

New Jersey Maritime Resources

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

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*RTDF Sediment Remediation Action Team Meeting
Baltimore, MD*



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**



Beneficially use as much as possible

■ Options

- Construction Aggregate/Beach Replenishment
- Fill Material
- Capping Material
- Remediation Material (HARS)

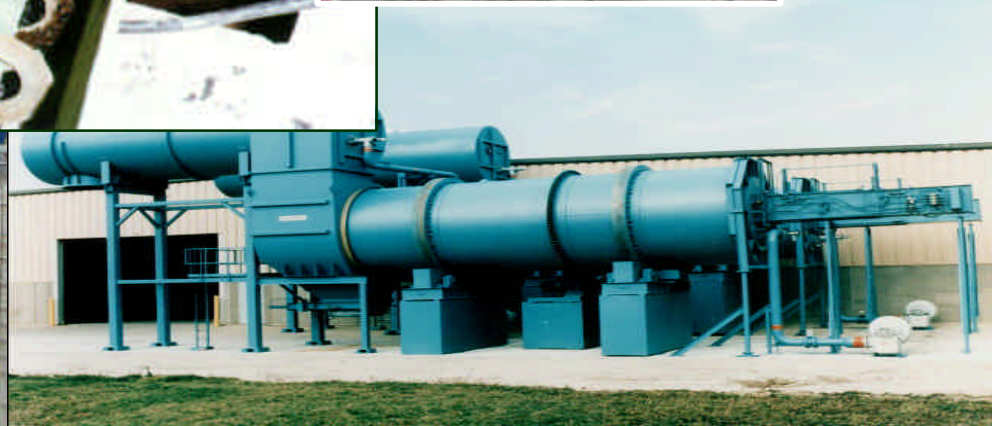
■ Economics (\$5/cyd - \$47/cyd)

■ Health and Safety

■ Capacity and Throughput



Sediment Decontamination



Decontamination Program Goals

- Decontamination vs. stabilization
- 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



Selection Process

- Request for Proposals 3/98
- Culling to remove non-responsive
- Technical Review Committee
Recommendations
- Dredging Project Facilitation Task
Force Interviews
- Final Selection, Press Release
- Appropriation Signing 9/99, \$20m



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**



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

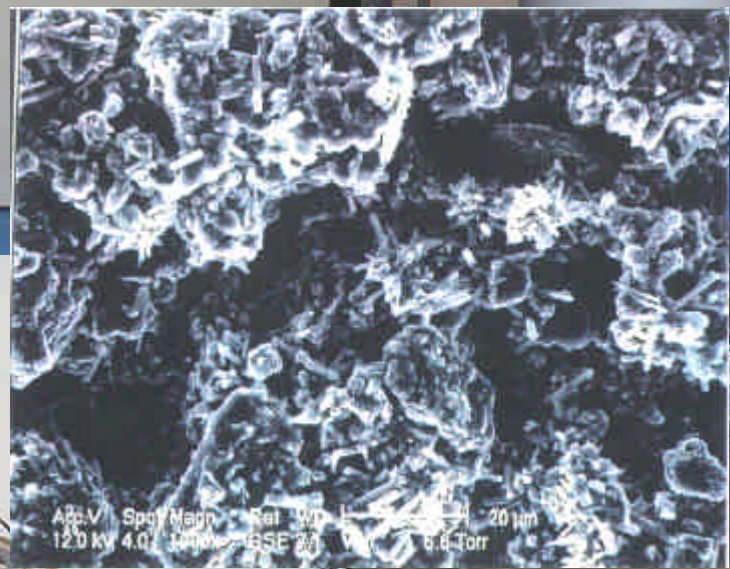


BEM Systems, Inc.

