



2010 C&D FORUM

Baltimore, MD

Presentation Title:
Achieving 98.5% Reuse and Recycling
of old WTE Plant
Case Study: Nashville Thermal

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Dismantlement, Reuse and Recycling of the Former Thermal WTE Facility (Location: Downtown Nashville, TN)



Overview of THERMAL

- Conceived in 1970 to reduce City of Nashville's solid waste disposal needs and provide for air conditioning and heating for the downtown Nashville area
- Thermal provided DH&C services to almost 40 buildings for 30-years ...from 1974-2003

Thermal Plant Construction Feb. 1973



Progress as of July 1973



Aerial View of the Initial Plant 1974





New 200' Concrete Stack & Acid Gas Control Upgrade



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The 1,000 ton-per-day WTE Facility 2000



Bucket Moving Trash to the Hopper



Floor Area Inside for Thermal Waste Tipping



Test Your Demo Estimating Skills!

- Q1. How many tons of concrete will be recycled?
- Q2. How many tons of asphalt pavement will be recycled?
- Q3. How many tons of metal will be recycled?
- Q4. How many tons of reused equipment will be salvaged?

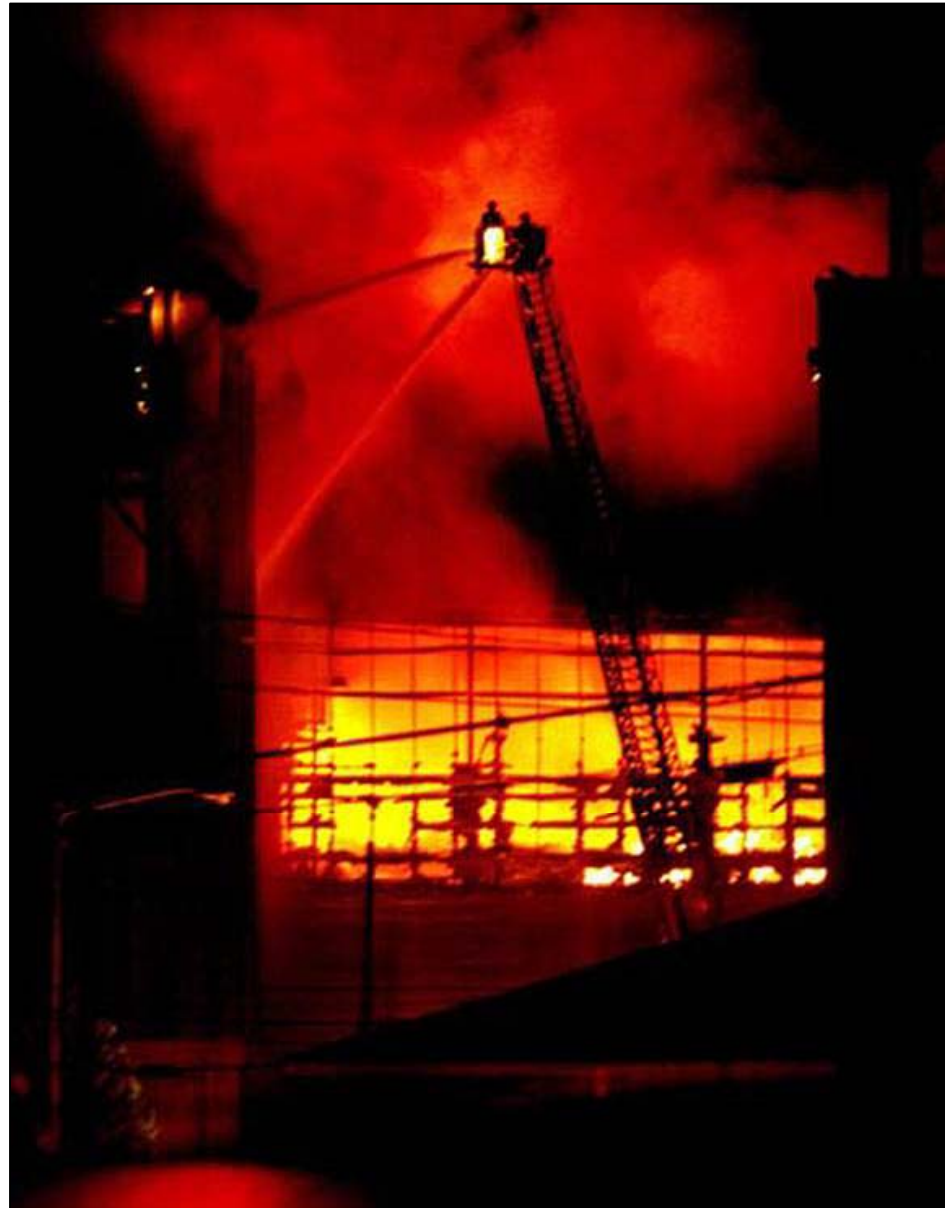
Solid Waste Master Plan in 2001

- As part of the 2001 Plan, newly elected Mayor Purcell slated the Thermal facility for closure within 3 to 5 years
- Thermal was to be replaced with a new Energy Generating Facility (EGF) utilizing natural gas and electricity rather than MSW.

The Dream: Site after Demo & Final Seeding



Fire at the Nashville Thermal Plant May 23, 2002



Thermal Plant Still Smoldering Morning After May 23, 2002 Fire



Thermal after Fire Cleanup



THERMAL Dismantlement Approach

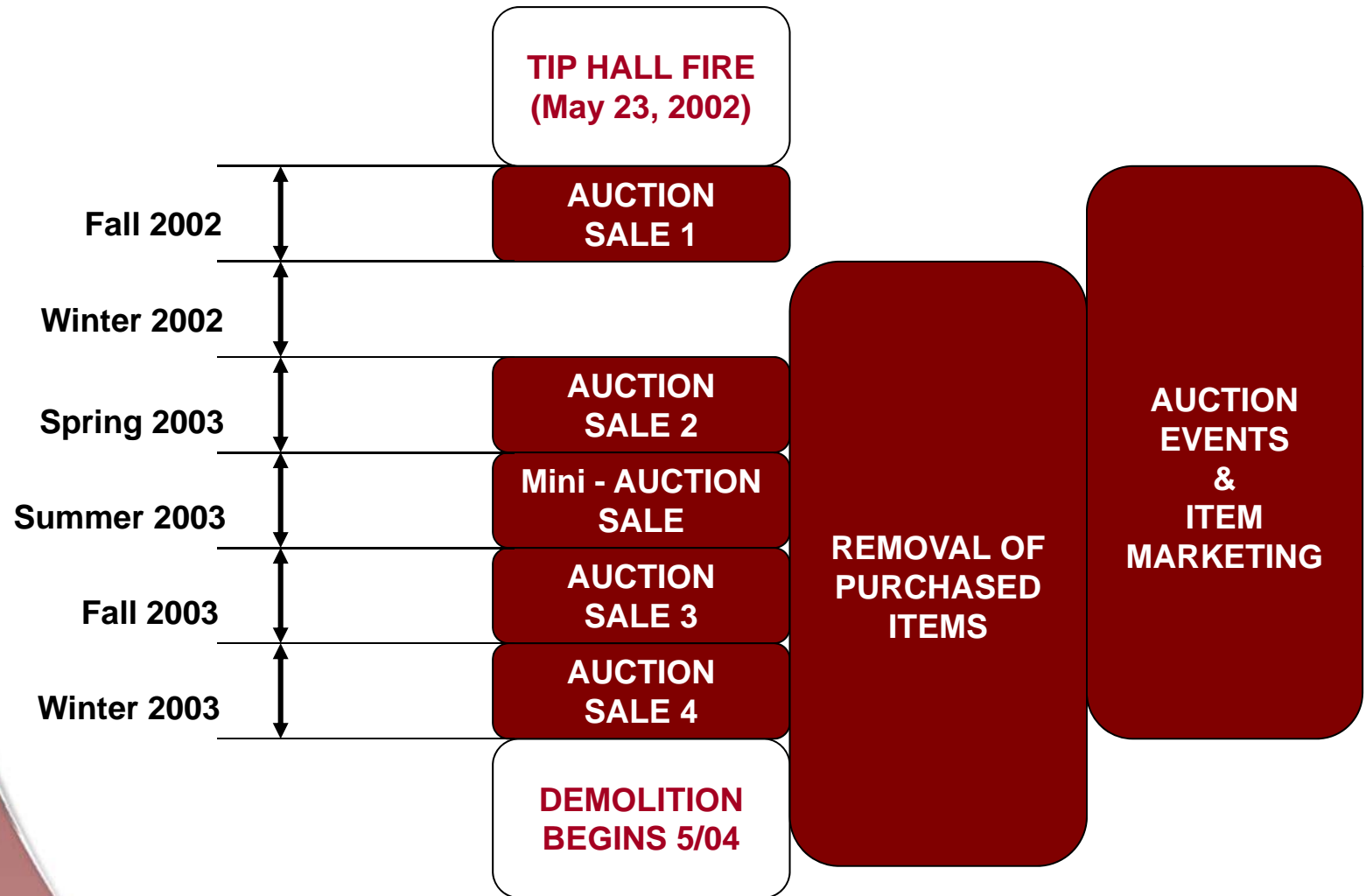
- Demolition Contractor Budget Established in Year 2000 as \$2.4 million
- But, to reduce budget impact, **plus increase potential for equipment reuse and recycling**, decision made to:
 - (1) conduct Internet auction of Thermal's useable equipment, and
 - (2) parcel out smaller unique projects using Metro's purchasing staff with GBB acting as the overall Contracts Manager and developing the RFP's.

