

Lessons from the flooding of New Orleans – could it happen in London?

FST, Royal Society 11 December 2007



SCOTT STEEDMAN



**US Army Corps
of Engineers ®**

Mission

Rescue and Recover

Study Performance

Reconstruct to Authorised Level

Study Higher Level

Team

Task Force Hope

Interagency
Performance Evaluation
Taskforce (IPET)

Task Force Guardian

Future Planning Study






Performance Evaluation of New Orleans and Southeast Louisiana Hurricane Protection System

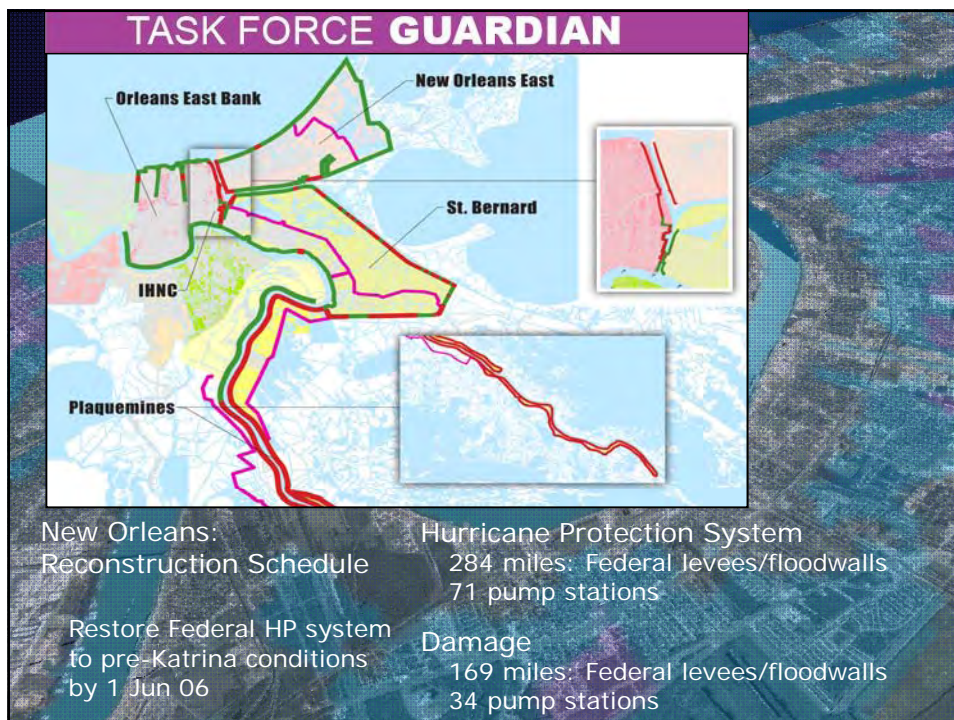


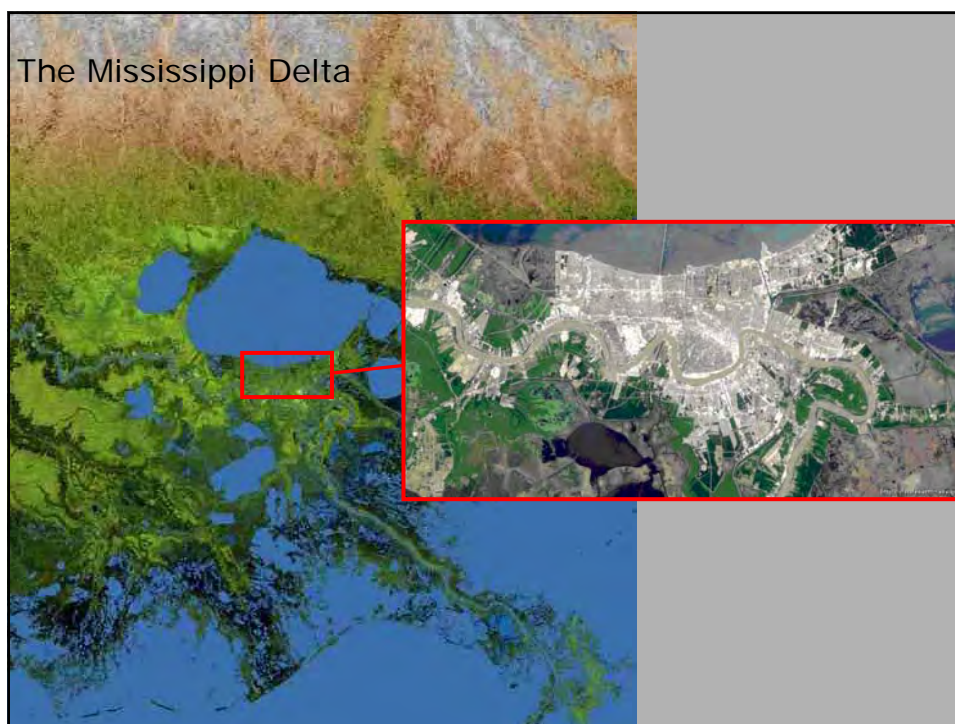
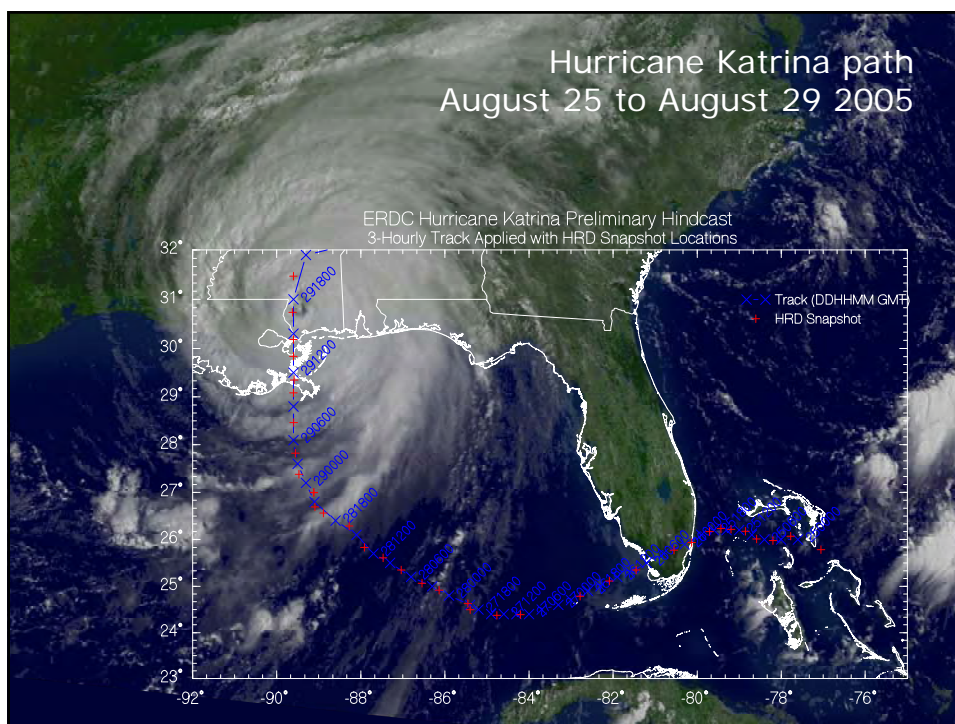
Interagency Performance Evaluation Task Force (IPET)

