

New Jersey Maritime Resources

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

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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**

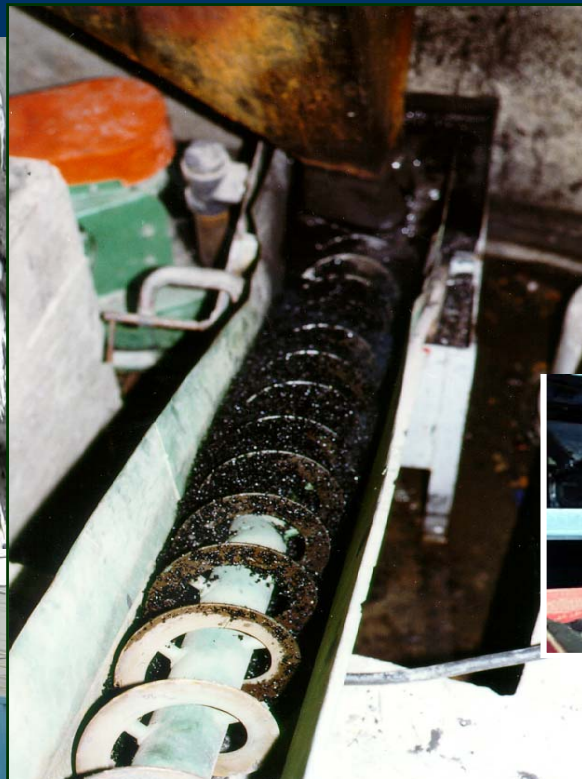


Beneficially use as much as possible

- **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



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



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**



