New Jersey Maritime Resources

The Use of Sediment Decontamination Technologies for the Management of Navigational Dredged Materials

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Society of American Military Engineers
Newark, NJ

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PORT OF NEW YORK AND NEW JERSEY

- 15 Million People
- Largest Port on East Coast
- Largest Petroleum Port
- Naturally Shallow, 250 miles of engineered waterways
- 4-7 mcy/year dredging
- Oldest Industrialized Watershed
- 2-4 mcy/year contaminated sediment

Regional Dredged Materials Management Plan (DMMP)

- Reduce Need to Dredge
- Reduce Contamination
- Beneficially use as much as possible
- Dispose of only what cannot be used

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Beneficially use as much as possible

- Options
  - Construction Aggregate/Beach Replenishment
  - Fill Material
  - Capping Material
  - Remediation Material (HARS)
- Economics ($5/cyd - $47/cyd)
- Health and Safety
- Capacity and Throughput

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Sediment Decontamination

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Sediment Decontamination Program for the NY/NJ Harbor

- Program initiated in 1992 at EPA
- WRDA Bench Scale Testing
- Port Authority Matrix
- WRDA Pilot Program
- OMR Pilot Program
- $40 million in Federal and State resources, combined with private investment

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Decontamination Program Goals

- Decontamination vs. stabilization
- Suitable for navigational dredged material
- Cost competitive with alternatives ($29/cy)
- Match dredging throughput (5,000 cy/day)
- Moderate to high capacity (500K cy/yr)
- Produces value-added product
- Unlimited capacity as needed

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NJMR Decontamination Program

- Request for Proposals 3/98
- Technical Review Committee Recommendations
- Dredging Project Facilitation Task Force Interviews
- Two phases: small scale pilot and larger scale demonstration
- Pilots initiated in summer 2000 with Newark Bay dredged material

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NJMR Success Criteria

- Produce product that meets environmental criteria for intended use
- Cost competitive
- Ability to process or store up to 5,000 cyd/day to support current dredging operations
- Annual plant capacity of 500,000 cyd/yr

Decontamination Technologies

- NUI Environmental~Chemical Oxidation; Manufactured Soil
- BEM Systems~Georemediation®; Manufactured Soil
- ENDESCO Clean Harbors~Rotary Kiln; Blended Cement
- JCI/Upcycle~Rotary Kiln; Lightweight Aggregate
- BGW~Biogenesis® Sediment Washing; Manufactured Soil