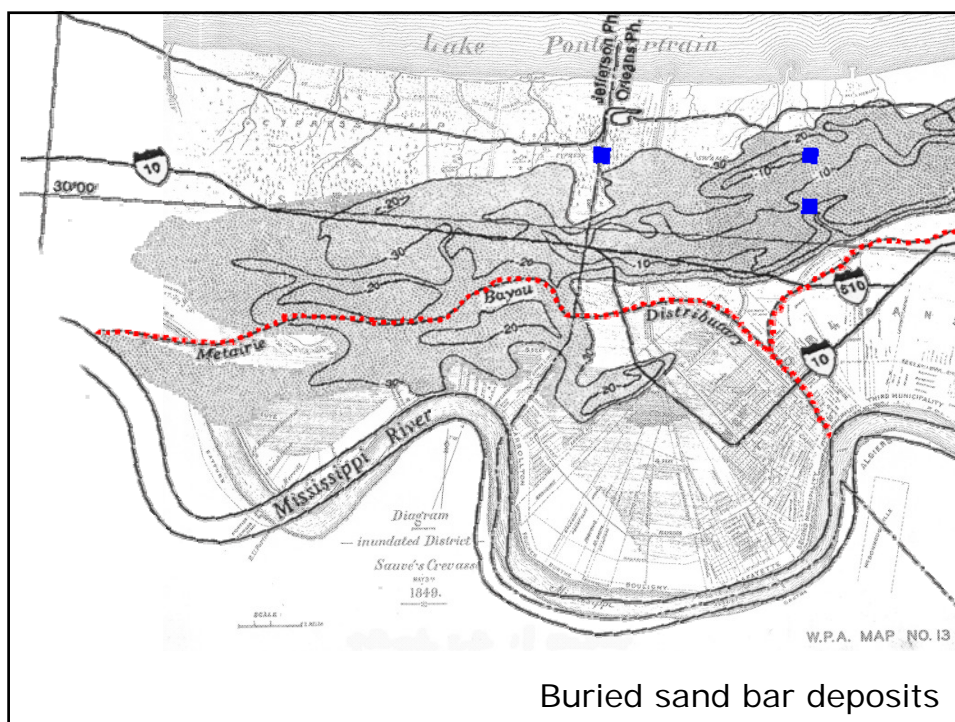
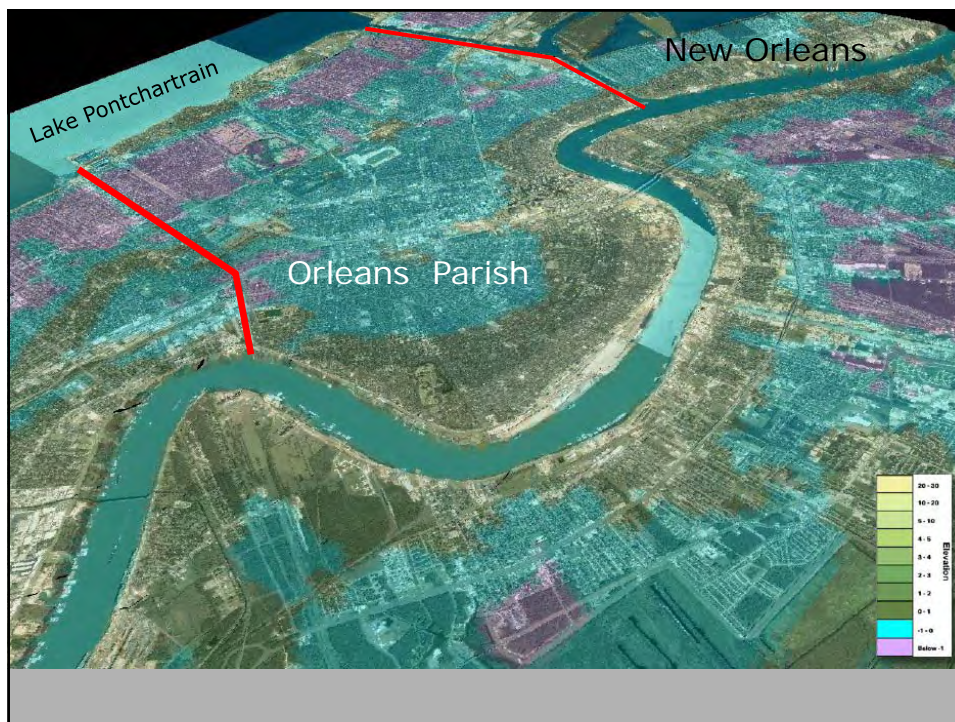










Buried sand bar deposits

The New Orleans System pre-Katrina



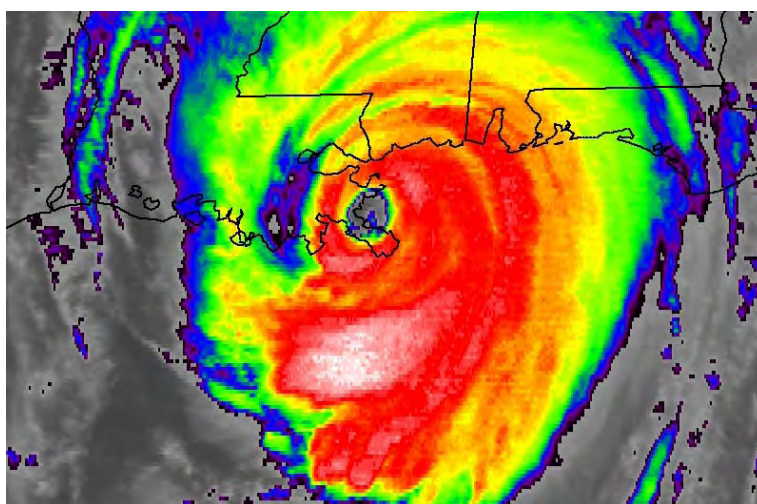
17th Street outfall canal

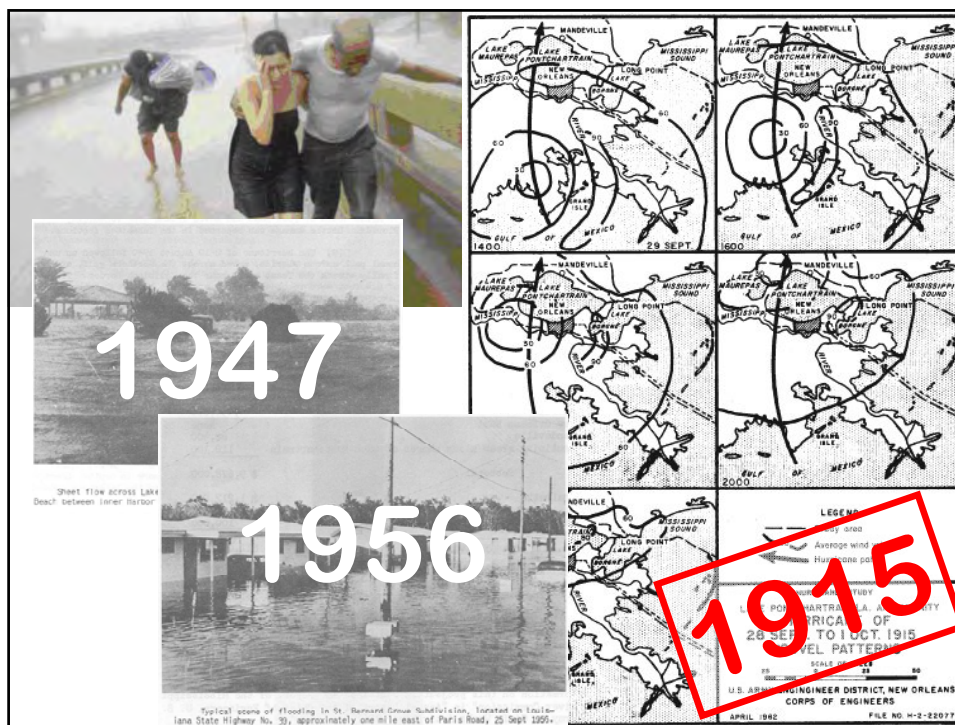




Flood protected bridges

Hurricane Katrina – Category 5, reducing to
Category 3 on landfall





LETTER OF TRANSMITTAL

DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 20310

Honorable John W. McCormack
Speaker of the House of Representatives

Dear Mr. Speaker:

I am transmitting herewith a favorable report dated 4 March 1964, from the Chief of Engineers, Department of the Army, together with accompanying papers and illustrations, on a review of the reports on, and an interim hurricane survey of Lake Pontchartrain and Vicinity, Louisiana, requested by resolutions of the Committee on Public Works, United States Senate, adopted 28 January 1949 and 4 February 1957, and authorized by the River and Harbor Act approved 2 March 1945. It is also in partial response to Public Law 71, 84th Congress, approved 15 June 1955.

by the Congress, since this would be governed by the President's budgetary objectives as determined by the then prevailing fiscal situation. A copy of the letter from the Bureau of the Budget is inclosed.