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



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

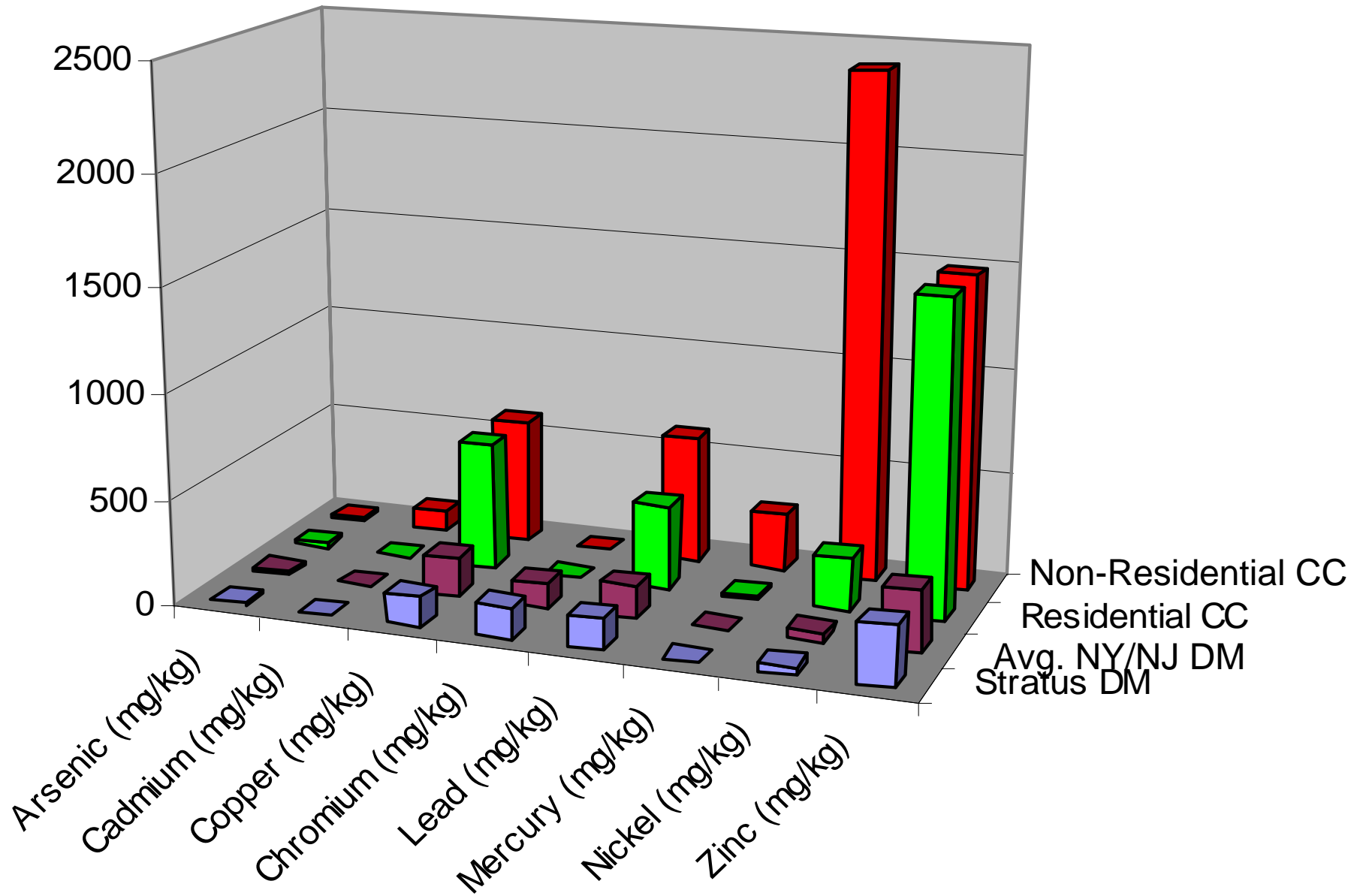


Decontamination Technologies

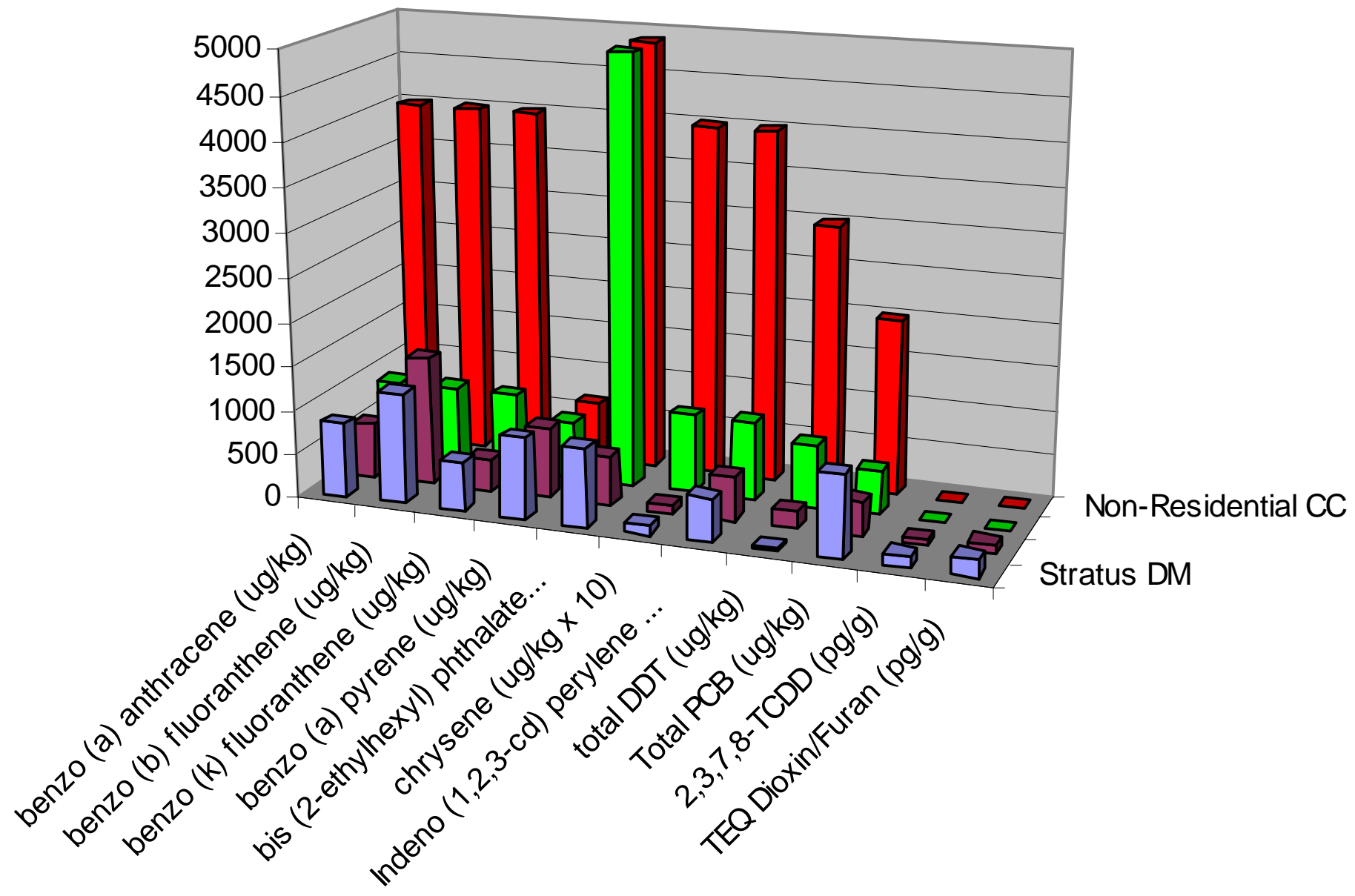
- NUI Environmental~Chemical Oxidation; Manufactured Soil
- BEM Systems~Georemediation®; Manufactured Soil
- ENDESCO Clean Harbors~Rotary Kiln; Blended Cement
- JCI/Upcycle~Rotary Kiln; Lightweight Aggregate
- BGW~Biogenesis® Sediment Washing; Manufactured Soil