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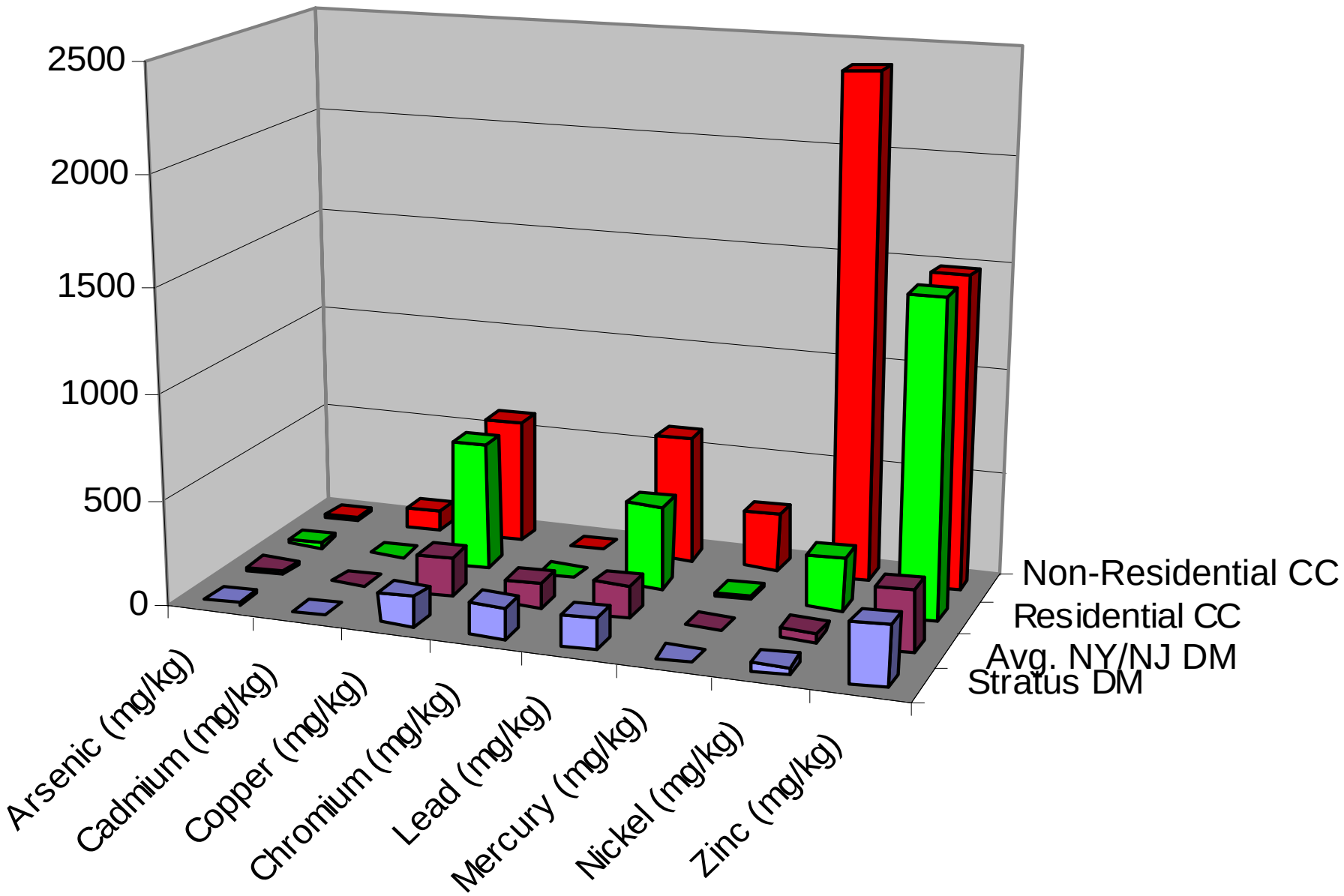
Chemical Makeup of NY/NJ Navigational Dredged Material



