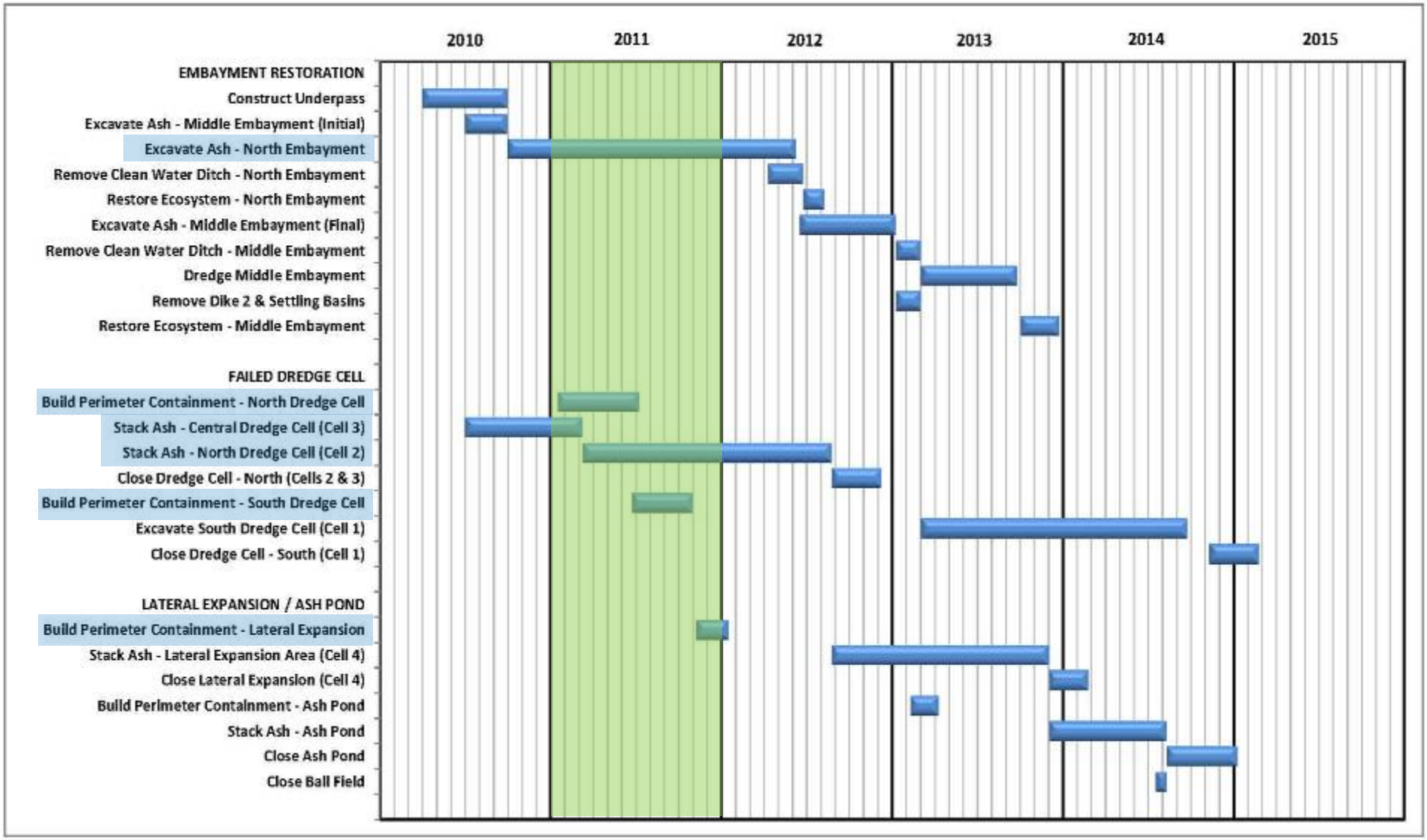
- ✓ **Skimmer wall construction**
  - Complete 12/2/2010

- ✓ **Utility Installations complete**
  - Complete 01/2011

Safety

- ✓ Program continues to meet or exceed standards of quarterly audits by EPA & Coast Guard
- ✓ Injuries continue to decline
- ✓ Our goal is to be injury free
- ✓ Recordable injury rate near Top 10-percentile of construction projects