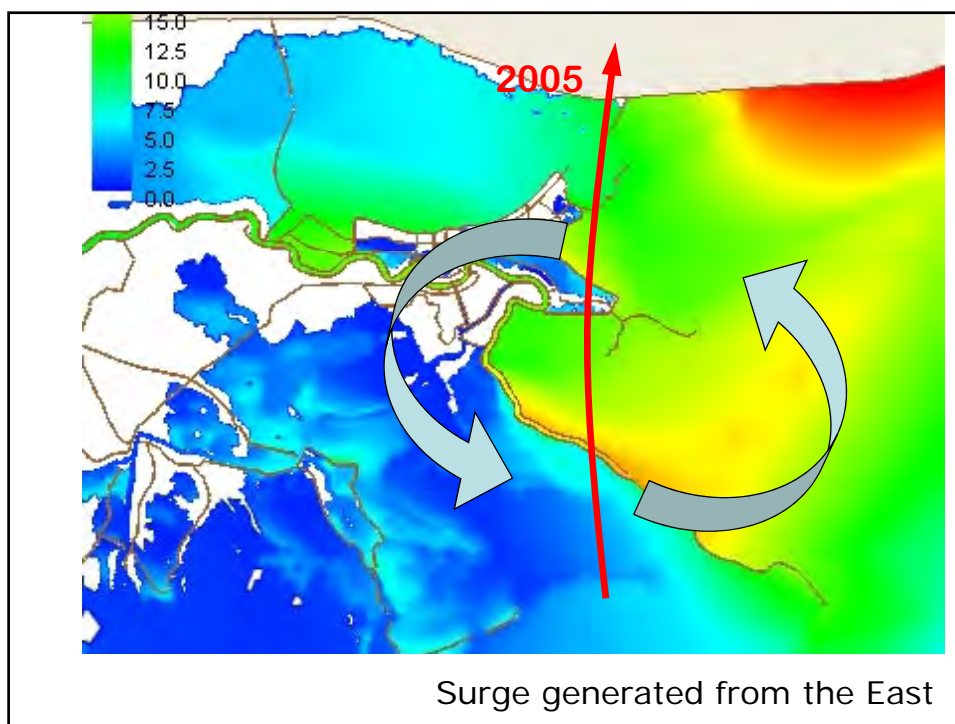
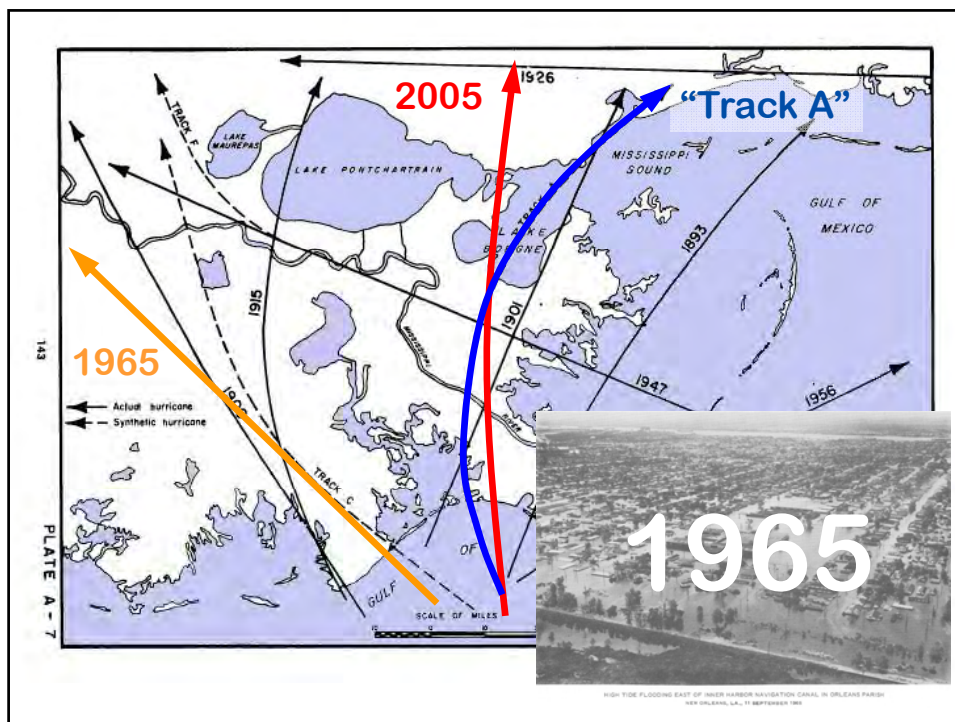
Sincerely yours,

Stephen Ailes
STEPHEN AILES
Secretary of the Army

1 Incl
Report

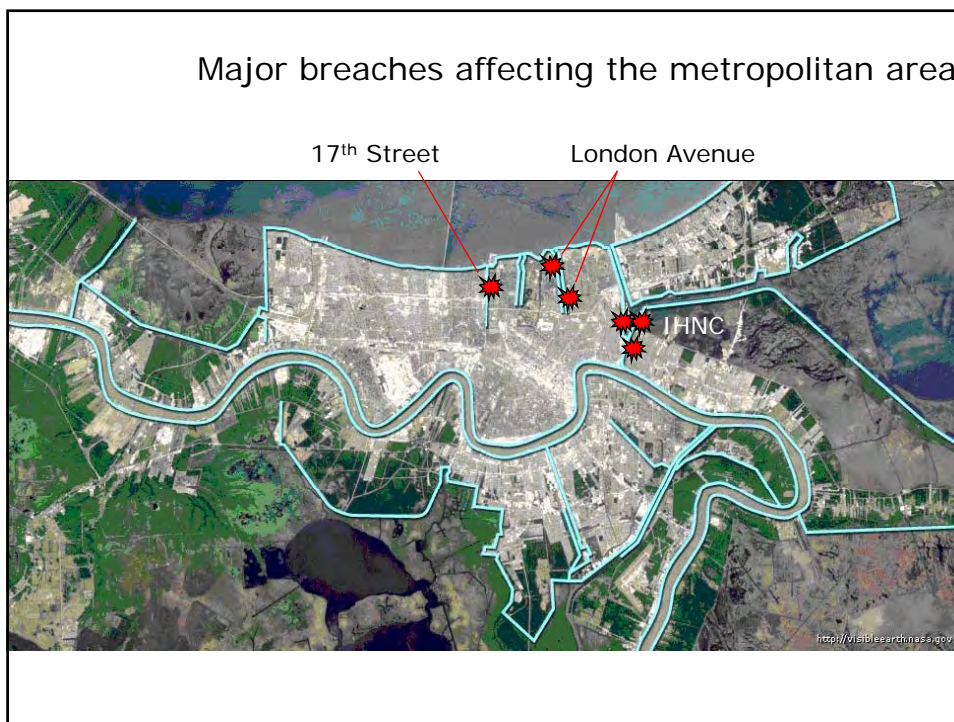
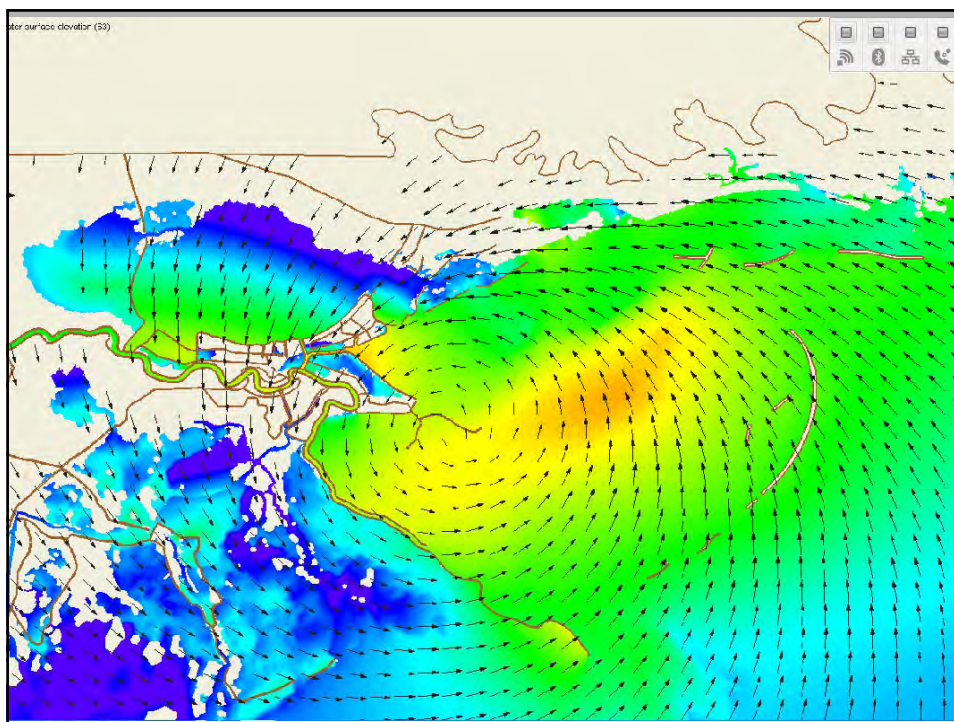
1964