GBB's C&D Related Activities for Metro Dismantlement Project

Six “Major” Dismantlement activities that needed to be completed included:

- Auctions of old equipment using Metro's eBid Internet site
- Asbestos Removal from Thermal's heating & chiller plants
- Additional Fencing to secure entire Thermal site
- Removal of Thermal's UST's (Underground Storage Tanks) (contained oil used for Thermal's backup boilers)
- Complete Major Dismantlement & Full-Scale Reuse/Recycling of rest of Thermal structures & equipment
- Placement of Cover Soil & Grass Seeding of site

Thermal Equipment Auction Events & Timeline





Thermal Auction Internet Marketing

Sale!



WTE Equipment Auction

**Fans
Pumps
Boilers
Soot Blowers
Ram Extractors
and MORE!!!**

**Nashville Thermal
Online Auction
38 Pieces
Ends April 22nd**

 **http://ebid.nashville.gov**

SALE

**Energy
Generation
Equipment**

**Boilers
Chillers
Pumps
and
More...**

**CLOSES
11.12.03**



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Thermal Auction - Summer 2002



Turbine Generator, sold for \$150,000

Thermal Auction - Summer 2002



**CO Monitoring Systems,
sold for \$17,555**

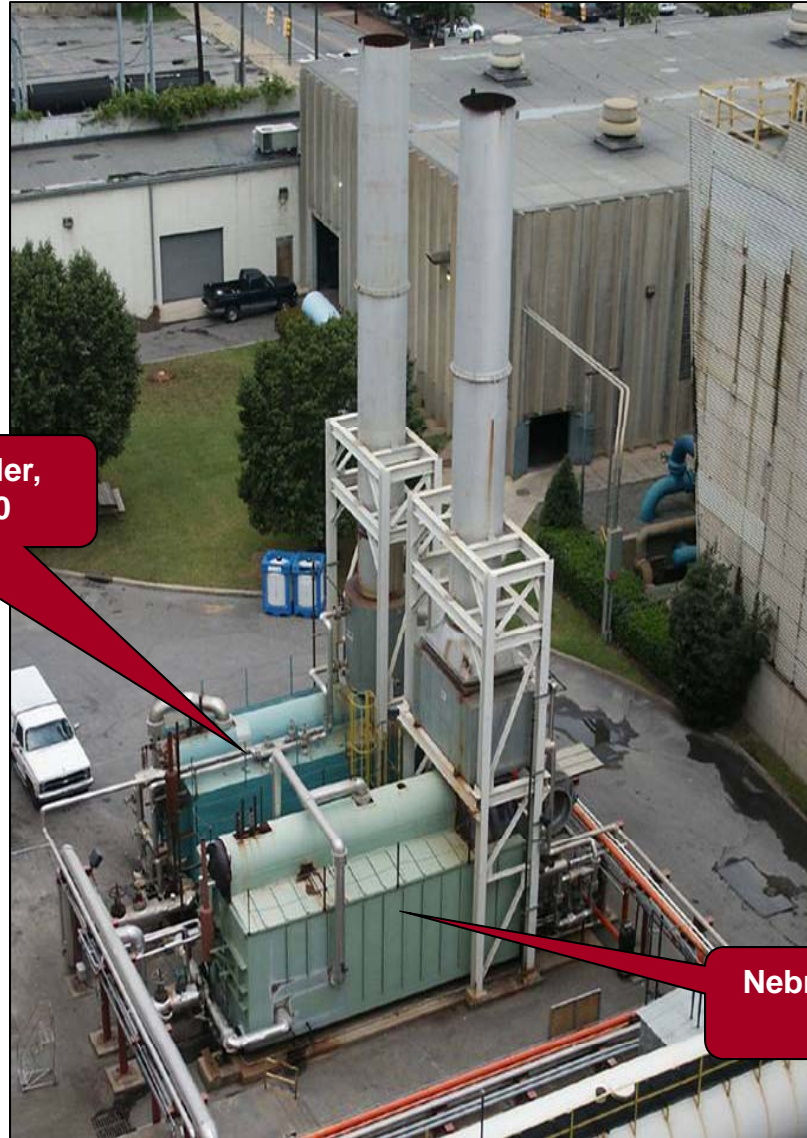
Thermal Auction - Fall 2003



Nebraska Boiler No.5 sold for \$20,000

Thermal Auction - Winter 2003

**B&W Package Boiler,
sold for \$275,000**



**Nebraska Package Boiler,
sold for \$100,000**

Thermal Equipment Auction Summary

- 152 auction events completed on Metro eBid Site
 - Total auction sales volume = \$983,362