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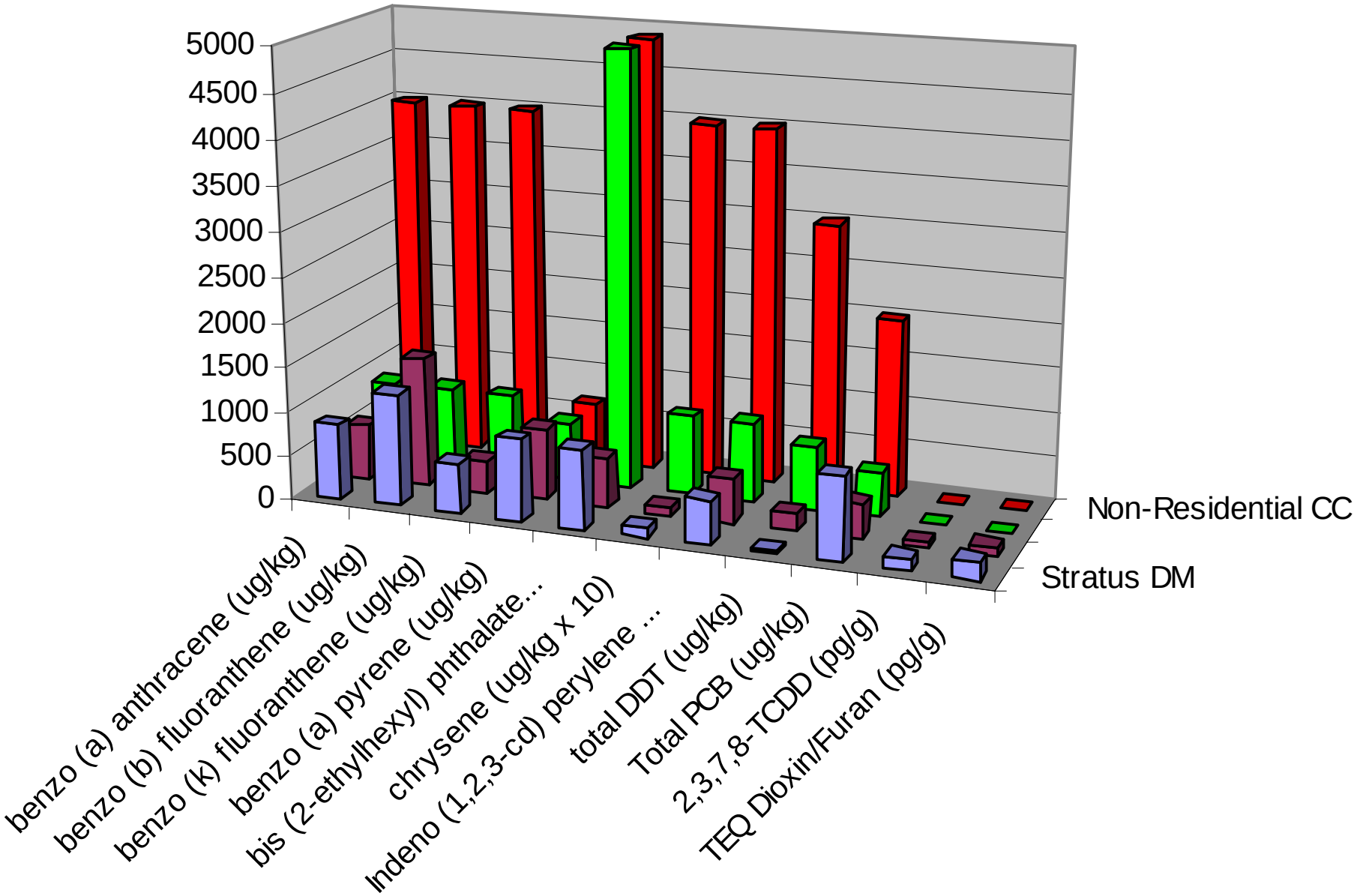

NUI Environmental Group

- 800 gallon pilot
- Chemical oxidation with $KMnO_4$ and super-ionized water
- Production of base for manufactured soil product
- Pilot completed, report final and available on website
- Meets environmental criteria, engineering criteria not evaluated
- 7500 cyd demo planned for 2003