LEGEND
Steady rain
Average wind velocity
Hurricane path
HURRICANE SURVEY
LAKE PONTCHARTRAIN, LA. AND VICINITY
STANDARD PROJECT HURRICANE
TRACKS AND ISOVEL PATTERNS
SCALE OF MILES
U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
APRIL 1962 FILE NO. M-2-22077
PLATE A-5

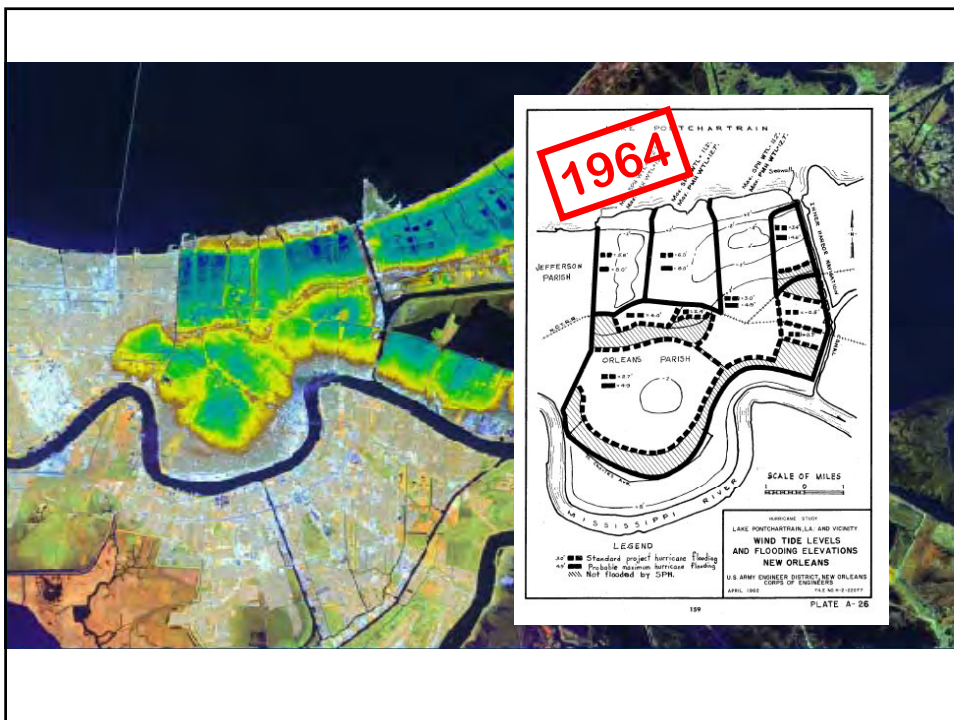


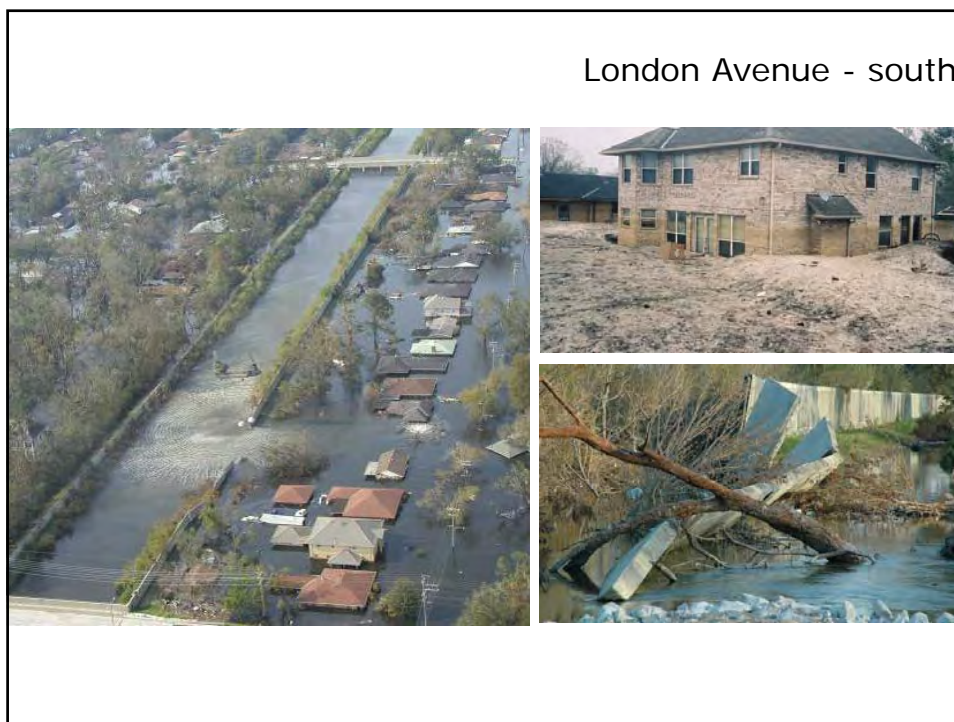
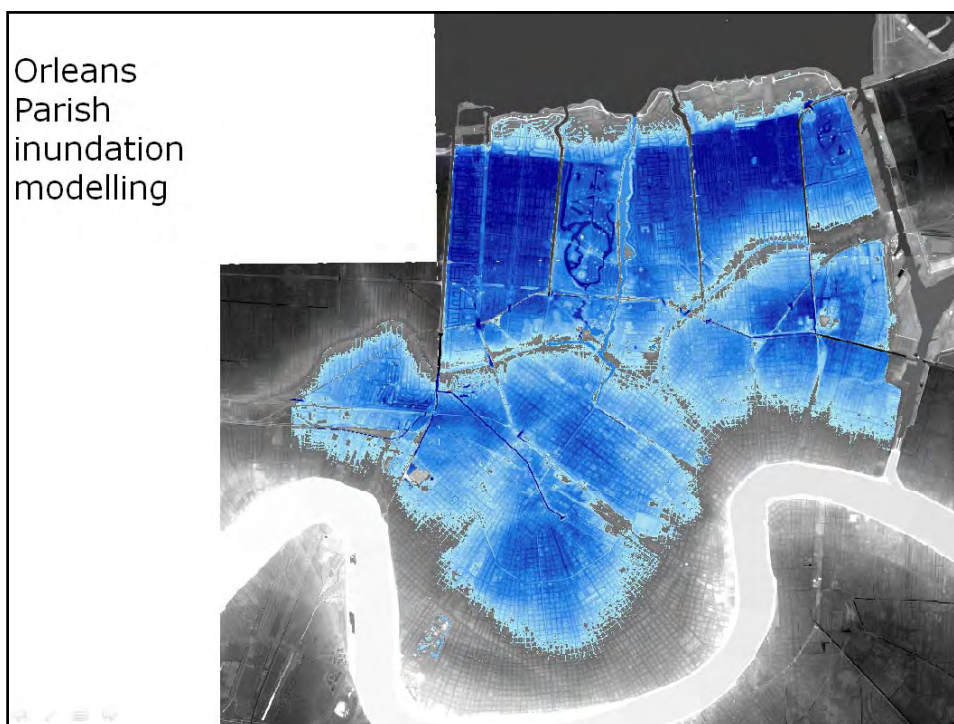
Surge generated from the East