Non-Time-Critical Schedule



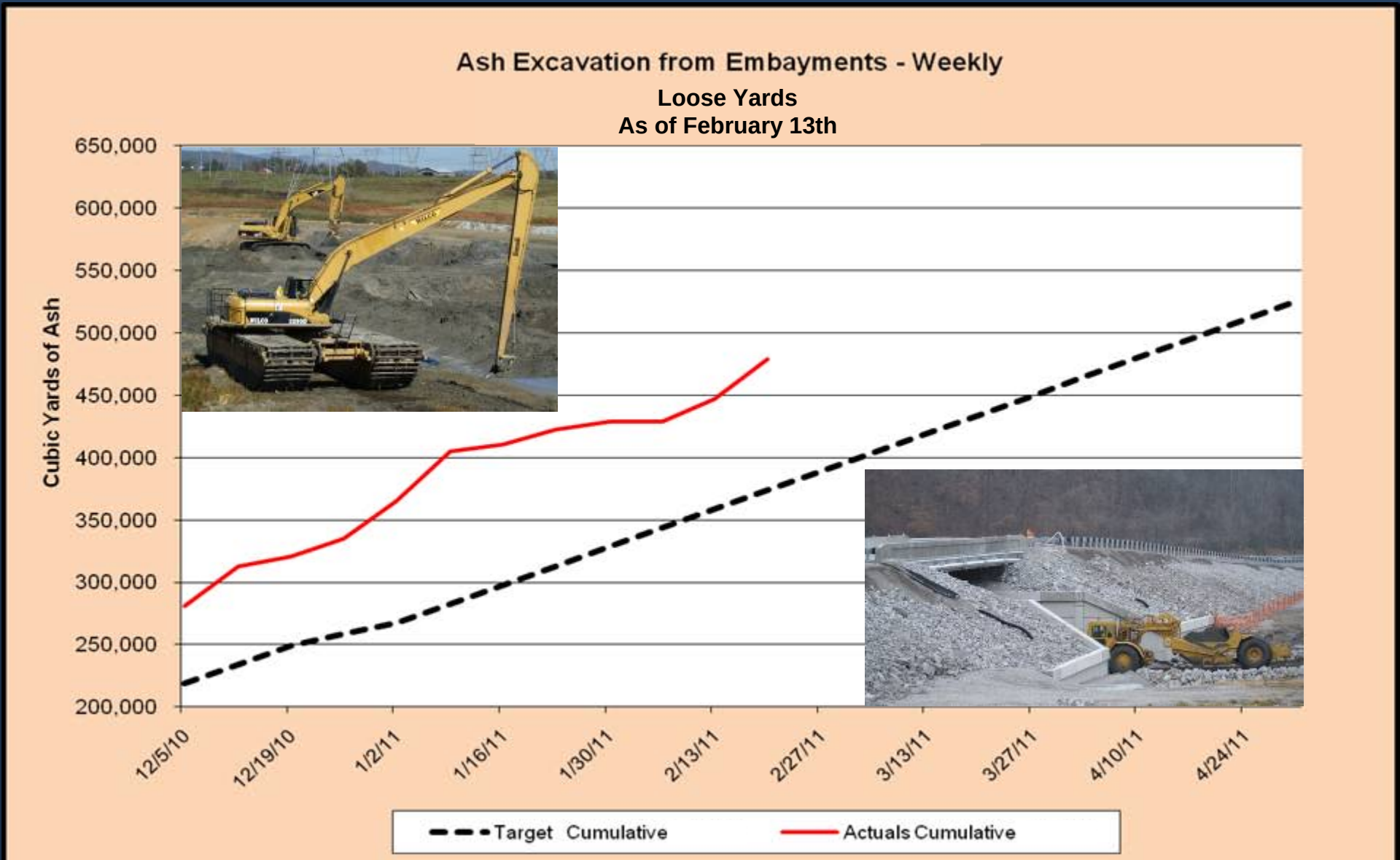
Current Activities

- **Excavation & hauling**
  - North Embayment
  - Middle Embayment
- **Drying Material**
  - Windrowing
  - Lime Treatment Operation
    - Ash Processing / Ball Field
- **Stacking**
  - Central Dredge Cell
  - North Dredge Cell
- **Perimeter Containment Wall**
- **River System Sampling & Analysis Plan**
- **Air & surface water monitoring**

Ash Excavation & Hauling

- **Swan Pond Circle Bridge/ Underpass & haul roads open**
- **No impact on local traffic**
- **Approximately 470,000 loose CY of 2.8 million CY from north & middle embayments through Feb. 2011**
- **Hauling:**
  - To short-term storage:
    - West storage
    - Lateral expansion
    - Ash processing / ball field
  - To long-term storage:
    - Central dredge cell
    - North dredge cell

Ash Excavation & Hauling



Ash Stacking

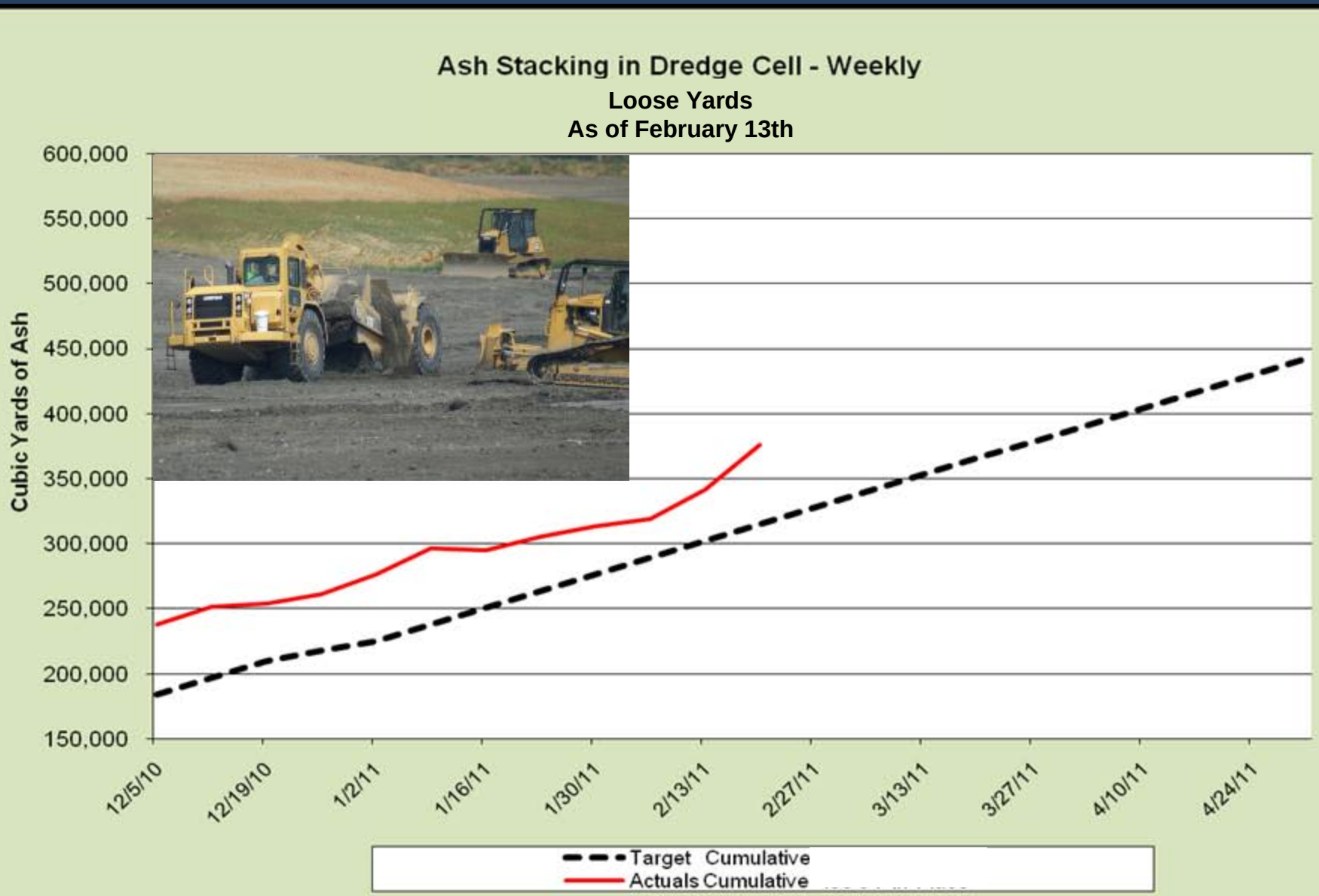
- **Drying material (as needed)**
  - Windrowing
    - West storage
    - Lateral expansion
  - Lime Treatment Operation
    - Ash Processing / Ball Field

