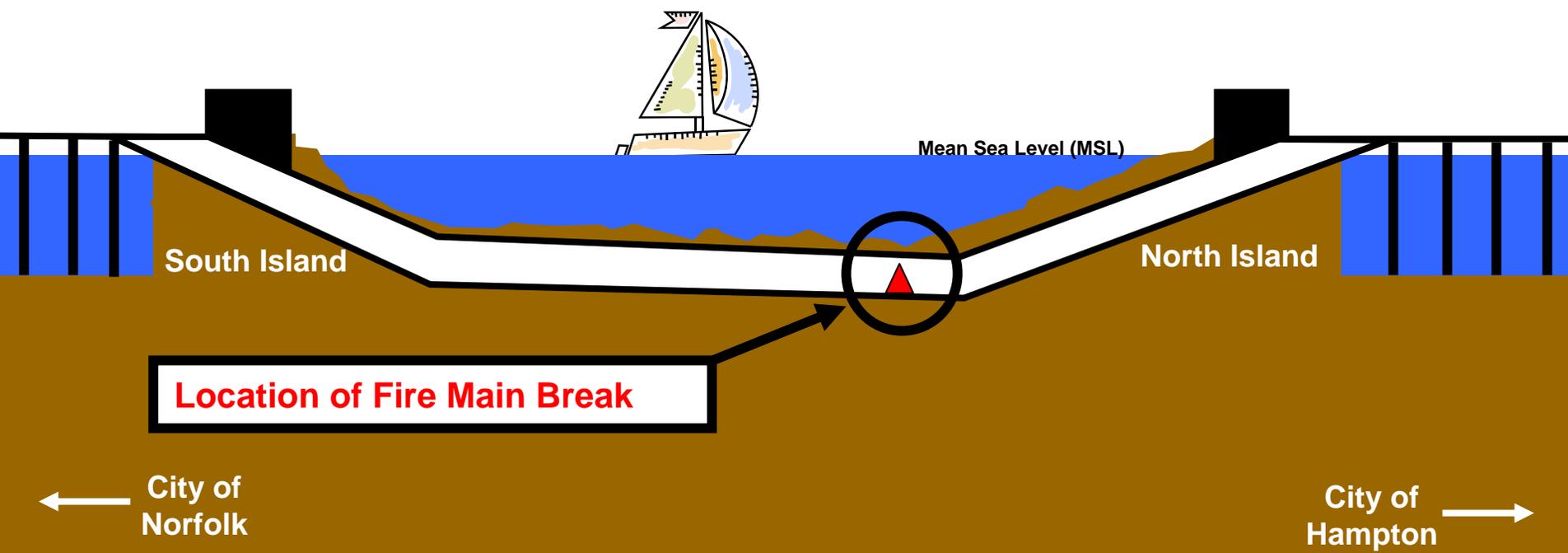




Hampton Roads Bridge-Tunnel
Flooding Initial Review
Presented to the CTB
July 16, 2009