Chemical Makeup of NY/NJ Navigational Dredged Material



Chemical Makeup of NY/NJ Navigational Dredged Material

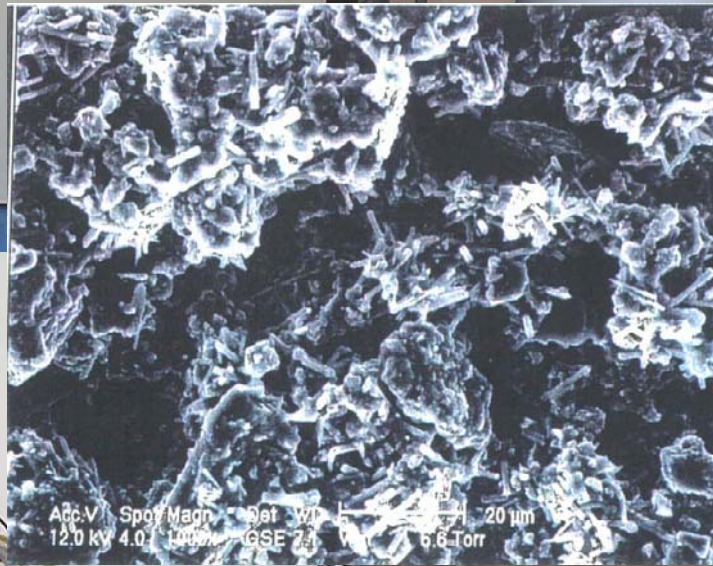


NUI Environmental Group

- 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



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



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



A large industrial generator, the ECOMELT, is shown in an outdoor industrial setting. The generator is a massive, horizontal, cylindrical metal structure with several large, circular openings along its length. It is supported by a series of concrete trunnion supports. In the background, there are several large, vertical, cylindrical tanks, likely part of a flue gas quencher system. The ground is dark and appears to be a construction or industrial site.