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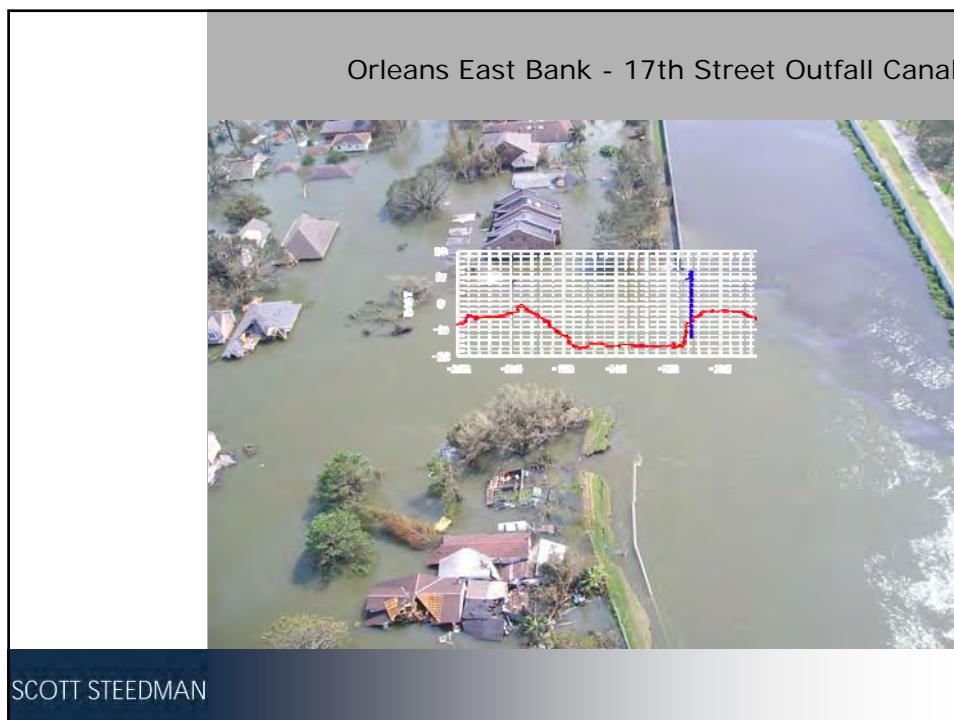
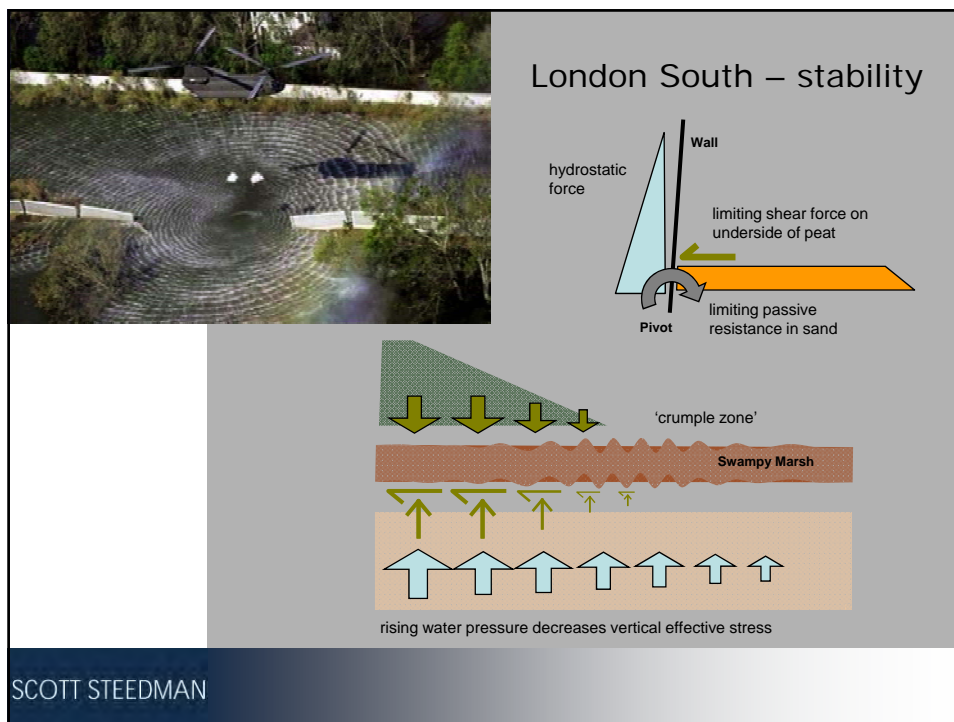


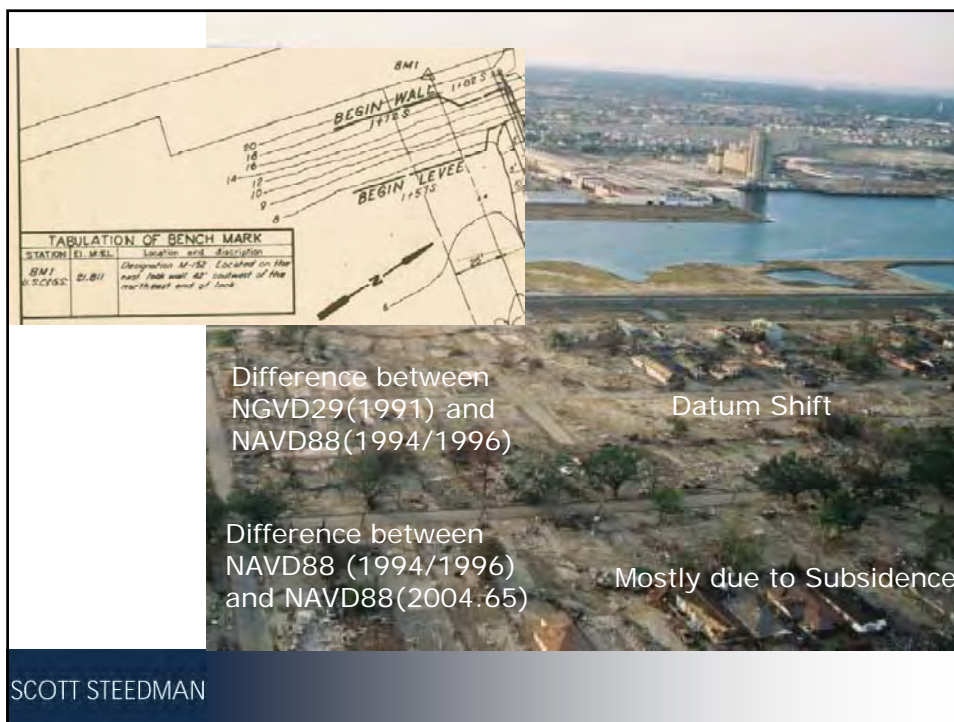
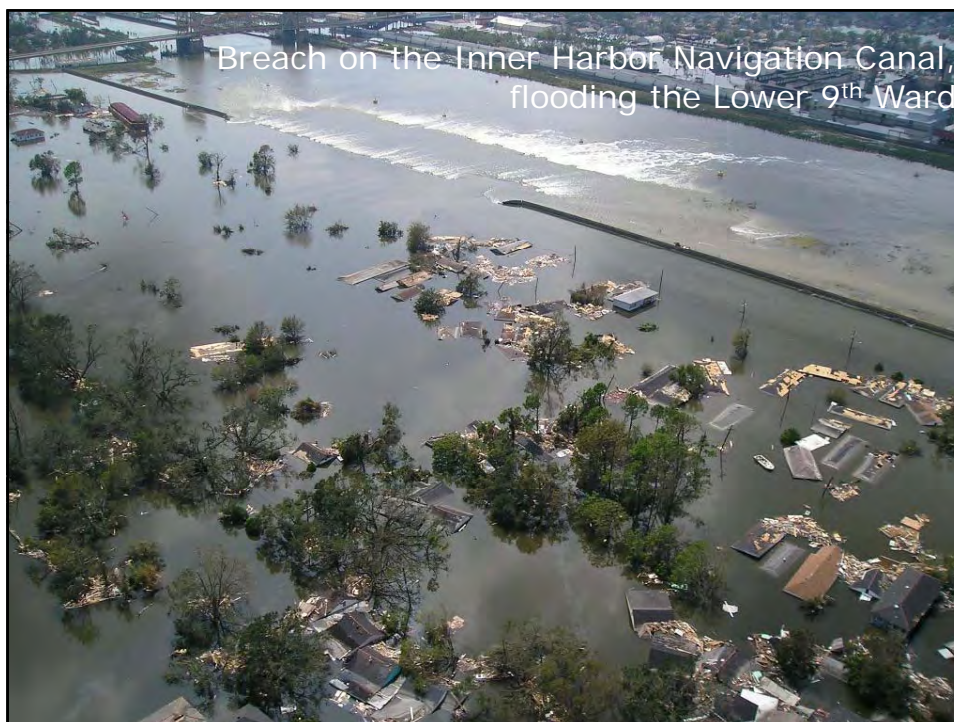
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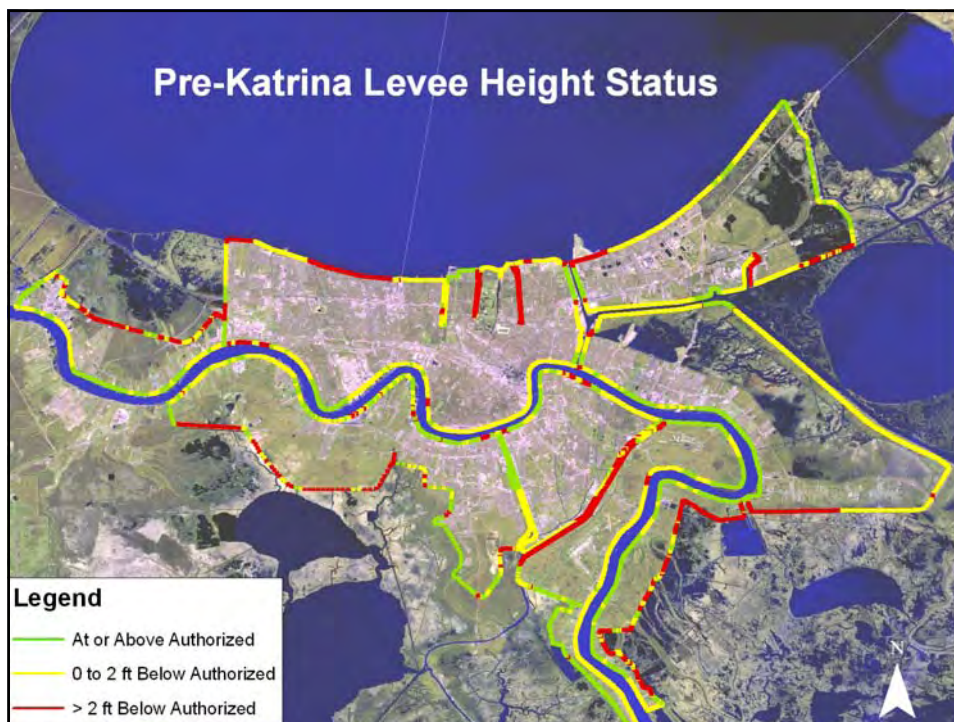
London South – sand foundation