HRBT Tunnel Side Profile



Location of Fire Main Break

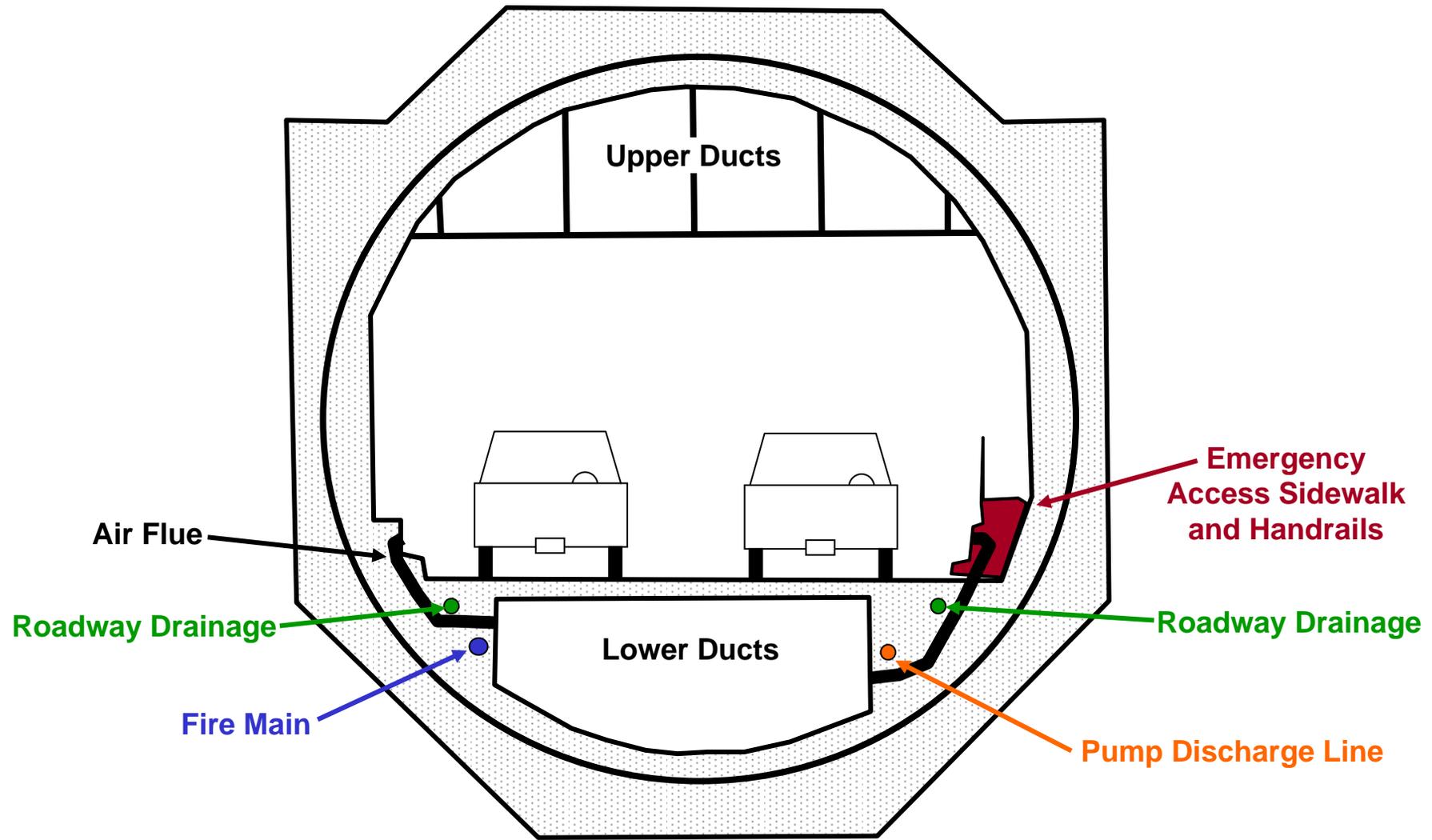
← City of Norfolk

City of Hampton →

Note: Not to Scale

Westbound Tunnel Cross Section

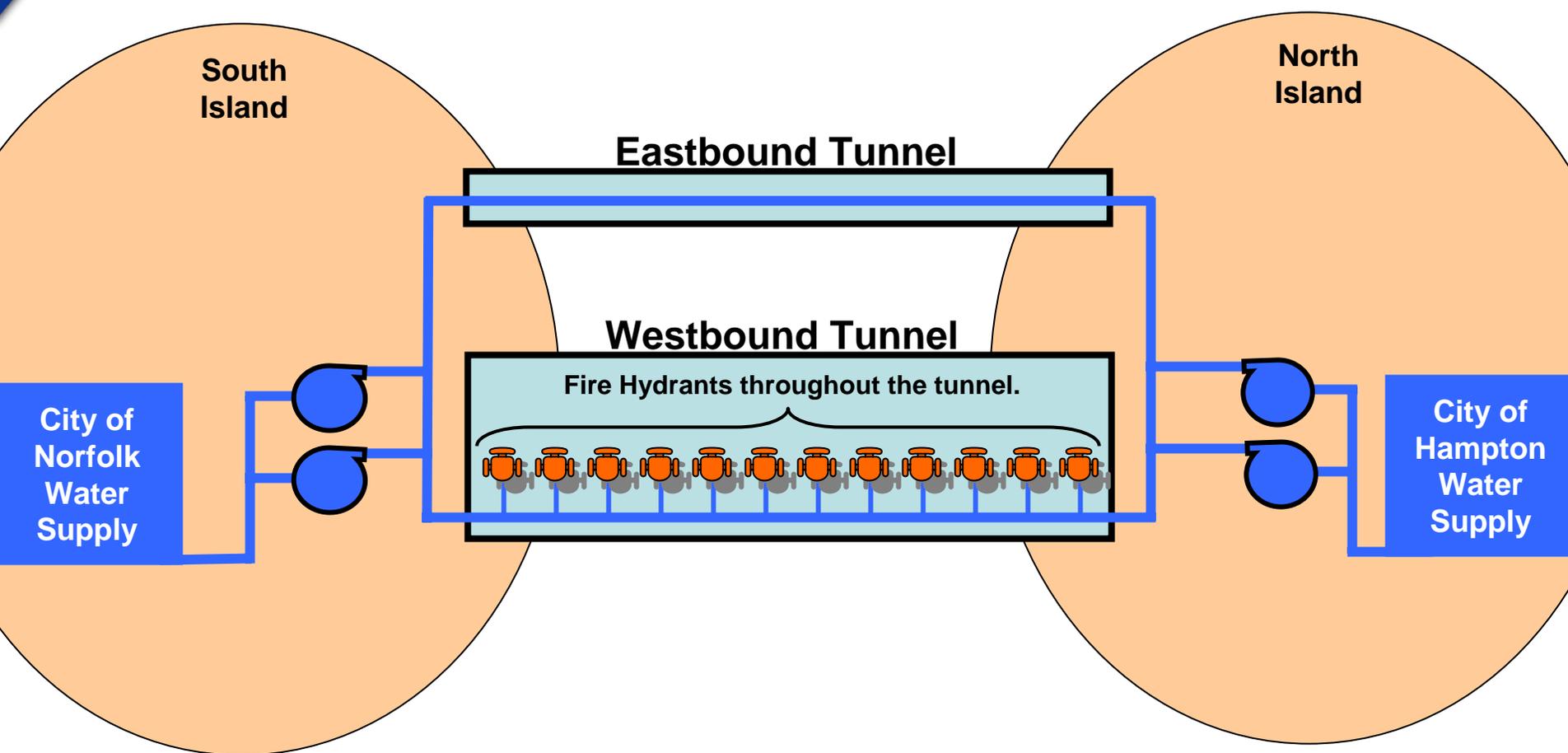
(Looking South towards Norfolk)



Note: Not to Scale

Fire System Plan View

(Simplified Schematic)



Note: Not to Scale

Severe Thunderstorm Warning Area and Impacts Reported to NWS

Imatology Info IEM Networks GIS Roads Severe Weather Web Cams

mbot Interact Radar LSR App River Summary SPC Watches [VTEC Browser]

Help RADAR Map Text Data **Google Map** SBW History Storm Reports within SBW All Storm Reports Geography Included List Events

WAKEFIELD Severe Thunderstorm Warning #0189 issued 2009-07-02 00:50Z expires 2009-07-02 01:30Z