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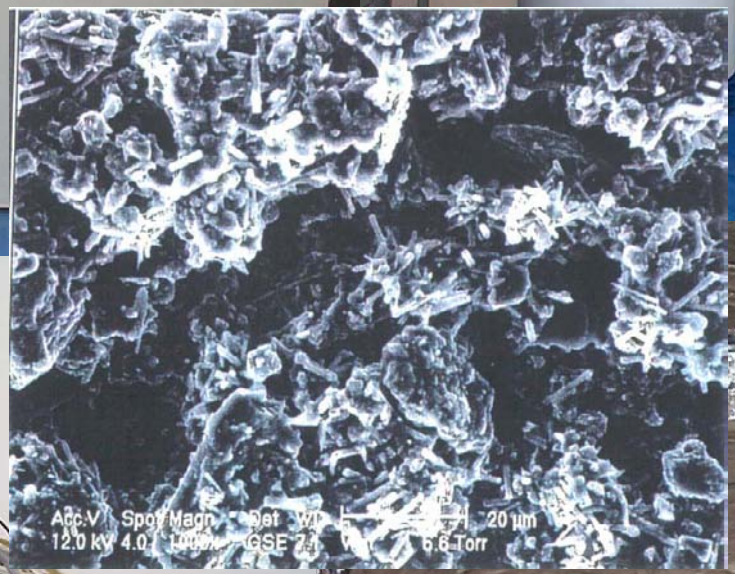
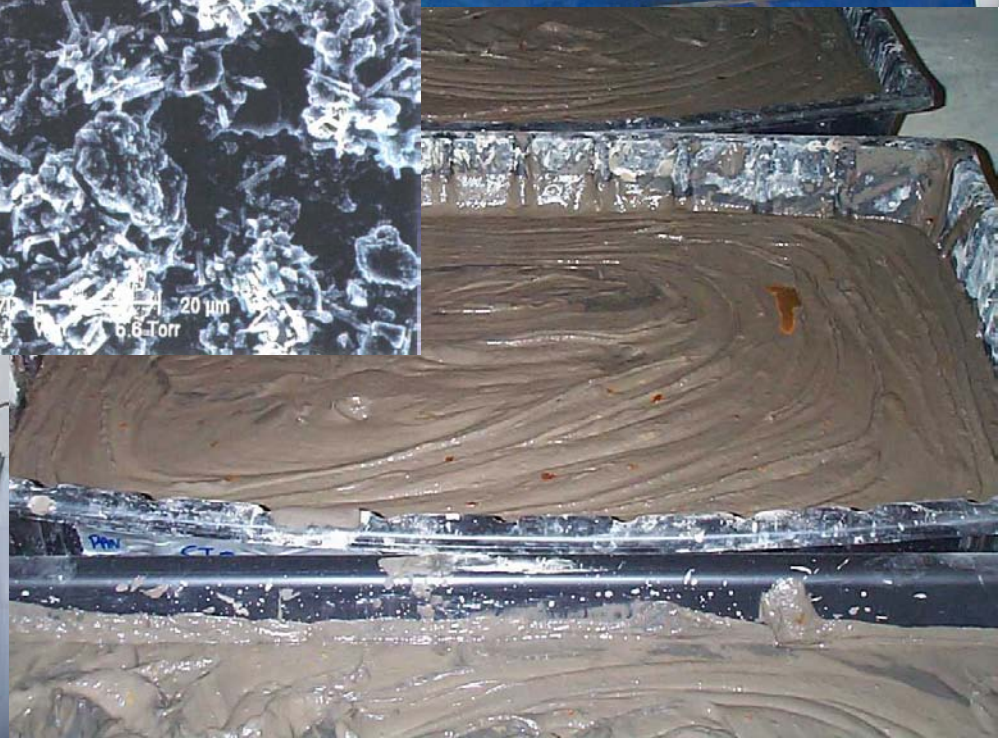
BEM Systems, Inc





BEM Systems, Inc.

- Georemediation (oxidation and enhanced mineralization)
- 600 gallon pilot, bench scale
- Production of manufactured soil product
- Pilot completed in 2002
- Unable to meet NJ SCC goals, inconsistent treatability
- Increased leachability of Arsenic, Lead and pesticides
- Demonstration level test not planned