- **Dust control measures**
  - Water trucks (haul roads)
  - Paper mulch (unworked areas)
  - Mist (lime treatment operation)

- **Central & North Dredge Cells**
  - Stacking
    - Approx. 374,000 loose CY volume stacked
  - Contouring

- **Instrumentation**
  - Compaction
  - Pore pressure (piezometers)
  - Vertical settlement (Inclinometers)

Ash Stacking

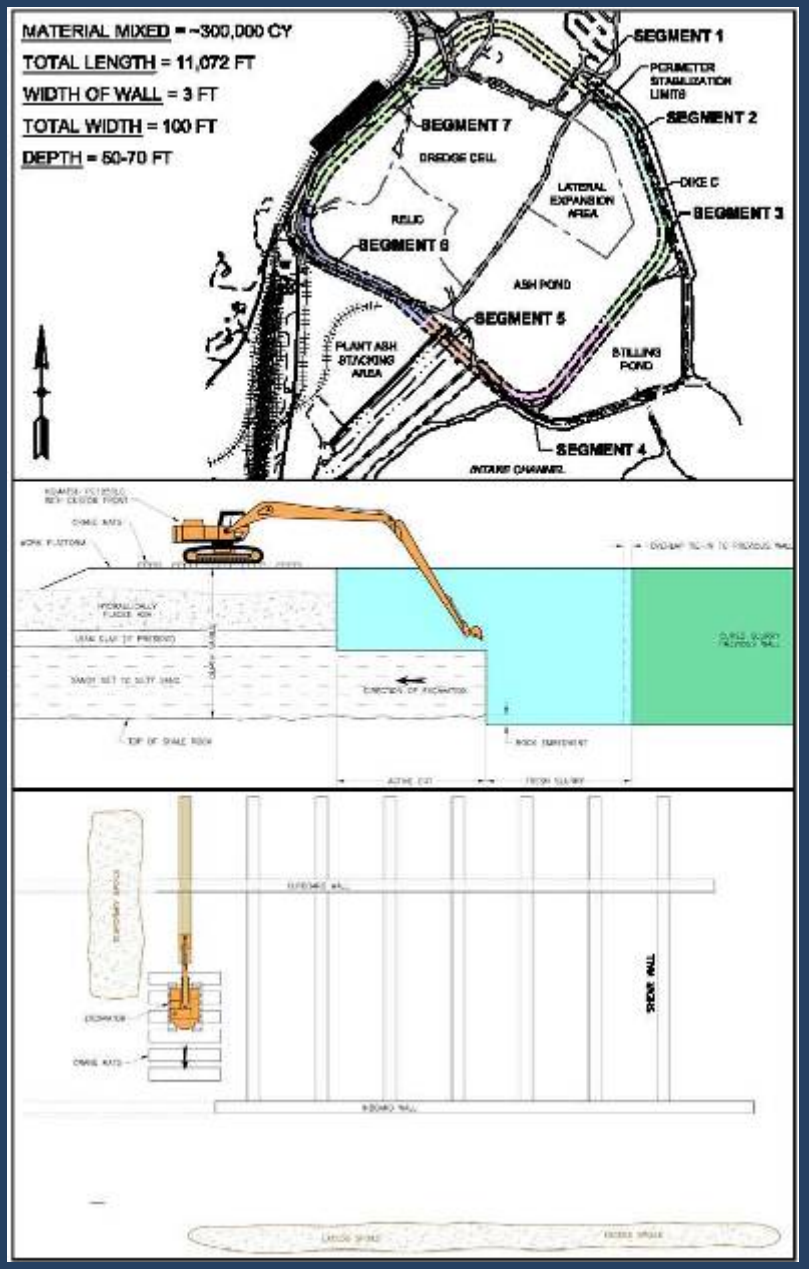


Perimeter Containment Wall

- **Perimeter Containment System**
  - Designed to withstand earthquake
  - 11,500 linear ft.
  - 50-70 ft deep – keyed into bedrock
  - Contract award pending

- **Demonstration project**
  - 100 ft. section
  - Begins March 2011

- **Full scale work**
  - Anticipated to begin Summer 2011



Dike C Buttress

- **Reinforcement of Dike C**
  - 3,332 feet complete to date
  - Approximately 60% complete