Hide Storm Reports Show County Intersection

Map Satellite Hybrid Nexrad

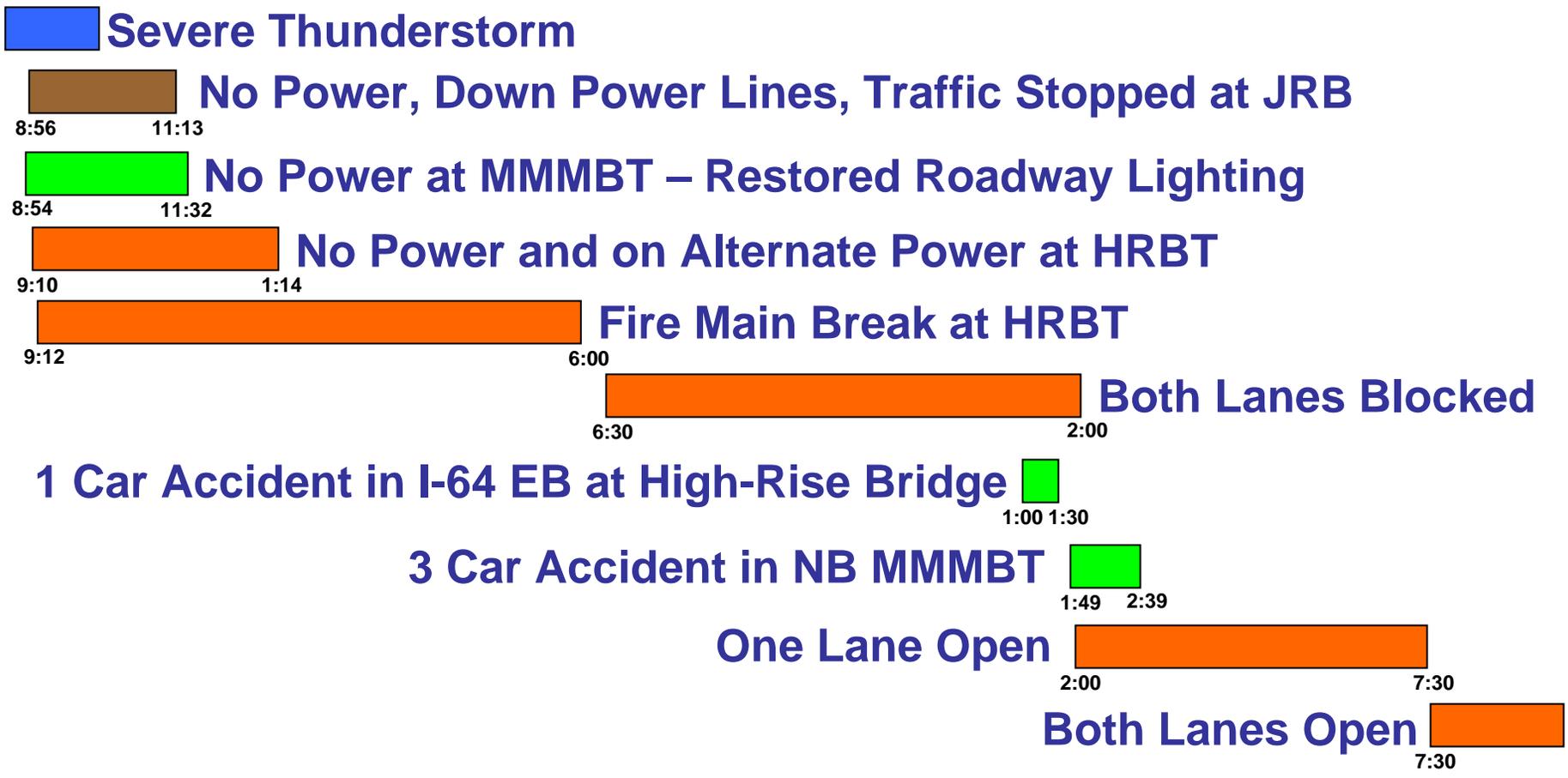
The map displays a yellow shaded area representing the severe thunderstorm warning zone. This area covers parts of Newport News, Hampton, and the surrounding regions. Key locations within the warning area include Newport News, Langley AFB, and parts of Hampton. Major highways shown include I-64, I-66, I-81, and various state routes like 171, 172, 134, 143, 258, 60, 64, 66, 68, 69, 10, 32, 30, 13, 460, 564, and 620. Other labeled locations include Fort Eustis Military Res, Poquoson, Langley AFB, Fox Hill Grandview, Buckroe Beach, Naval Station Norfolk, and Little Creek Naval Amphib Base. The map also shows the Chesapeake Bay Bridge-Tunnel and the Chesapeake Bay. The bottom of the screen shows a Windows taskbar with the Internet Explorer browser icon and a 100% zoom level.

Simultaneous Events

- **James River Bridge (Route 17)**
 - Power Lines Down
 - All Traffic Stopped
- **Monitor-Merrimac Memorial Bridge-Tunnel**
 - Loss of Electrical Power
- **Hampton Roads Bridge-Tunnel**
 - Loss of Electrical Power
- **Chesapeake Bay Bridge-Tunnel**
 - Tractor Trailer overturned

Regional Overview Timeline

1st			July 2nd																					
PM			AM											PM										
9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9



HRBT Response Timeline

Wednesday July 1, 2009

9:10 PM	Power failure at HRBT / Maintenance Notified 9:15 PM / Power switched to Norfolk
9:24 PM	HRBT Fire Pump # 4 on / Maintenance Notified
9:25 PM	Maintenance at James River Bridge for downed power lines, cannot respond to HRBT
11:34 PM	Maintenance reports to HRBT Control Room
11:39 PM	Maintenance checks Fire Pump # 4
11:45 PM	Fire Pump # 4 turned off by Maintenance