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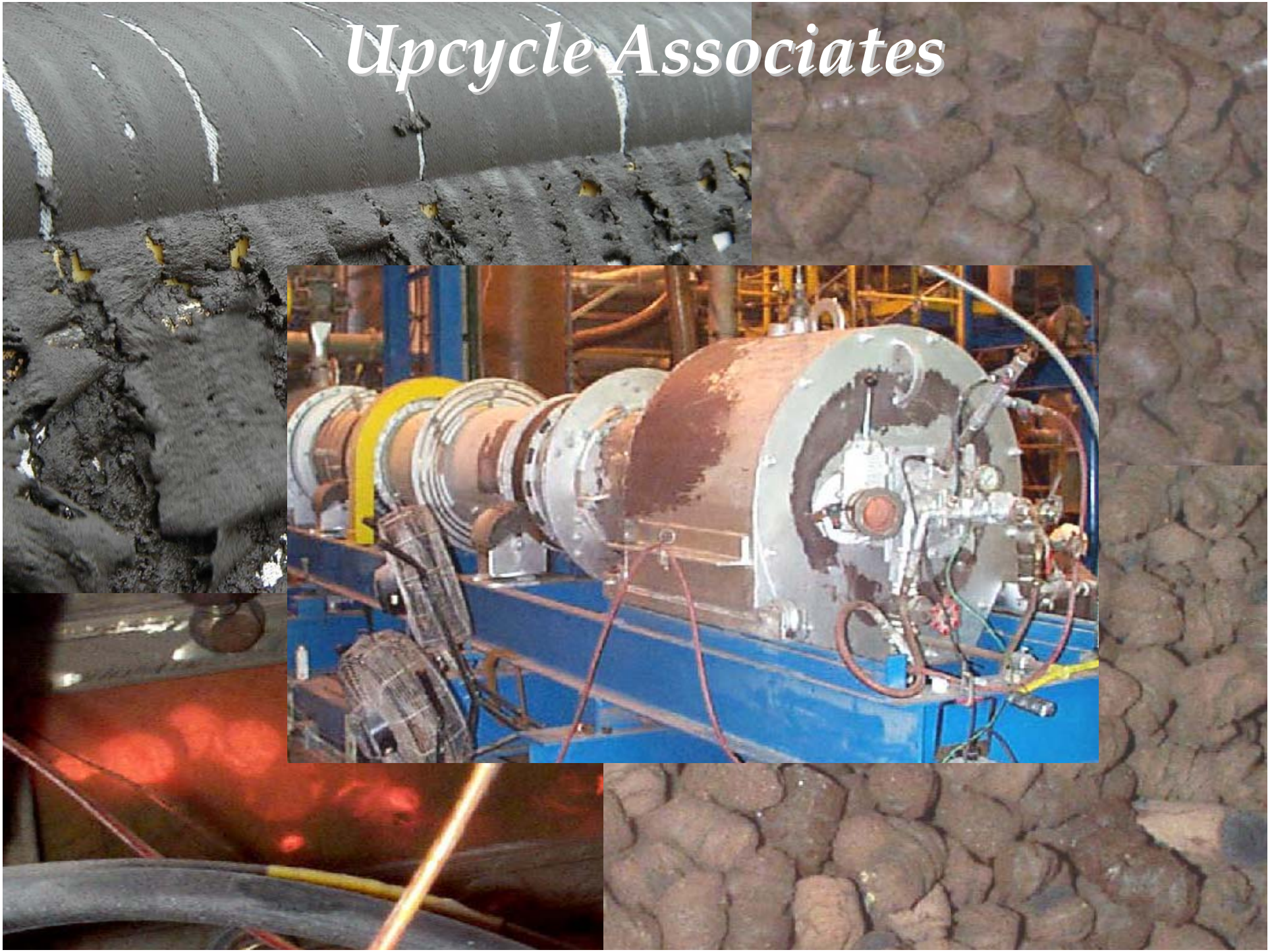
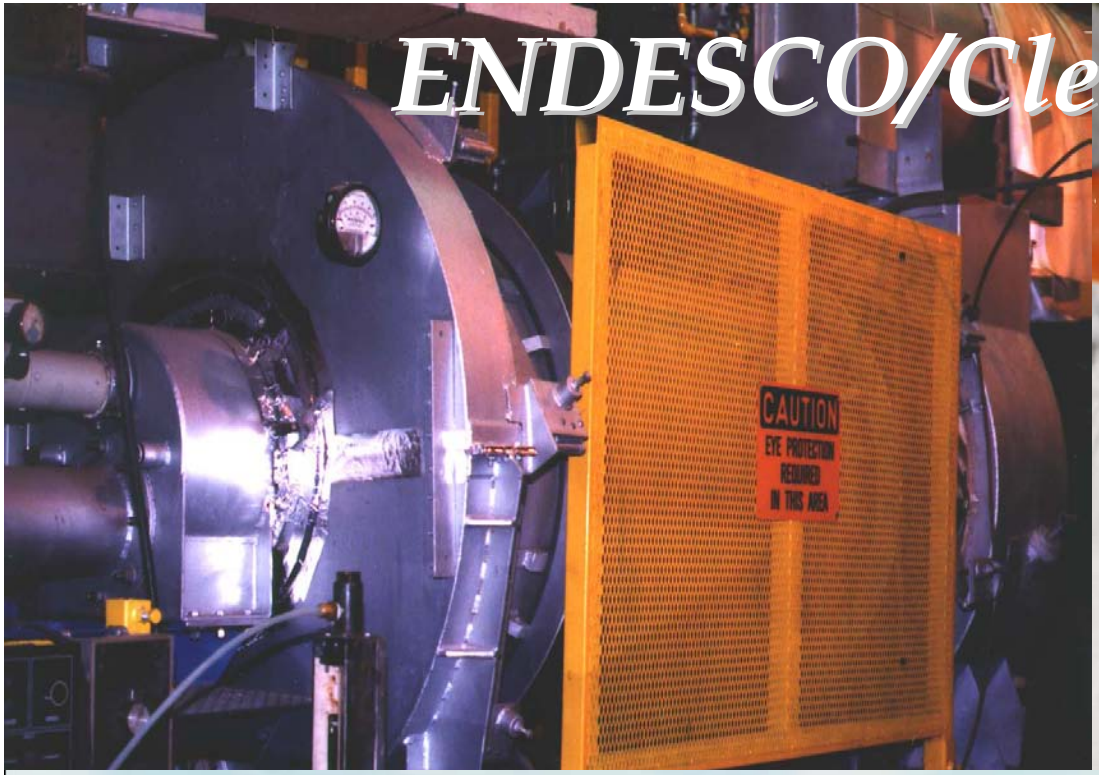
Upcycle Associates