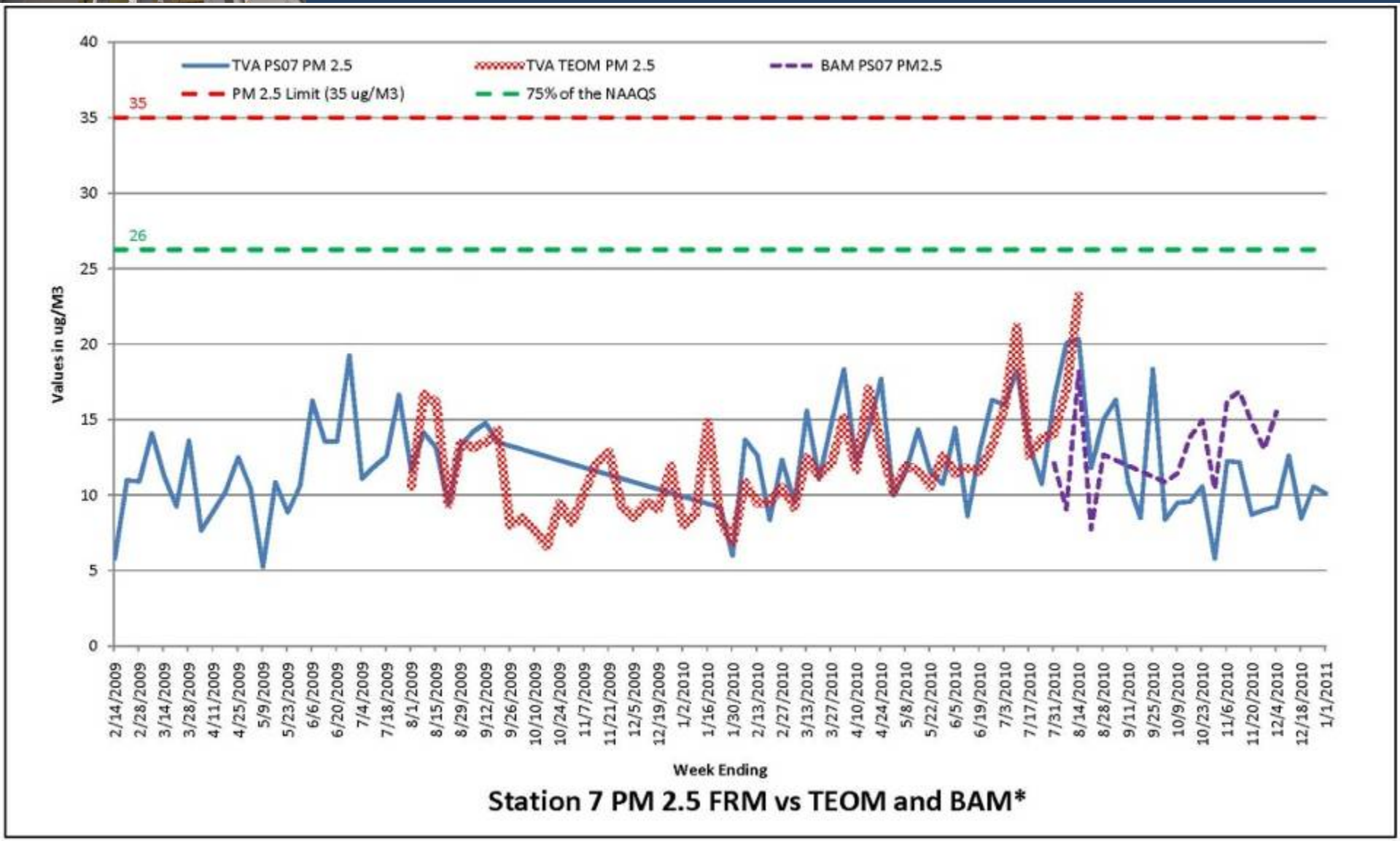
- **Dike C Buttress Work Plan Segment A**
  - Dike reinforcement along KIF Plant Intake
  - Public Comment Period thru March 10

- **Plant Intake Bridge**
  - Demolition to clear area for Dike C reinforcement construction

Air Monitoring

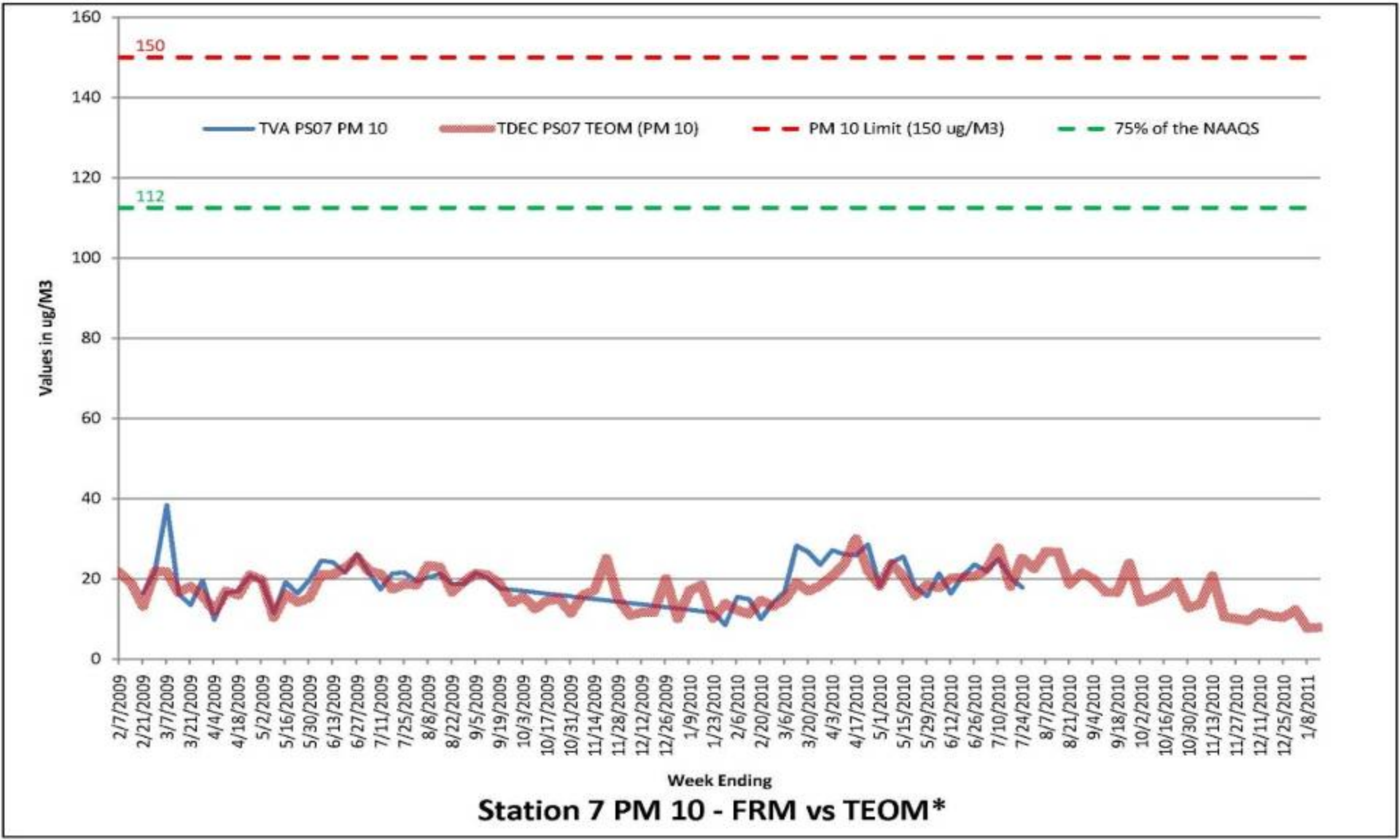
- **Real-time air monitors (5 stations)**
  - 2 TEOMs (PM 2.5 & 10)
  - 5 BAMs (PM 2.5)
  - 1 FRM (PM 2.5)
- **Quarterly EPA Ambient Air Monitoring audit**
  - No findings