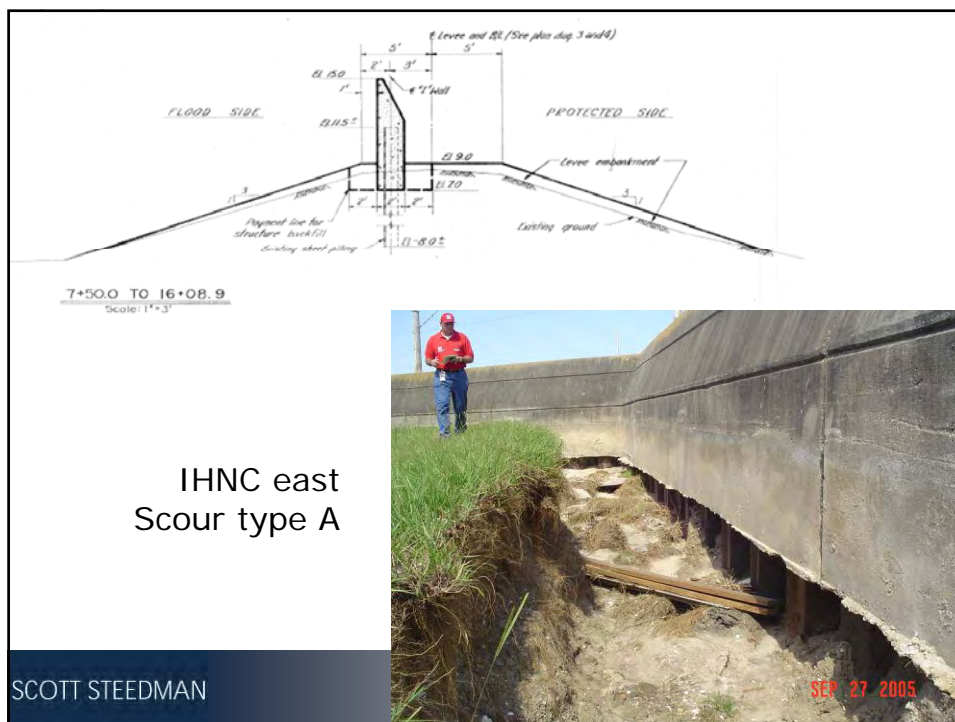
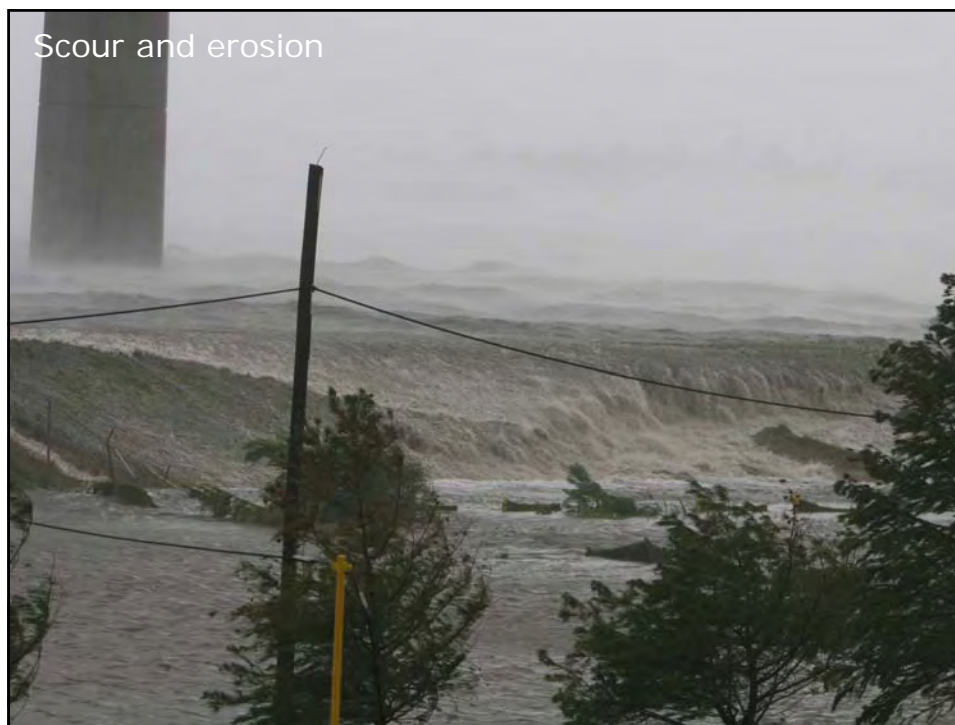
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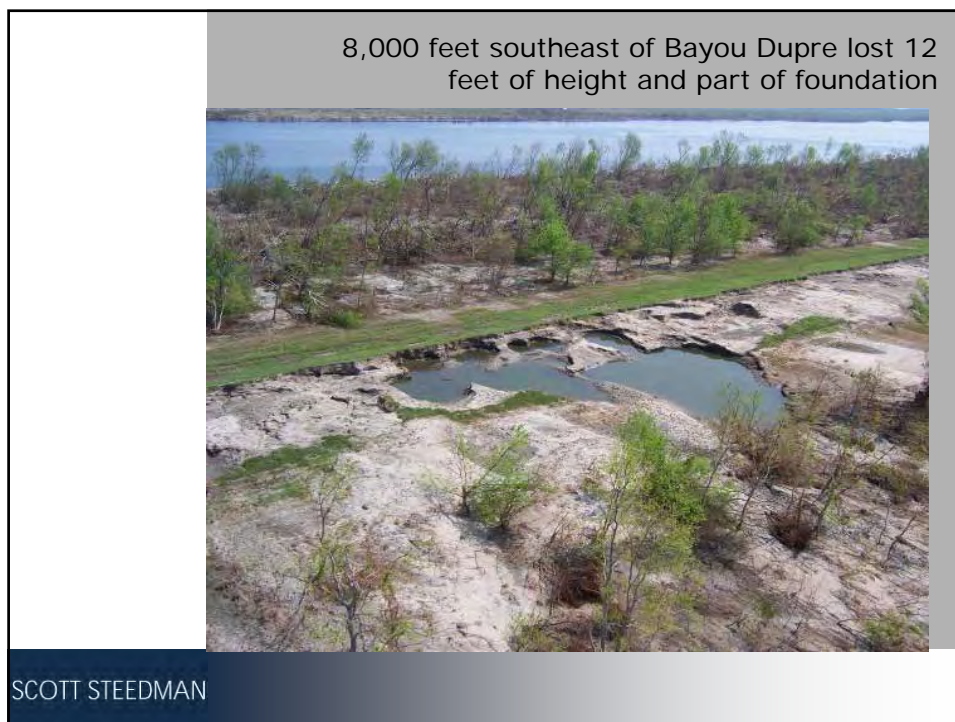
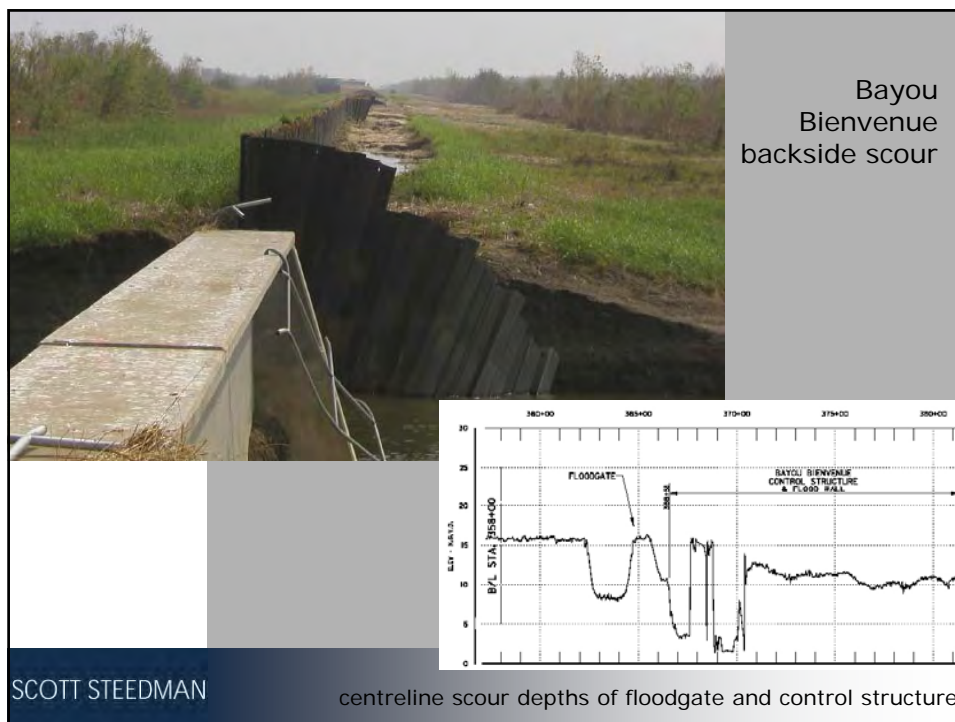