Upcycle Associates, LLC

- Two-part pilot
  - Belt press dewatering at Stratus (500cy)
  - Fuller Test Kiln in Bethlehem, PA (4cy)
- Produced lightweight aggregate for construction
- Meets all regulatory and engineering criteria

ENDESCO/Clean Harbors



ENDESCO/Clean Harbors

- Can handle very contaminated materials
- Kiln, not incinerator (2500° F)
- Must meet strict emission requirements
- Produces "Ecomelt" for blended cement
- 300 ton pilot about to be initiated
- De-watered material from Upcycle pilot
- IMTT site in Bayonne, NJ

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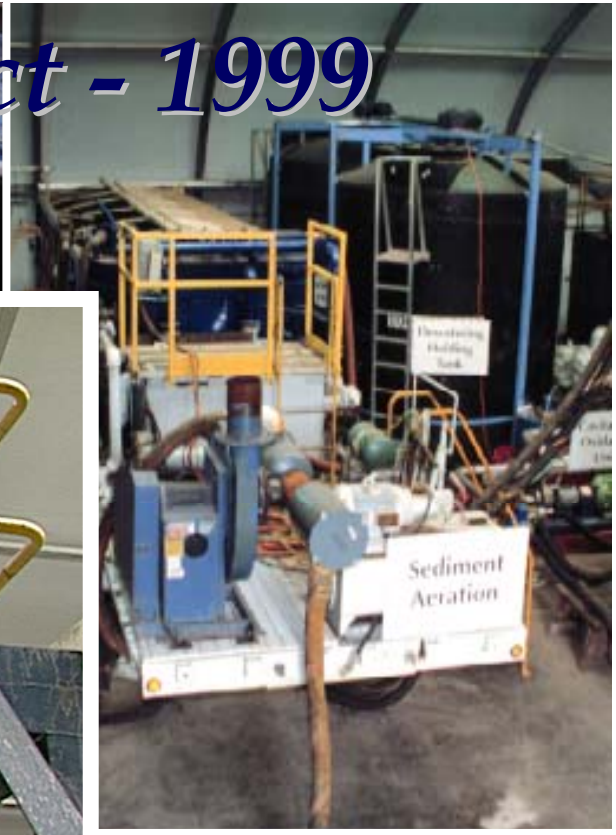
ECOMELT® Generator
on Trunnion Supports
Flue Gas
Quencher
(Bottom
Section)
IMTT-Bayonne Demonstration Site
September 20, 2002