Air Monitoring



Station 7 PM 2.5 FRM vs TEOM and BAM*

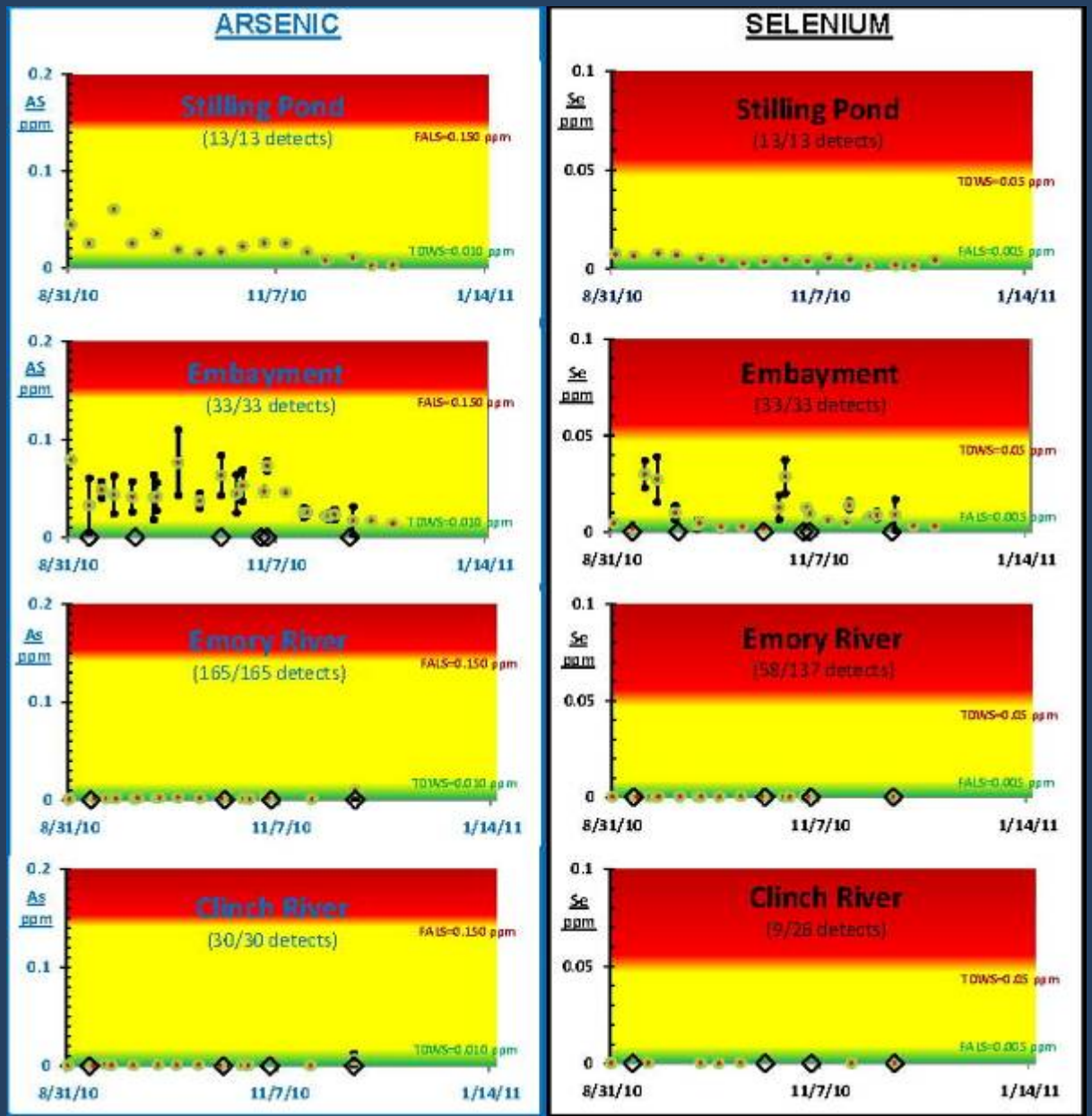
Air Monitoring



Surface Water Monitoring

- 3 on-site locations sampled 1/week
- ISCO automated samplers (rain events)
  - 3 locations on Emory River
  - 2 locations on Clinch River
  - 1 location on-site (clean water ditch)

Surface Water Monitoring



River Sampling & Analysis Plan

Completed Field Work – *Data undergoing validation and review*

- Fixed surface water sampling
  - 8 weeks, 5 locations
- Ground water
- Tennessee & Clinch
  - Submerged sediment
  - Ash deposits
- Clinch & Emory seasonally-exposed sediment
- Biota sampling
  - Fish
  - Benthic invertebrates
  - Bird eggs / hatchlings
  - Amphibians
  - Turtle blood & toenails

Ongoing Field Work

- Clinch & Emory
  - Submerged sediment
  - Ash deposits
  - Sediment pore water sampling
  - Biological assay