- Weight of materials sold at auction = **1,163 tons**

Oil Tanks Removed – Ready for Scrapping



Admin. Area, Chiller Building & Cooling Towers Demolished May 2004 (in 1 Month)



200-Ft. Stack w/ Two 9' Diameter Metal Flues



Stack Explosion + 10 minutes! – All Recyclable!



Wrecking Ball, Shear and Bucket in Action



Concrete Crusher w/Magnet for Aggregate



Crushed Concrete Aggregate Produced



As of Oct.13, All Processing Only on South Side

(Note: The new EGF at top of picture - brick bldg.)



Metro as Crushed Aggregate Market

Hundreds of dump truck loads of crushed aggregate were transferred off the Thermal site to Metro markets

- Metro Ash Monofill
- Metro Convenience Center

Convenience Center Now Paved Over



Spread/Rolled Crushed Concrete Use at Monofill



Recycled Aggregate and Asphalt as Base Fill on Loop Road at Monofill



Green Site as of March 30, 2005





Thermal Demo Summary

Materials Movement & Reuse/Recycle Rate

(Final Job Amounts as of 11/7/2004 Closeout)

<u>Activity / Item</u>	<u>Tons</u>
Auction (Recycled/Reused)	1,093
Demo Steel, Including Rebars & Structural	4,394
Crushed Concrete Aggregate Produced	50,007
Demolition Debris to Landfill (1)	983
Asbestos (Removed/Disposed at Landfill)	21
Scrapped Metal from Auction & UST's	118
Railroad Ties	7
Crushed Asphalt Produced	<u>9,747</u>
Total Weight , all Materials (final job total), tons	66,370
% Recycled/Reused (total 65,366 tons)	98.5%
(1) Based on 600 pounds/CY of volume removed	