- 600 gallon pilot
- Georemediation (oxidation and enhanced mineralization)
- Rutgers Civil Engineering Dept.
- Production of manufactured soil product
- Pilot completed, report in preparation



BEM Systems, Inc

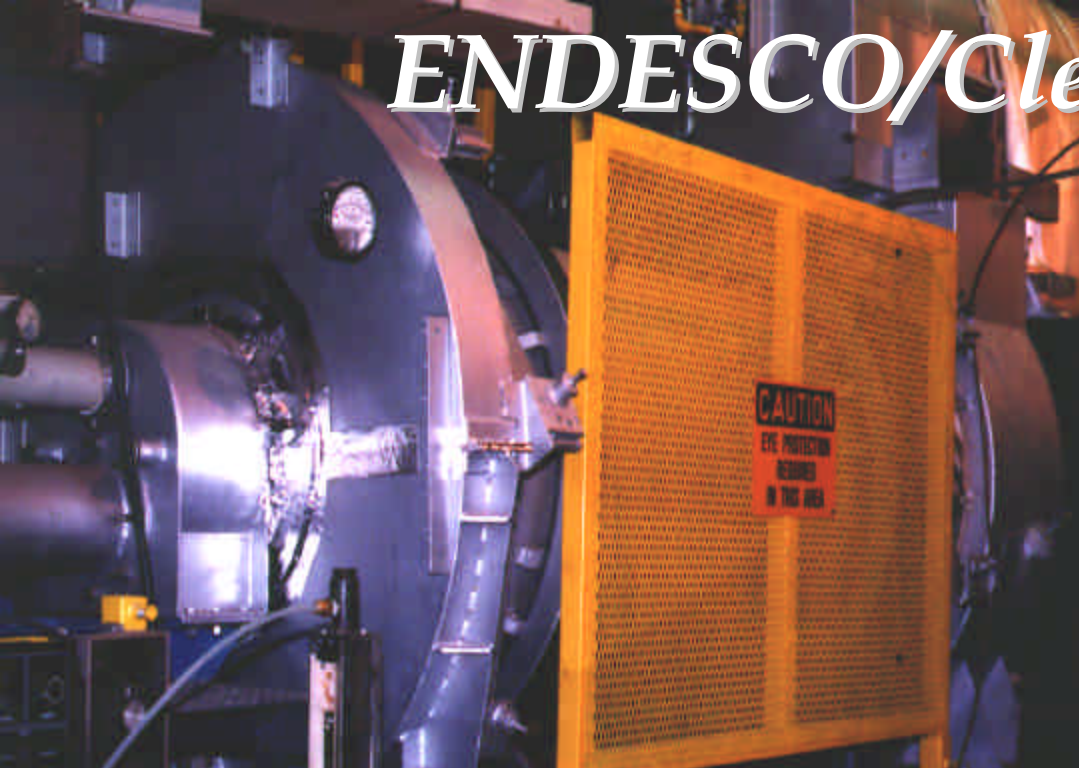


ENDESCO/Clean Harbors