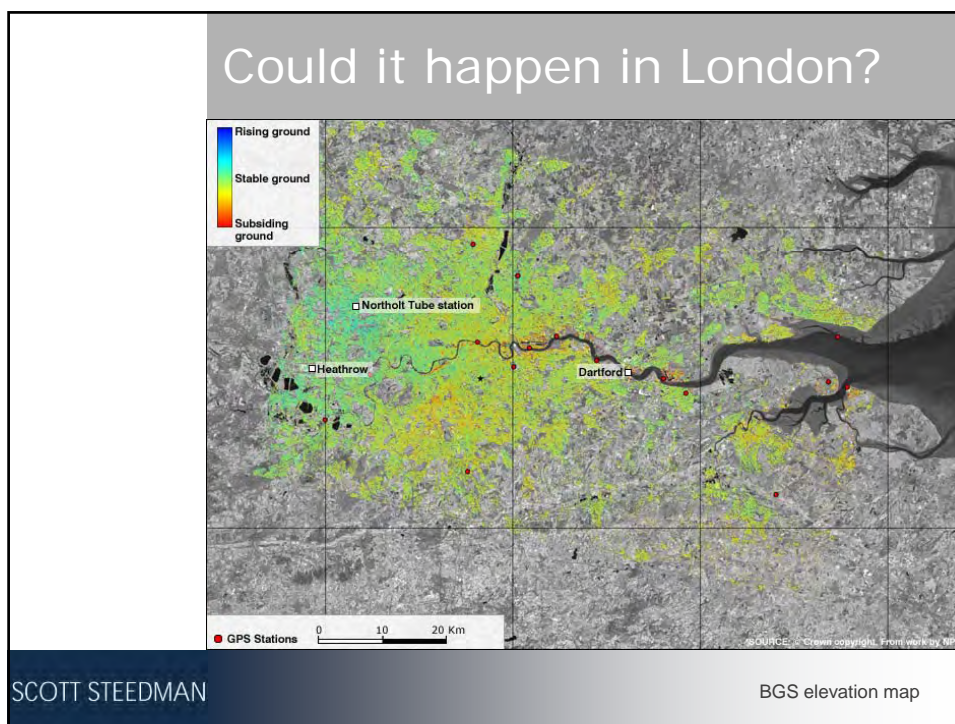


Summary of Benchmark Elevations at Various Hurricane Protection Projects				
Hurricane protection project (Benchmark)	BM Elevation used for Construction	BM Elevation that should have been used	Current BM Elevation	Construction Loss / Current Loss (at BM)
Orleans Ave (Chrysler)	7.11 ft NGVD29 (82)	6.15 ft LMSL (83-01)	5.94 ft LMSL (2005)	0.96 ft / 1.17 ft
London Ave (P 153)	11.27 ft NGVD29 (64)	9.51 ft LMSL (83-01)	9.31 ft LMSL (2005)	1.76 ft / 1.96 ft
17 th Street (USACE 14)	8.77 ft NGVD29 (??)	6.81 ft LMSL (83-01)	6.56 ft LMSL (2005)	1.96 ft / 2.21 ft
IHNC (M 152)	21.811 ft NGVD29 (65)	20.56 ft ?? LMSL (1969)	19.77 ft LMSL (2005)	1.25 ft / 2.04 ft
SCOTT STEEDMAN				



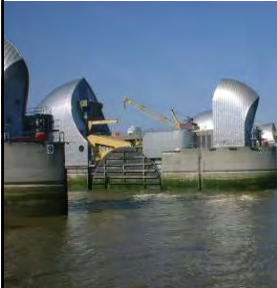




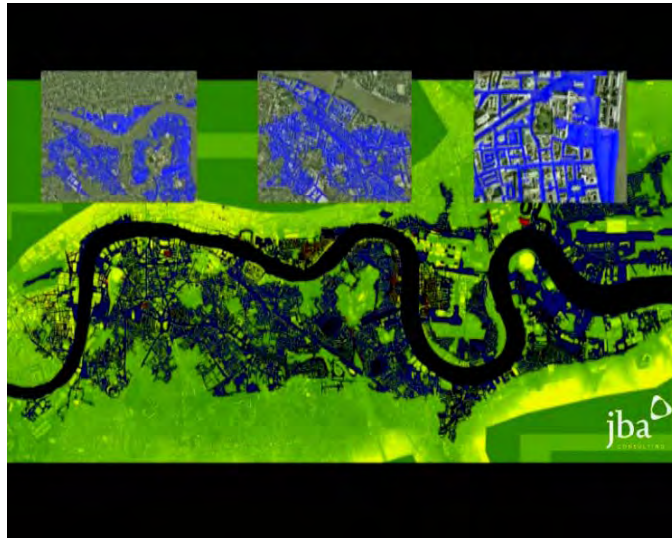


Netherlands – recent levee failure

Thames Flood



European Model
Development Team



GUY CARPENTER

Guy Carpenter Thames flood initiative

Do the defences built after 1953 remain adequate?