Future Field Work

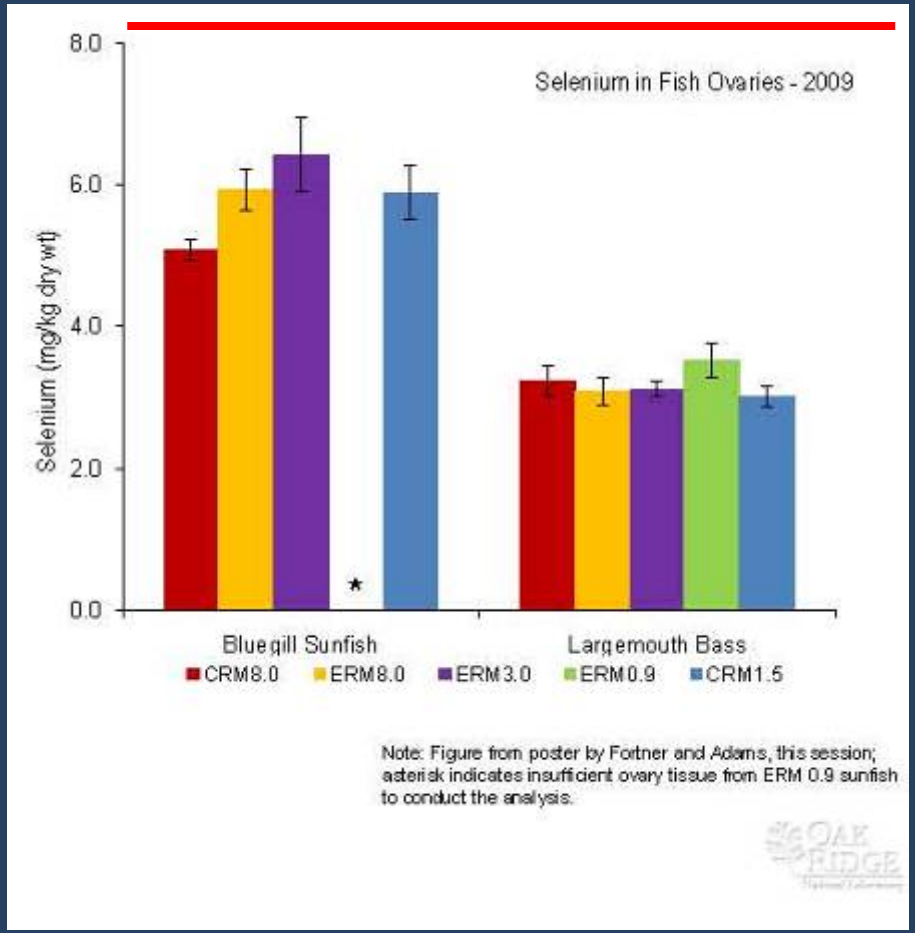
- Aquatic vegetation

Some data is available and can be found at www.tva.gov/kingston/presentations/setac2010 & www.epakingstontva.com

Greeley and Adams (ORNL) Data

preliminary

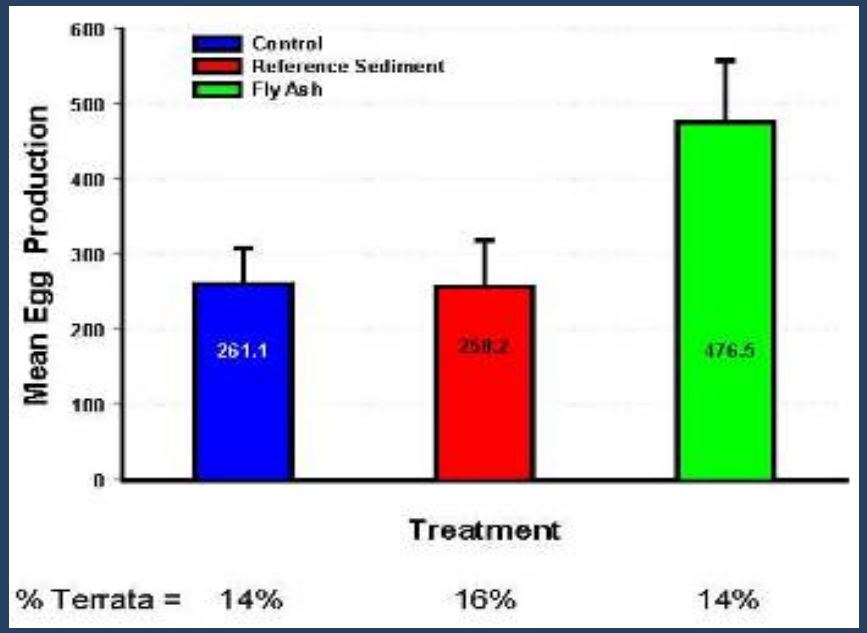
- Current selenium concentrations in fish ovaries from the Emory and Clinch Rivers remain ***lower than 10 mg/kg threshold*** for reproductive impacts

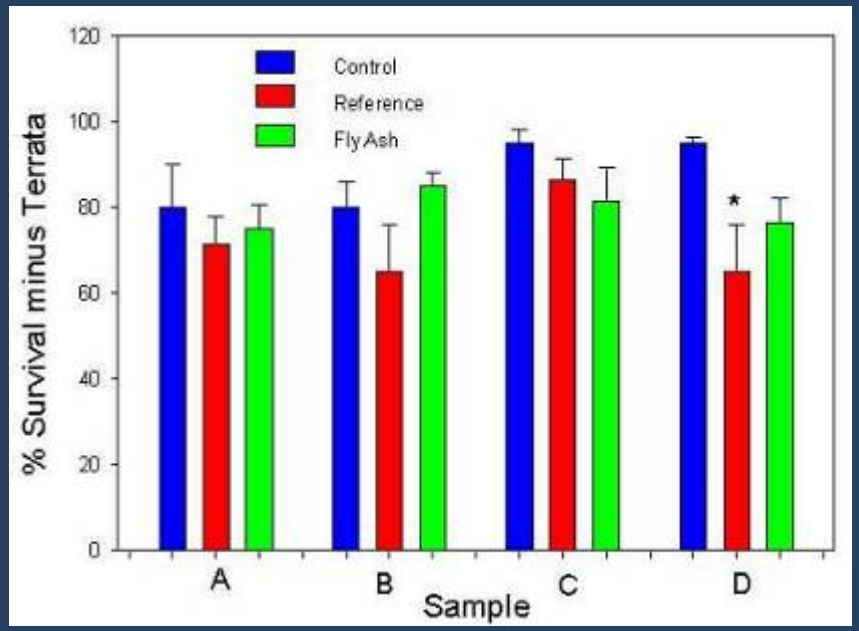


Greeley and Adams (ORNL) Data

preliminary

- Direct contact to fly ash: ***no apparent adverse effects*** on 7-day fathead minnow embryo-larval development or adult survival rates