BioGenesis Pilot Project - 1999

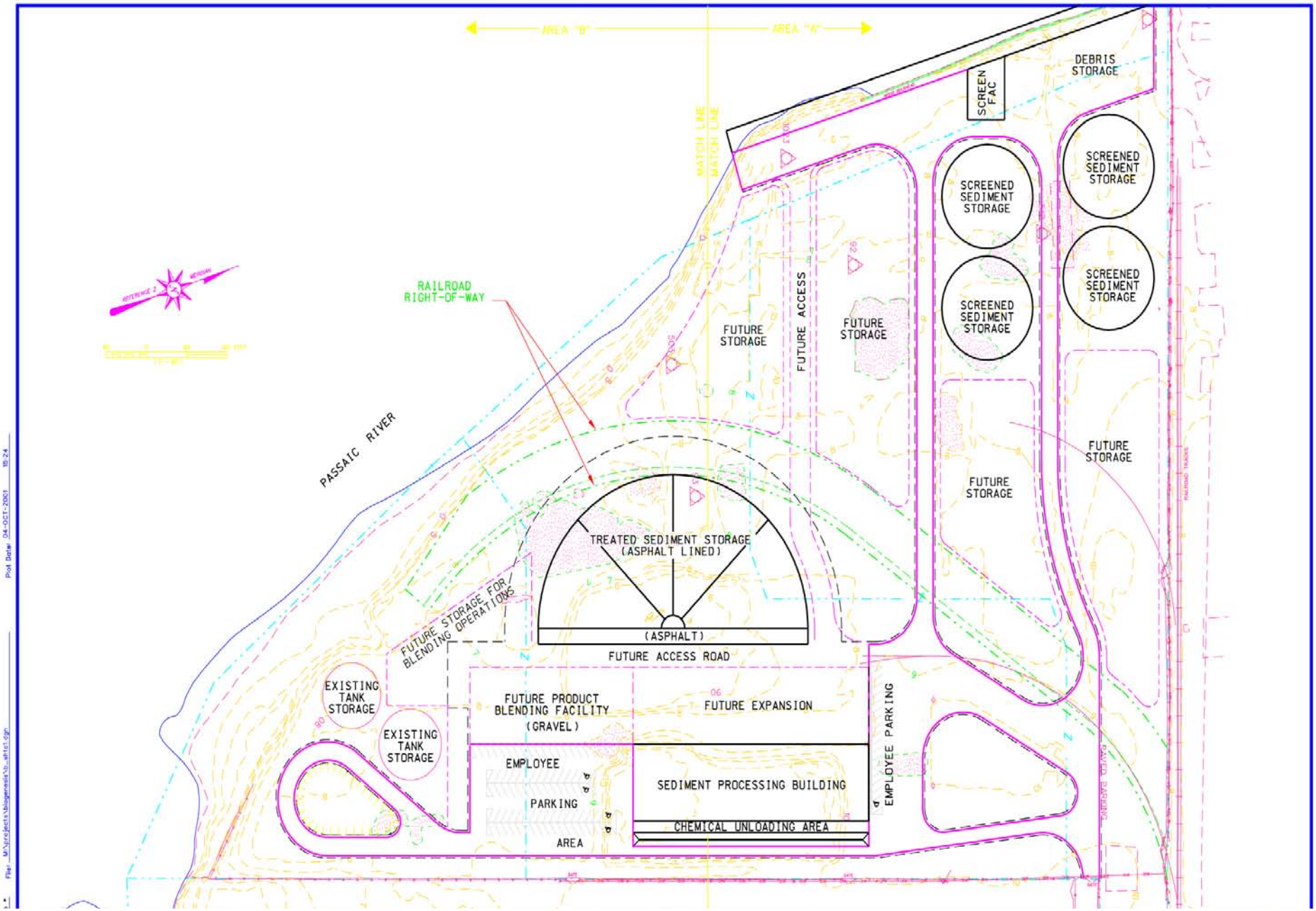


BioGenesis/Montgomery Watson

- Production of manufactured soil products
- Winter/Spring 1999 successful pilot
- BASF site in Kearny, NJ
- 250,000 cyd/yr plant
- 20,000 cyd demonstration
- 55,000 cyd full scale

BioGenesis Soil Washing System

BASF Site, Kearny, NJ



BioGenesis Site Plan

Public Outreach

- Not where we work, play or pray
- WRDA/Rutgers Educational Outreach
- Public Comment on Acceptable Use Determinations
- Public Comment through NEPA process
- Case-by-case outreach as needed

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Looking to the Future: Environmental Dredging

- "Hot" Channels (Passaic River and Gowanus Canal)
- Off channel hot spots (outfalls and depositional areas)
- Mass Removal
- Economic Restoration
- Environmental Restoration

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Visit us at
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