What will be the effects of climate change?

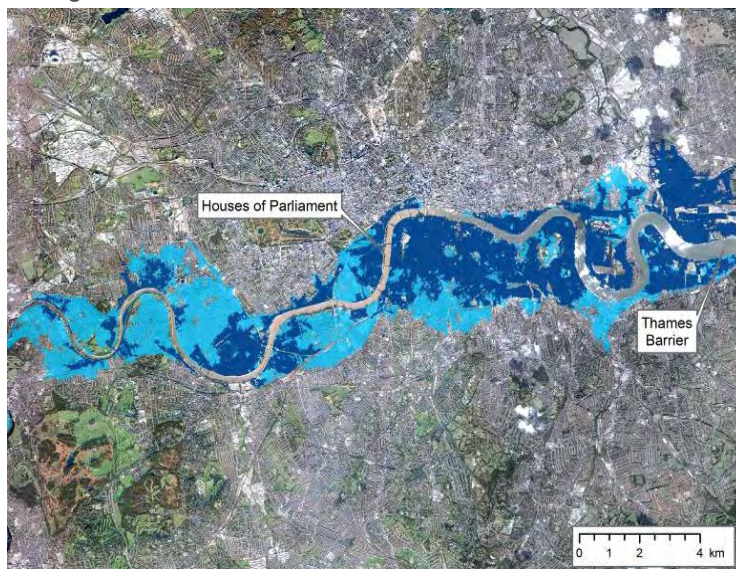
- Growing vulnerability
- Increasing property values
- Need to build in floodplain areas



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Worst Case Scenarios

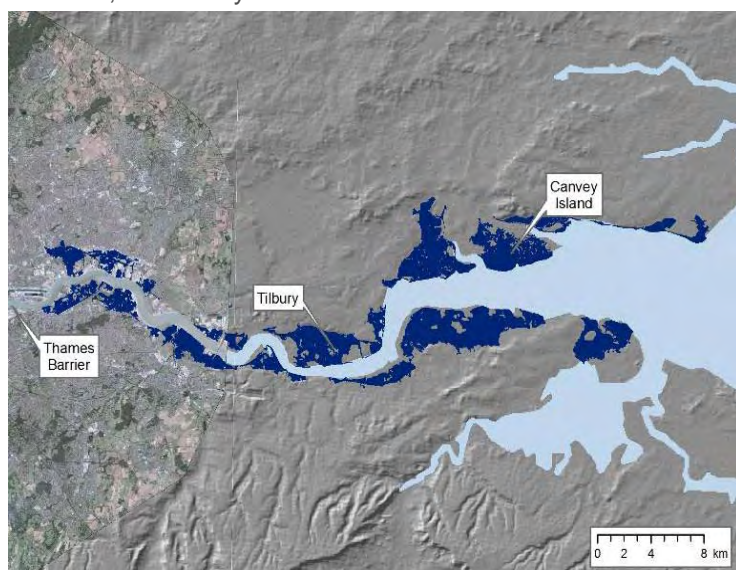
Sea Surge



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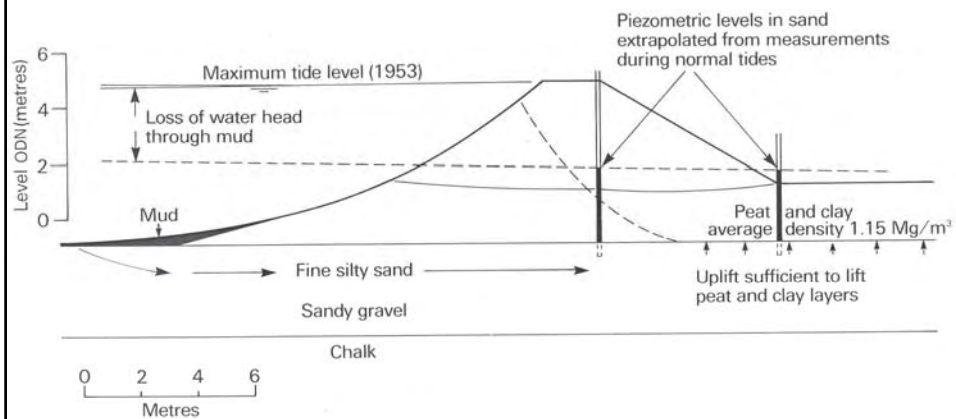
Worst Case Scenarios

Barrier shut, secondary defence failure



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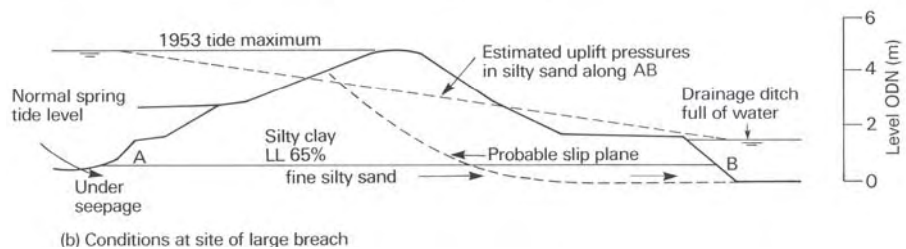
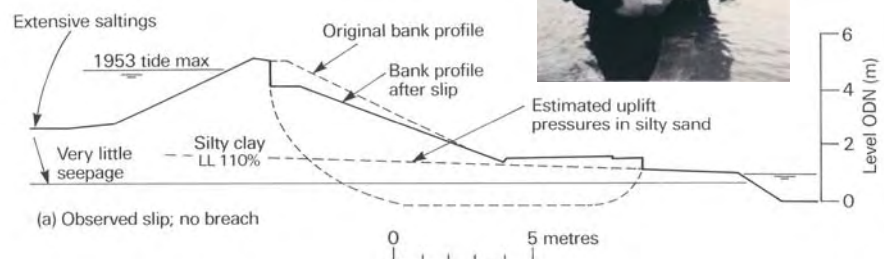
Thames estuary levees: peat over gravel



bre

John J M Powell

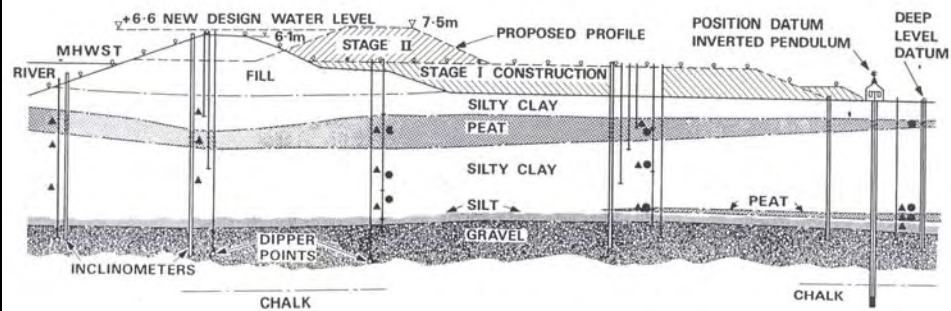
Levee failures in 1953



bre

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Reconstruction during 1970s and 1980s



wider, higher ... but still on top of peat

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John J M Powell

Continued movement in critical zones



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John J M Powell