- 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



ENDESCO/Clean Harbors

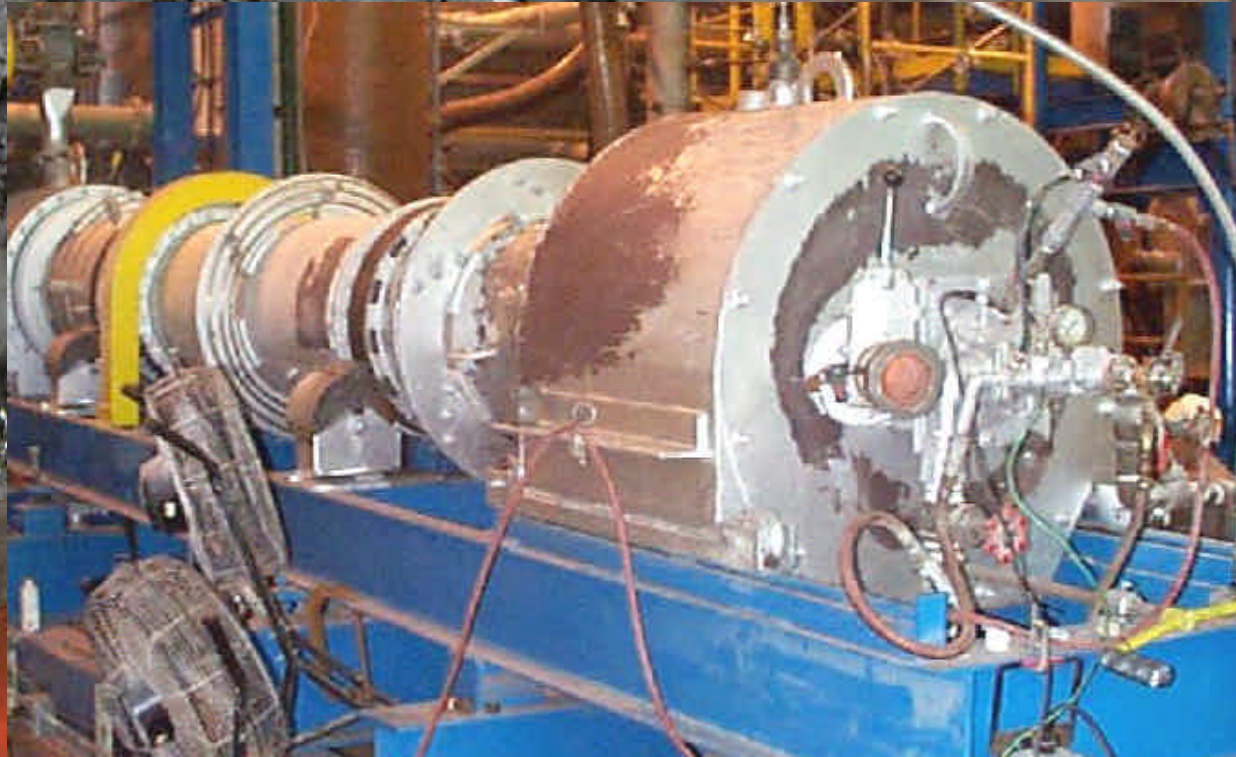


Upcycle Associates, LLC

- **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**



Upcycle Associates

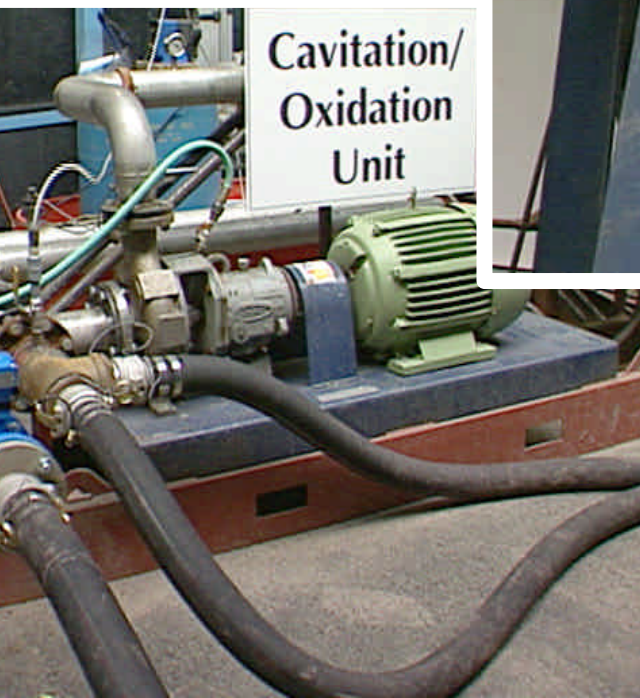
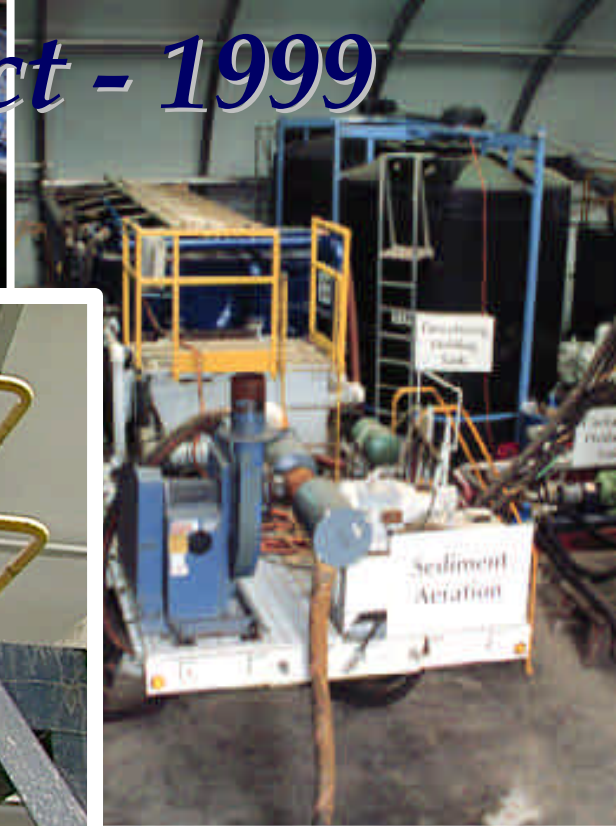