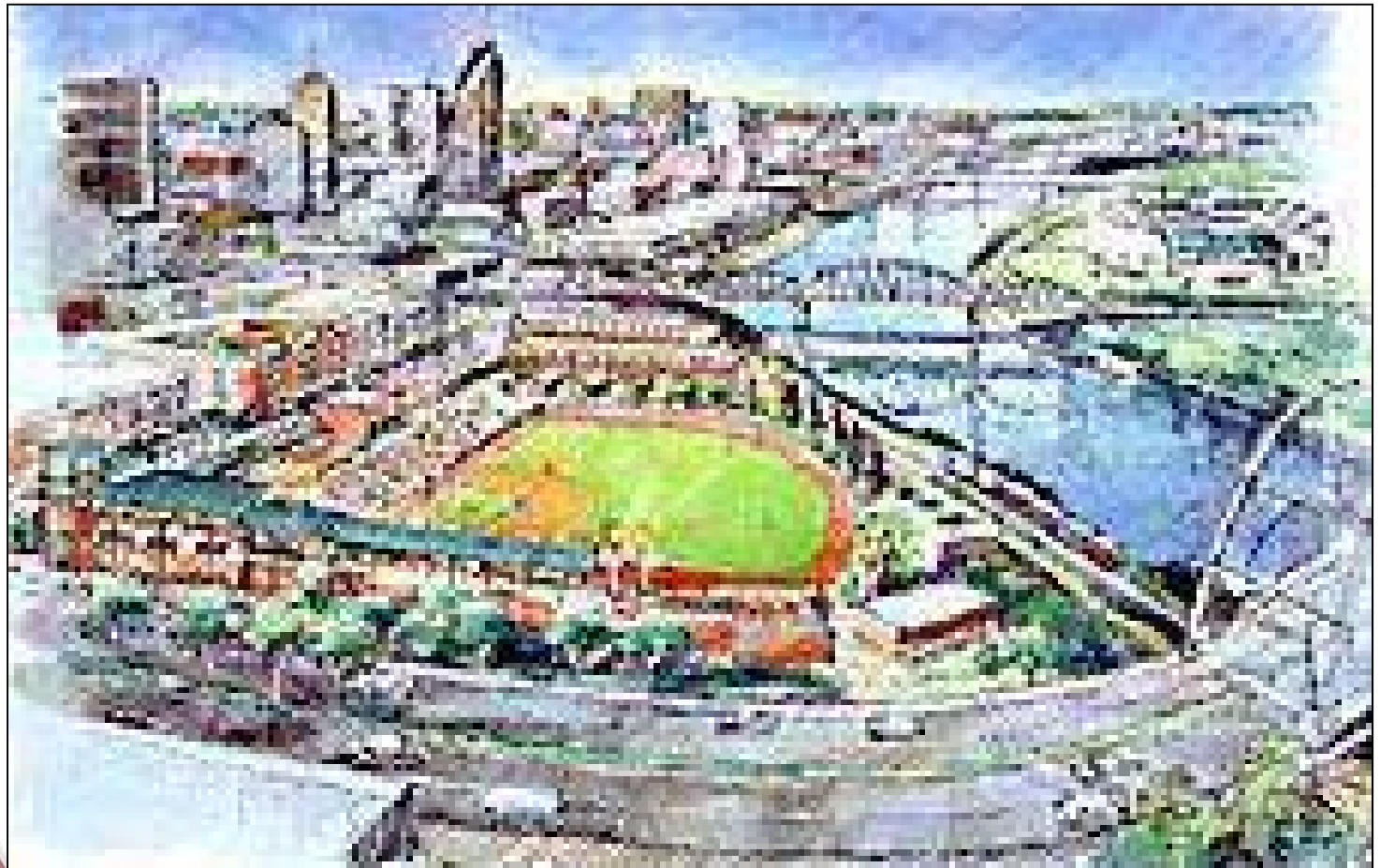


Overall Dismantlement Project Costs

- **Original Year 2000 Demo Estimate ----- \$2,400,000**
- **Final Project Costs:**
 - **UST-----\$128,000**
 - **Asbestos Removal-----\$86,000**
 - **Fencing-----\$13,000**
 - **Demolition----- \$775,000**
 - **Cover Dirt & Seeding--- \$96,000**
 - **Subtotal Cost----- 1,098,000**

 - **Internet Auction-----(\$983,000)**
- **Actual Net Total Dismantlement Cost --- \$115,000**

One Proposed Site Use Did Not Happen New Nashville Sounds Baseball Stadium



Key to Dismantlement Project SUCCESS

- Political Will....Mayor set the Agenda
- Knowledgeable and Motivated Project Team
 - Outside experts working with local team
- Aggressive Product Markets Development
 - Metro became a Market player, not just observer
- Luck...(but sometimes you make your own!)
- 98.5% reuse/recycle @ 5% of the original budget!!!



Thank You for your Attention
Questions for Bob Brickner
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