ISABEL
Lessons Learned

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IMPACTS OF ISABEL

September 18-19, 2003

• Actual flooding close to predicted 100 year flood.
• Technically, approximately 80 year flood.
• Damage from tidal surge; rainfall not significant.
• Flood maps basically correct in tidal floodplains.
• Homes built in compliance not damaged.
• Significant damage from less than 3 foot waves.
• Over 500 homes substantially damaged.
MITIGATION TOOLS

- Flood Insurance Increased Cost of Compliance.
- Increase freeboard from 1 foot to 2-3 feet.
- Map Coastal A Zones.
- Anchor existing tanks.
- Elevate utilities as replaced.
FLOOD INSURANCE

• Most property owners had flood insurance.
• Significant mitigation was accomplished with help of flood insurance and ICC.
• Increased Cost of Compliance (ICC) pays extra $30,000 to elevate if substantial damage.
• Flood insurance does not pay for replacement.
  – Elevation costs more – at least $40,000.
  – Pays for losses to level of flooding, not replacement.
  – Still purchase flood insurance if flooding likely.
FREEBOARD

PROTECT PROPERTY FROM FLOOD DAMAGE

• Sea level rise – up to 3 feet next 100 years.
• Land subsidence.
• More frequent storms.
• More severe storms like Isabel.
FREEBOARD

PROTECT RESIDENTS FROM DISRUPTION

• People still out of their homes.
• Recovery takes a long time.
• Recovery more expensive than most think.
• Stress leads to other problems.
• Flood insurance does not pay for all.
FREEBOARD

FLOOD INSURANCE SAVINGS
A SINGLE FAMILY HOME, ONE FLOOR, NO BASEMENT WITH $200,000/$50,000 COVERAGE:

- At BFE (0 feet) = $902
- 1 foot above = $605
- 2 feet above = $428
- 3 feet above = $388

(Refers to feet above 100-year flood elevation.)
FREEBOARD

ADDITIONAL COST TO ELEVATE 2-3 FEET ABOVE BFE CAN BE RECOVERED QUICKLY THROUGH SAVINGS IN FLOOD INSURANCE PREMIUMS

- Estimated cost to lay 2-3 courses of block = $1000 - $1800
- Maximum flood insurance savings per year = $514
- Time to recoup additional expense = about 3 years
- Flood insurance will be more costly in future
COASTAL A ZONES

SUBJECT TO 1-3 FOOT WAVES

• Less than 3 foot waves caused significant damage.
• Decks and tanks torn loose and batter foundation.
• Area not currently mapped.
• Not easy to regulate unless mapped.
• Consider mapping as part of Map Mod.? 
COASTAL A ZONES

WAVES 1-3 FEET

• Covered in Coastal Construction Manual.
• Regulated similar to V-zones
• Area below kept essentially open
• Waves pass through without damage
• Elevate or anchor tanks.
ANCHOR TANKS

- Remediation for oil spills over $2.25 million
- Initiative to anchor residential oil and propane tanks
- Codes require all new and replacement tanks be anchored
- Existing tanks not addressed except by Baltimore County.
ANCHOR TANKS

- Develop effective, inexpensive, permanent solution that can retrofit existing tanks in place
- Uses exiting technology – ground anchors
- Certified by engineer to hold tank during flood
- Train oil and propane suppliers how to install by video and workshops
- Educate public to create desire to anchor tanks
- Cheap insurance - $350 to protect $2,000 tank and contents over 20 years = $17.50/yr.
ANCHOR TANKS