Fire Main Wall Rupture



HRBT Response Timeline

Thursday July 2, 2009

12:01AM	Maintenance notes no water supply to the HRBT Facility
1:14 AM	HRBT split power to Hampton and Norfolk side – power restored
1:53 AM	Still no water at HRBT Facility (North and South Island)
6:15 AM	HRBT Control Room notified Maintenance of standing water at Station 7 (lowest point) of westbound tunnel
6:26 AM	All WB traffic stopped due to standing water / Control Room started making notifications
6:45 AM	Maintenance arrive at HRBT
6:57 AM	Maintenance enters the tunnel – water bubbling up from manhole cover in roadway
7:03 AM	HRBT Major Incident VaTraffic / 511 alert system – bridge tunnel stoppage
7:17 AM	HRBT turned into high profile by TEOC; new VaTraffic entry made
7:22 AM	Vacuum truck requested by HRBT to TOC
7:42 AM	Maintenance secures water main and shuts off supply
7:55 AM	2 Vacuum trucks in WB tunnel
8:15 AM	Environmental notified about water discharge
8:29 AM	Hampton Fire Department en route to assist with pumping

HRBT Response Timeline

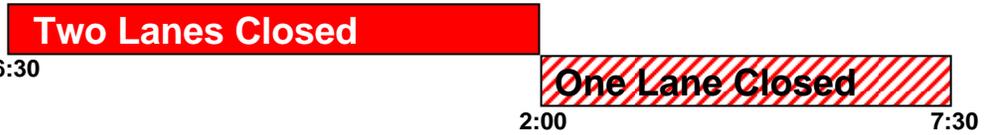
Thursday July 2, 2009

8:30 AM	Began water discharge from vacuum trucks into upper holding tank of North Island
9:15 AM	Environmental permits water discharge. VSP requests Hampton Fire Department to pump water into bay
9:26 AM	VDOT maintenance enters lower duct system
9:44 AM	Hampton Fire Dept. enters Westbound HRBT
2:13 PM	I - 64 West right lane open to traffic at 25 MPH
2:20 PM	VSP remains in tunnel for traffic control
5:00 PM	Hampton Fire Dept. concludes pumping
6:03 PM	Traffic stopped for Fire Dept. to exit
6:08 PM	VDOT preparing to open left lane of HRBT
7:37 PM	Right and Left Lanes open I-64 West bound at 55 MPH

Public Communications Timeline

1st			July 2nd																					
PM			AM											PM										
9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9

Traffic Impacting Event



PIO Communications

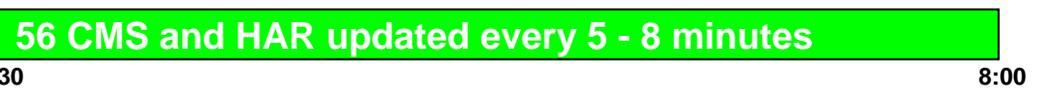


PIO Media Interviews



On the Go Info

- Changeable Message Boards
- Highway Advisory Radio



"511 Alerts"



SSP Routine Patrols 6 Patrols are 24 / 7 / 365

SSP Augmented Patrols



Action Plan

July 1st to 8th

- **July 1st to 2nd :**
 - Restore traffic – **Completed at 7:30 PM, July 2nd**
 - Conducted Emergency Response – **Completed**
- **July 2nd to 8th:**
 - Initiated Emergency Recovery Operations – **On-going**
 - Pump out water – **Completed**
 - Dry out Mid-River Pump Room – **Completed**
 - Dry out lower tunnel ducts – **Completed**
 - Remove two motors and one pump – **Completed**

Action Plan

Current and Future Milestones

- **July 9th:**
 - Replace the two motors and one pump-**Completed**
 - Remove second pump-**Completed**
- **July 10th:**
 - Repair and replace second pump-**Completed**
 - Complete Emergency Recovery Operations-**Completed**
- **Near Term:**
 - Process Stand Down-**Underway**
 - Repair and pressure test Fire Main
 - Establish an Independent Review Panel

Action Plan

Current and Future Milestones

- **Independent Review Panel**
 - **Membership**
 - Office of Commonwealth Preparedness
 - Virginia Department of Emergency Management
 - Virginia State Police
 - Cities of Hampton & Norfolk
 - Federal Highway Administration
 - Johns Hopkins University
 - Port Authority of NY/NJ
 - Chesapeake Bay Bridge Tunnel
 - Parsons Brinckerhoff
 - VDOT

Action Plan

Current and Future Milestones

- **Independent Review Panel**
 - **Mission**
 - Review existing policies and procedures relating to tunnel operations
 - Maintenance and operations
 - Communicating systems
 - Traffic Management
 - Technology
 - Develop Recommendations
 - **Schedule**
 - 3 Meetings starting 1st Week of August
 - Final Report in Mid-September



Questions?