BioGenesis/Montgomery Watson

- 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 Pilot Project - 1999

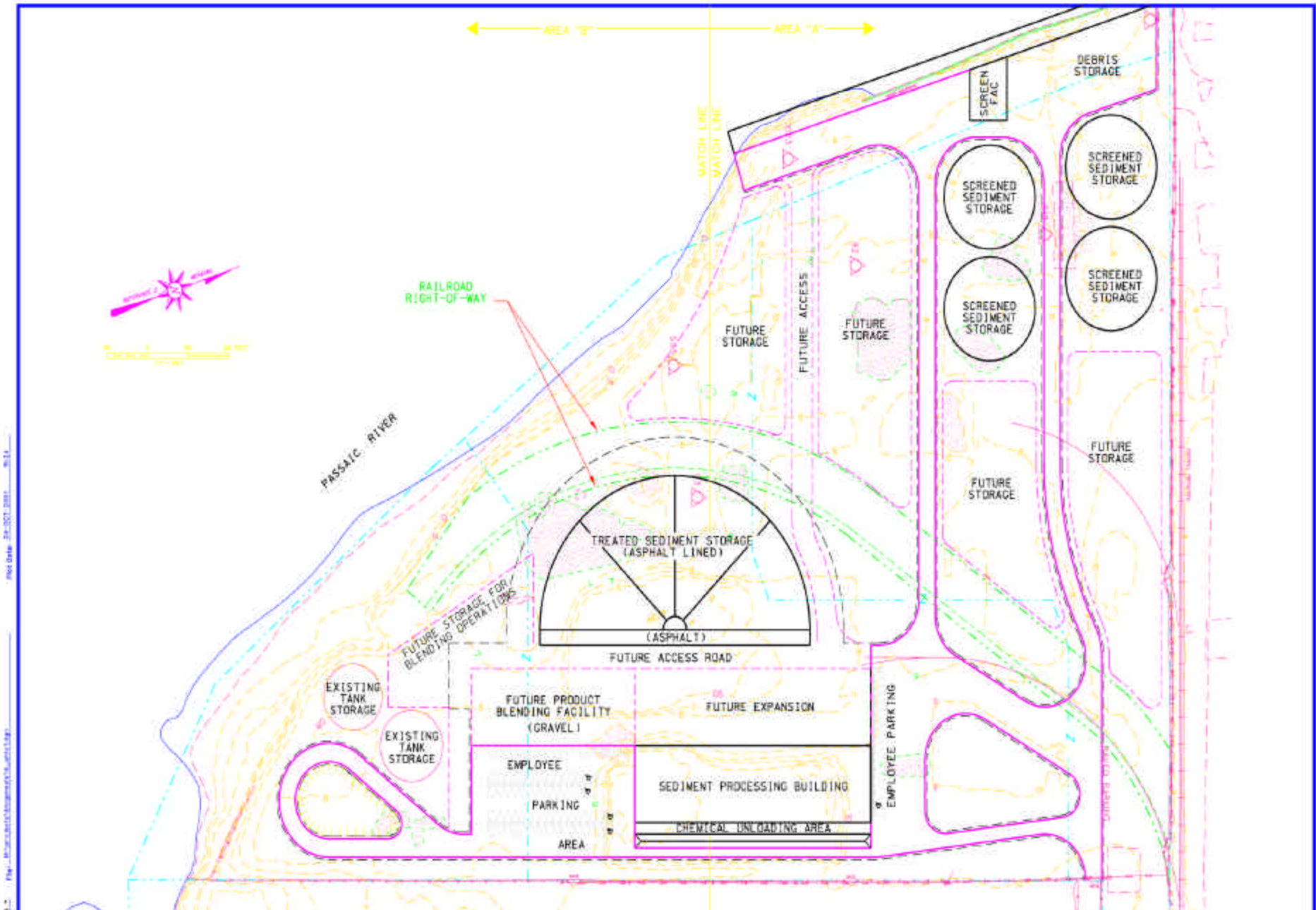


BioGenesis Soil Washing System





BASF Site, Kearny, NJ



BioGenesis Site Plan

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



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



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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