

**DREDGING WORLDWIDE**



# DREDGING WORLDWIDE

## Dredging Costs in the Modern Era

*Or, so you finally found a way to get your project permitted.  
Can you afford it?*

# DREDGING WORLDWIDE

Examples of Dredging  
Costs Run Amok



# DREDGING WORLDWIDE

## Review Three Projects

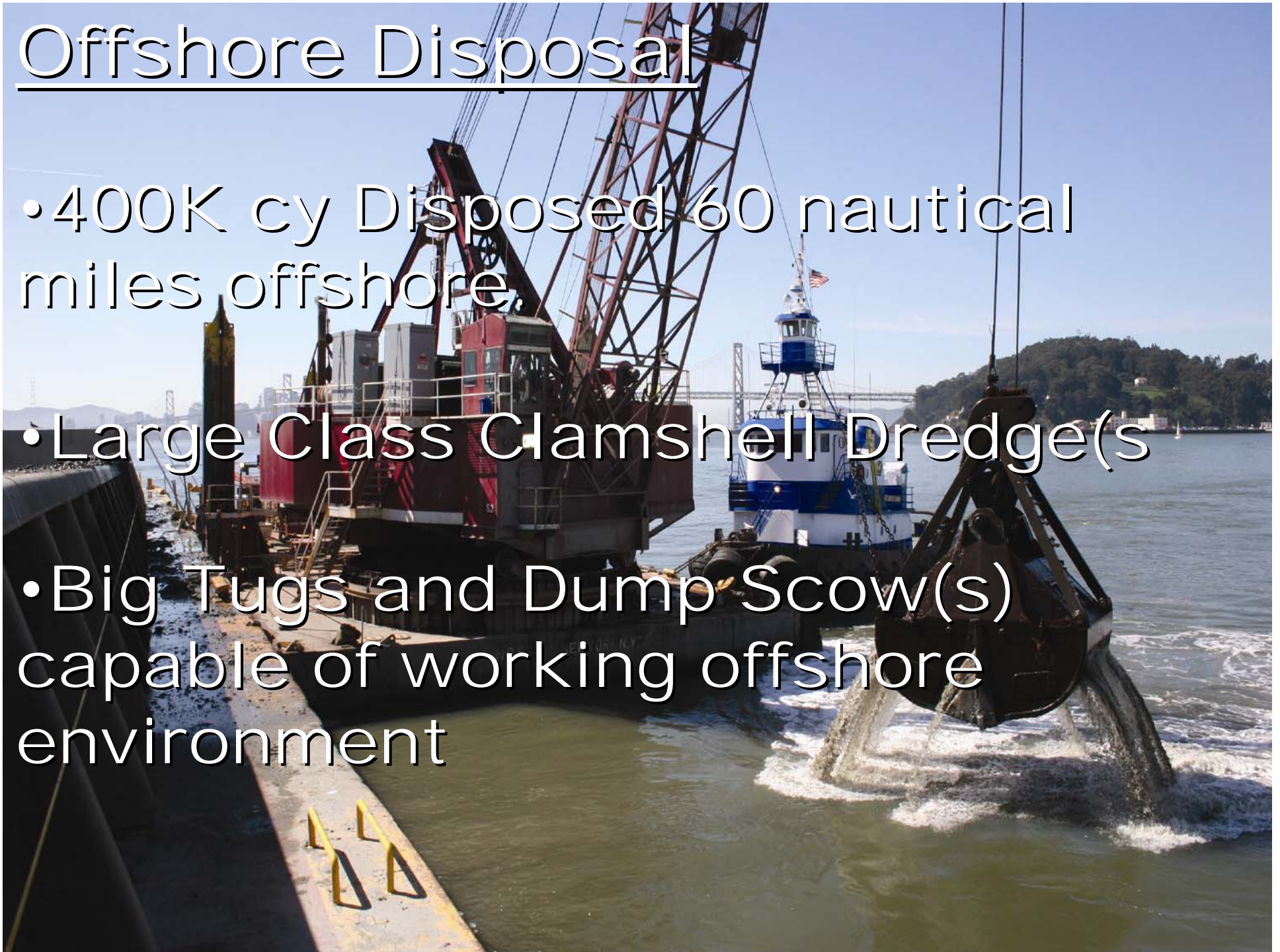
- Oakland Deepening
- Richmond, CA Maintenance
- New York/New Jersey

# Oakland 3E Deepening

- 4.5 million cy soft and very stiff clays and hard packed sand
- Busy Port
- Hyper Regulatory Environment
- Challenging Disposal Requirements Require Different Spreads of Equipment

# Offshore Disposal

- 400K cy Disposed 60 nautical miles offshore,
- Large Class Clamshell Dredge(s)
- Big Tugs and Dump Scow(s) capable of working offshore environment