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

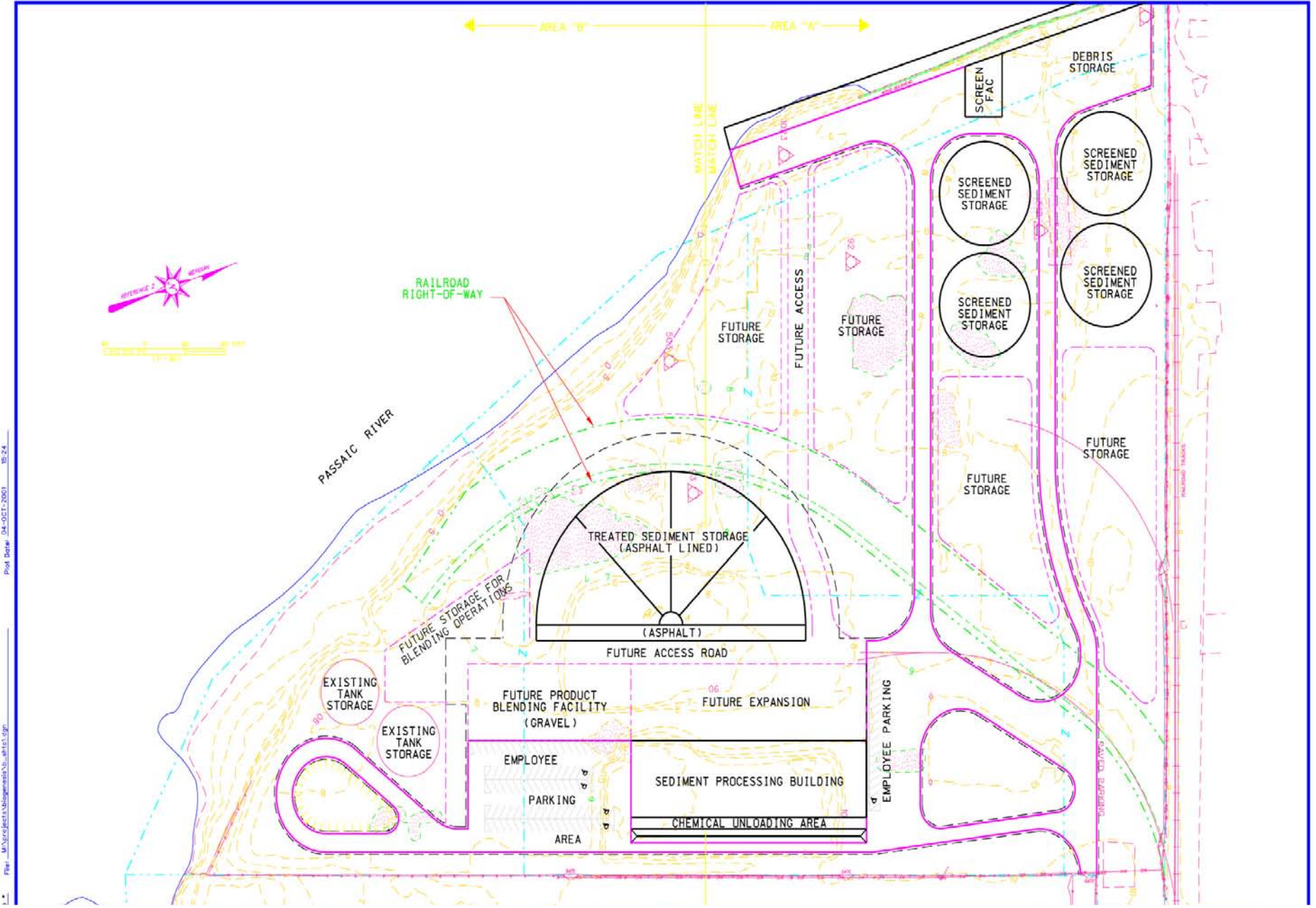


BioGenesis Soil Washing System





BASF Site, Kearny, NJ



Plot Date: 04-OCT-2001 15:24
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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



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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