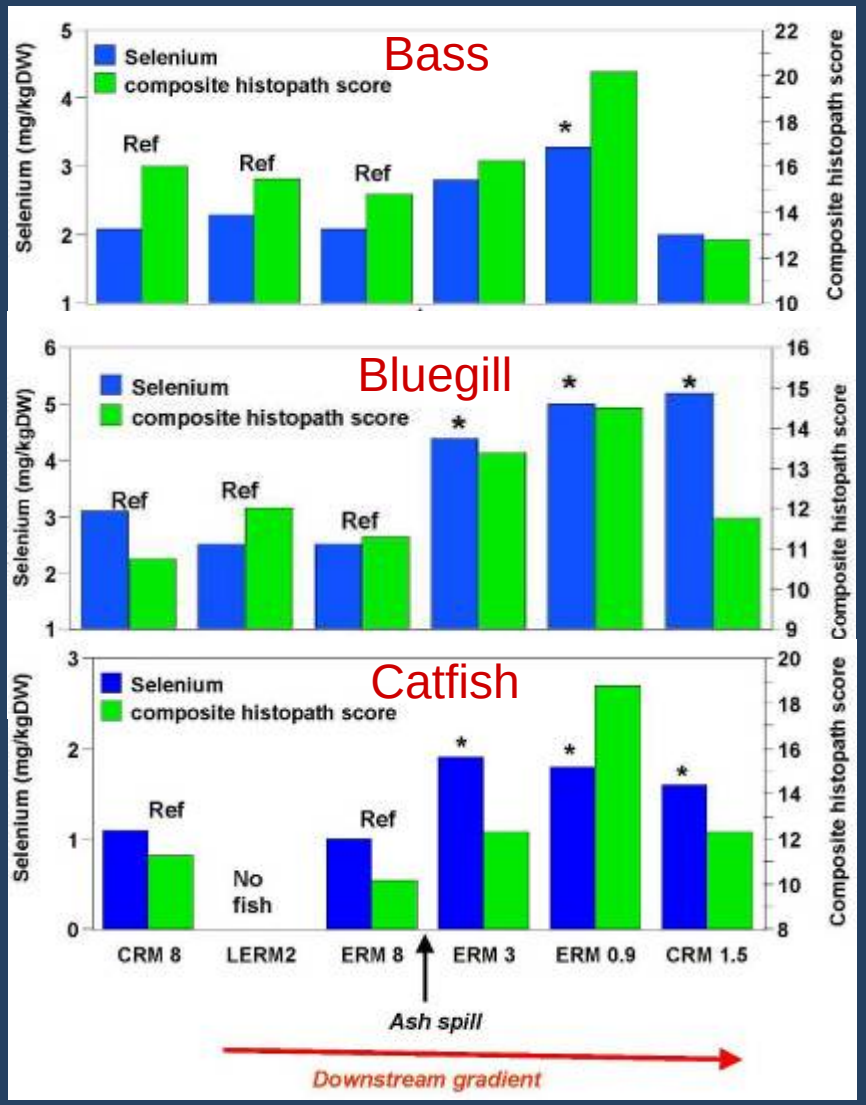




Baker (TVA), Adams/Greeley (ORNL) Data

preliminary

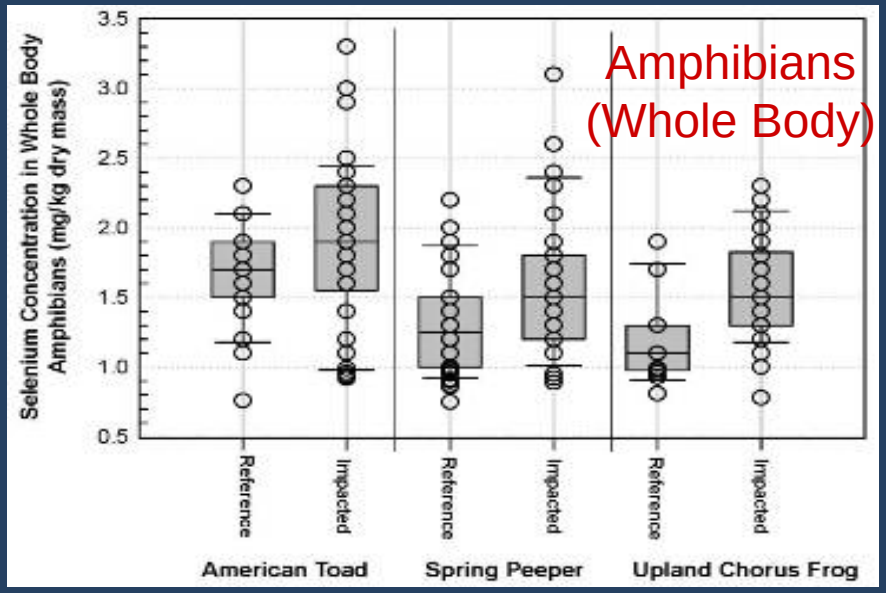
- Health of fish immediately below the ash spill ***appears to be compromised*** to some degree
- Effects appear to be ***localized to a small area*** and to resident species

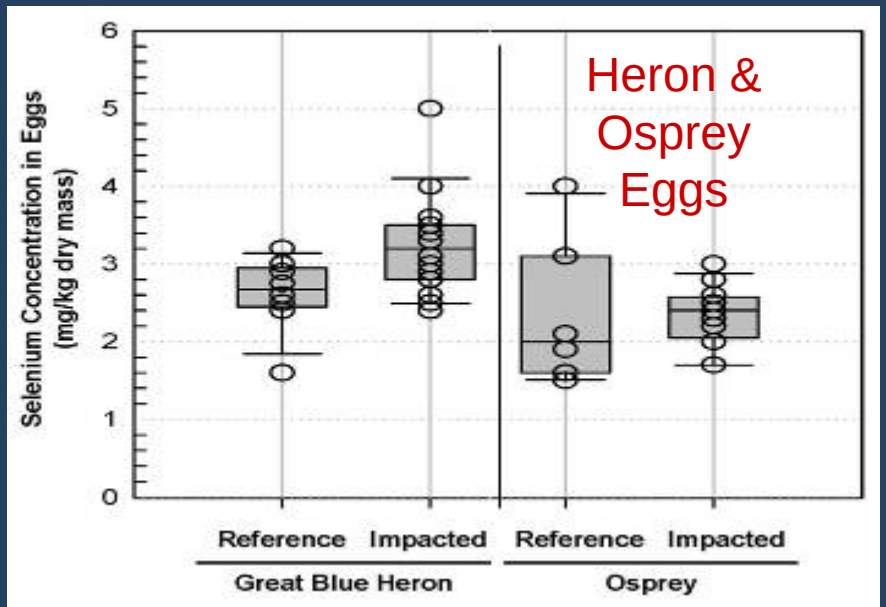


Hopkins (Virginia Tech) Data

preliminary

- ***Selenium*** elevated in tissues of most wildlife species evaluated
- Full scale ***physiological-reproductive studies*** of tree swallows and turtles will determine whether exposure to trace elements has adverse effects