# Middle Harbor Disposal

- 1.5 million cy Disposed within the Port of Oakland
- Large Hydraulic Dredge Required to Meet Schedule



# Hamilton Wetlands Disposal

- 2.6 million CY
- 14 nautical miles away, will require hydraulic offloader and BIG Boosters
- 35,000 feet pipelines to install and pump through
- Tight Fill Requirements (+/- 0.25 ft)
- Directly Adjacent to High Dollar Residential Areas





# Oakland

## Electrification

- Build Substations
- Purchase Cable
- Build Cable Barges
- Installation
- Operating with Heavy Ship Traffic



Richmond/Oakland  
Maintenance (2004 - 2006)  
As Bid

- 3 years work
- Each year 830,000 cubic yards (2.5 million cy total)

Anticipated Revenue \$27 million  
(\$10.80/cy)

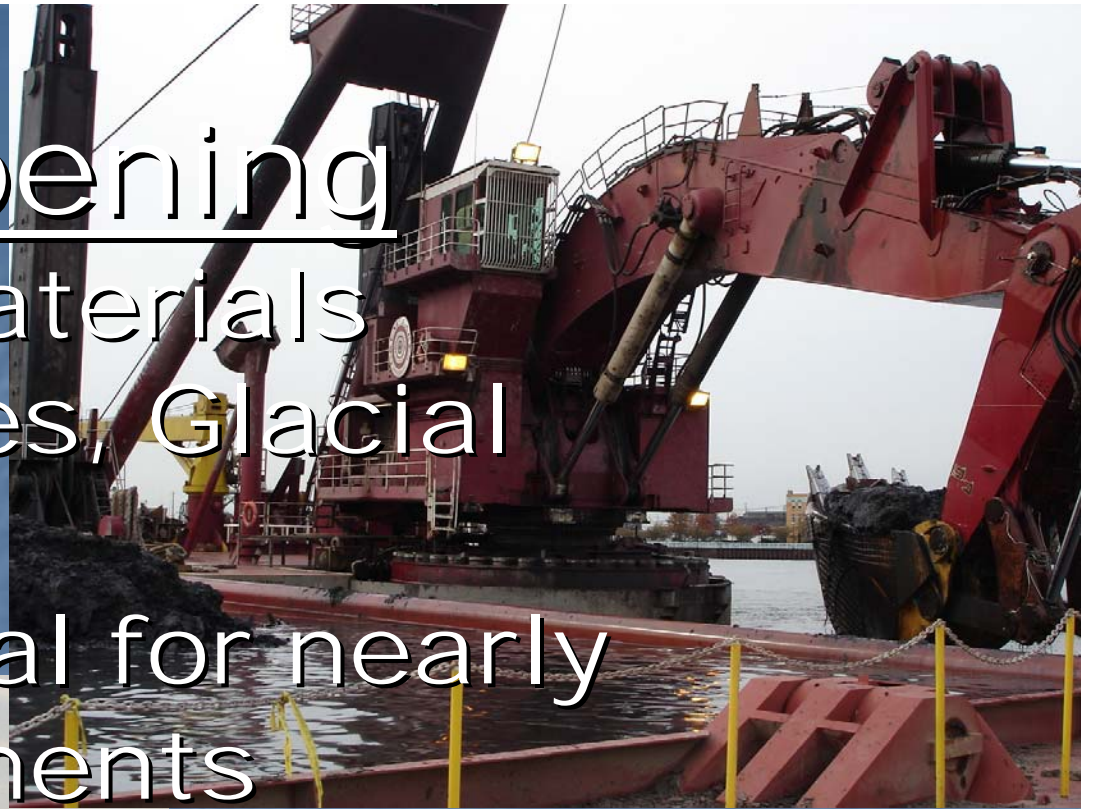
# Richmond/Oakland Maintenance (2004 - 2006)

## Actual

- GL Mobilized the Large Clamshell #53, 2 Biggest Scows in our Fleet, and 3 Tugboats from East Coast
- Pay Quantity 130,000 cubic yards
- Job Terminated after 1 year
- Final Revenue \$4.8 million (\$37/cy)


# NY/NJ Deepening

- Challenging Materials (Granites, Shales, Glacial Tills)
- Upland Disposal for nearly all recent sediments
- Extremely Busy Waterways





## NY/NJ Maintenance Dredging

- Previously material disposed of offshore - \$3 - \$5 per cy (2006)
  - Now nearly all needs to be processed with additives
  - Final disposal upland
  - Total cost \$50-\$90 per cy on average
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# NY/NJ Upland Processing

- Admixture 8-10% Portland Cement
- Trucking
- Upland Tipping Fees



# Dredge #51







**Now Where Do We Go From Here ?**

# Dredge "New York"









**HAPPY DREDGING.....**



3D visualization-Khalid Al-Muharrraqi