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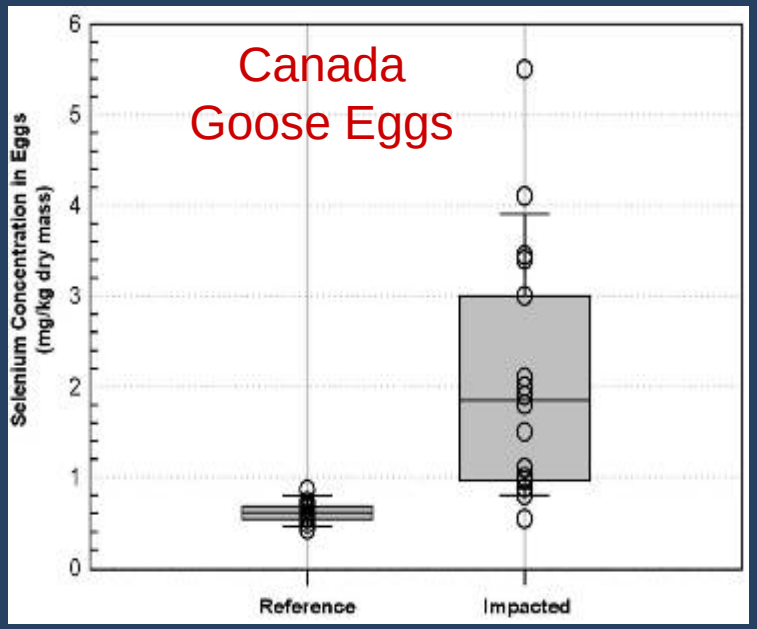

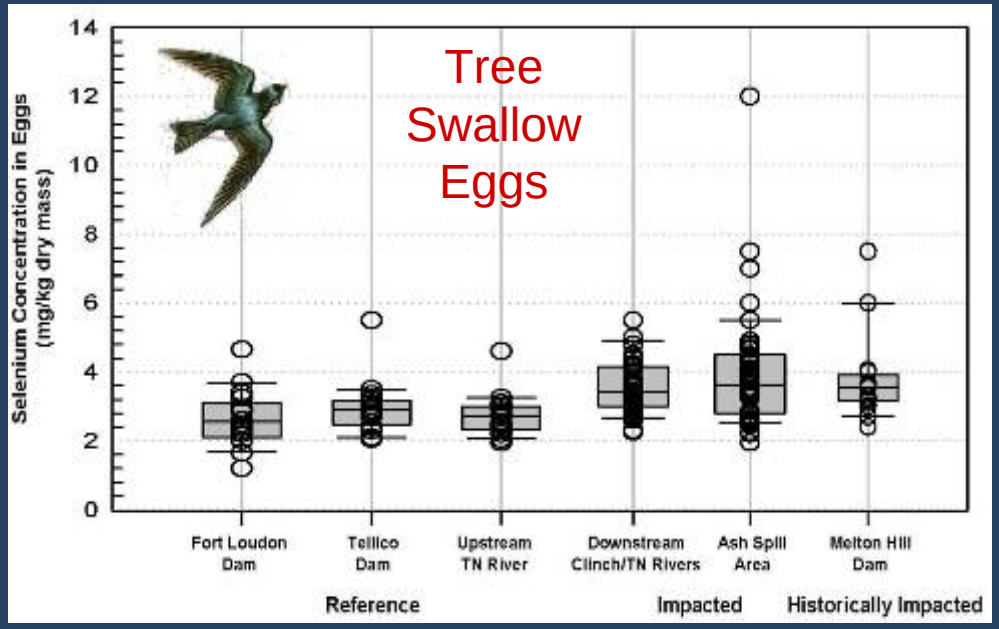

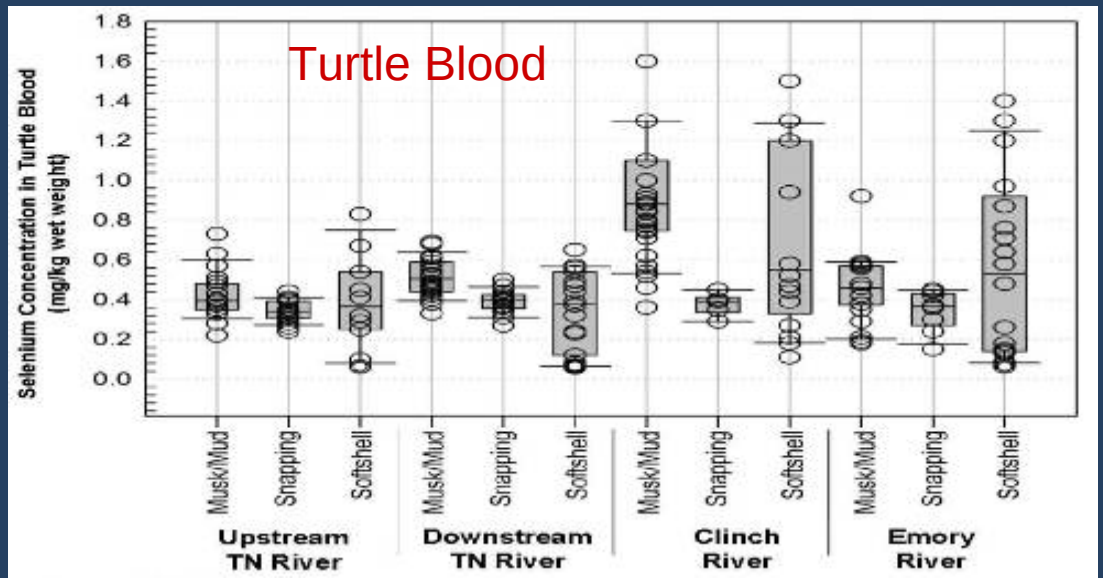

Coming Up Next….

- Continue ash excavation & stacking
- Perimeter Containment System Demonstration Project – March 2011
- Full scale Perimeter Containment construction – Summer 2011
- Complete River System Sampling Analysis Plan activities – Fall 2011
- Phase III Action Memo – 2012
- Questions?