SAND2012-7606P

Column legend (NPS scenarios):
- NPS 1: Nuclear Detonation – 10-Kiloton Improvised Nuclear Device
- NPS 2: Biological Attack – Aerosol Anthrax
- NPS 3: Biological Disease Outbreak – Pandemic Influenza
- NPS 4: Biological Attack – Plague
- NPS 5: Chemical Attack – Blister Agent
- NPS 6: Chemical Attack – Toxic Industrial Chemicals
- NPS 7: Chemical Attack – Nerve Agent
- NPS 8: Chemical Attack – Chlorine Tank Explosion
- NPS 9: Natural Disaster – Major Earthquake
- NPS 10: Natural Disaster – Major Hurricane
- NPS 11: Radiological Attack – Radiological Dispersal Devices
- NPS 12: Explosives Attack – Bombing Using Improvised Explosive Devices
- NPS 13: Biological Attack – Food Contamination
- NPS 14: Biological Attack – Foreign Animal Disease (Foot and Mouth Disease)
- NPS 15: Cyber Attack
- I.D.: Infrastructure Disruption
- Flood: Flood

Model	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
Threat Models																	
Air Dispersion (Plume)																	
HPAC	X	X		X	X	X	X	X			X						
Sweden Plume Model																	
Disease																	
SIR Disease Model																	
Consequence Models																	
Medical Needs																	
AHRQ Hospital Surge Model																	
Hospital Bed Capacity Model																	
BERM Clinic Staffing Model																	
Transportation																	
(RAIL) - RNAS																	
Population Movement																	
Air Travel Population Movement Model																	
Regional Travel Model																	
Infrastructure Effects																	
Building Damage Randomization Model																	
HAZUS Data Extractor (**Extraction ONLY)																	
Sweden Infrastructure Effects Model																	
Flood critical infrastructure effects model																	
HSIP Infrastructure effects model	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
GIS Utility Slot Model																	
Casualties																	
HPAC	X			X	X	X	X	X			X						
HAZUS Data Extractor (**Extraction ONLY)																	
AEGL Health Effects Models																	
GIS Utility Slot Model																	
Water Networks																	
EPAnet																	
Flood																	
Flood Inundation Model																	
Flood Population Effects Model																	
Economic Effects																	
ReAcct																	

2009 - 09

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
Scenario	Nuclear Detonation – 10-Kiloton Improvised Nuclear Device	Biological Attack – Aerosol Anthrax	Biological Disease Outbreak – Pandemic Influenza	Biological Attack – Plague	Chemical Attack – Blister Agent	Chemical Attack – Toxic Industrial Chemicals	Chemical Attack – Nerve Agent	Chemical Attack – Chlorine Tank Explosion	Natural Disaster – Major Earthquake	Natural Disaster – Major Hurricane	Radiological Attack – Radiological Dispersal Devices	Explosives Attack – Bombing Using Improvised Explosive Devices	Biological Attack – Food Contamination	Biological Attack – Foreign Animal Disease (Foot and Mouth Disease)	Cyber Attack	Infrastructure Disruption	Flood
Threat Models																	
Air Dispersion (Plume)																	
HPAC	X	X		X	X	X	X	X			X						
Sweden Plume Model																	
Disease																	
SIR Disease Model																	
Consequence Models																	
Medical Needs																	
AHRQ Hospital Surge Model																	
Hospital Bed Capacity Model																	
BERM Clinic Staffing Model																	
Transportation																	
(RAIL) - RNAS																	
Population Movement																	
Air Travel Population Movement Model																	
Regional Travel Model																	
Infrastructure Effects																	
Building Damage Randomization Model																	
HAZUS Data Extractor (**Extraction ONLY)																	
Sweden Infrastructure Effects Model																	
Flood critical infrastructure effects model																	
HSIP Infrastructure effects model	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
GIS Utility Slot Model																	
Casualties																	
HPAC	X	X		X	X	X	X	X			X						
HAZUS Data Extractor (**Extraction ONLY)																	
AEGL Health Effects Models																	
GIS Utility Slot Model																	
Water Networks																	
EPAnet																	
Flood																	
Flood Inundation Model																	
Flood Population Effects Model																	
Economic Effects																	
ReAcct																	

2009 - 10

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
	Nuclear Detonation – 10-Kiloton Improvised Nuclear Device	Biological Attack – Aerosol Anthrax	Biological Disease Outbreak – Pandemic Influenza	Biological Attack – Plague	Chemical Attack – Blister Agent	Chemical Attack – Toxic Industrial Chemicals	Chemical Attack – Nerve Agent	Chemical Attack – Chlorine Tank Explosion	Natural Disaster – Major Earthquake	Natural Disaster – Major Hurricane	Radiological Attack – Radiological Dispersal Devices	Explosives Attack – Bombing Using Improvised Explosive Devices	Biological Attack – Food Contamination	Biological Attack – Foreign Animal Disease (Foot and Mouth Disease)	Cyber Attack	Infrastructure Disruption	Flood
Threat Models																	
Air Dispersion (Plume)																	
HPAC	X	X		X	X	~	X	M			~						
Sweden Plume Model																	
Disease																	
SIR Disease Model																	
Consequence Models																	
Medical Needs																	
AHRQ Hospital Surge Model	X	X	X	X	X	X	X	X	X		X	X					
Hospital Bed Capacity Model	X					X	X	X									
BERM Clinic Staffing Model																	
Transportation																	
(RAIL) - RNAS																	
Population Movement																	
Air Travel Population Movement Model																	
Regional Travel Model																	
Infrastructure Effects																	
Building Damage Randomization Model																	
HAZUS Data Extractor (**Extraction ONLY)																	
Sweden Infrastructure Effects Model																	
Flood critical infrastructure effects model																	
HSIP Infrastructure effects model	X	X	~	X	X	X	X	M	~	~	~	~	~	~	~	~	
GIS Utility Slot Model																	
Casualties																	
HPAC	X	X		X	X	~	X	M			~						
HAZUS Data Extractor (**Extraction ONLY)																	
AEGL Health Effects Models																	
GIS Utility Slot Model																	
Water Networks																	
EPAnet																	
Flood																	
Flood Inundation Model																	
Flood Population Effects Model																	
Economic Effects																	
ReAcct																	

2010 - 03

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
Column scenario	Nuclear Detonation – 10-Kiloton Improvised Nuclear Device	Biological Attack – Aerosol Anthrax	Biological Disease Outbreak – Pandemic Influenza	Biological Attack – Plague	Chemical Attack – Blister Agent	Chemical Attack – Toxic Industrial Chemicals	Chemical Attack – Nerve Agent	Chemical Attack – Chlorine Tank Explosion	Natural Disaster – Major Earthquake	Natural Disaster – Major Hurricane	Radiological Attack – Radiological Dispersal Devices	Explosives Attack – Bombing Using Improvised Explosive Devices	Biological Attack – Food Contamination	Biological Attack – Foreign Animal Disease (Foot and Mouth Disease)	Cyber Attack	Infrastructure Disruption	Flood

THREAT MODELS

Air Dispersion (Plume)

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
HPAC	■	■		■	■	▨	■	M			▨						
Sweden Plume Model																	

Disease

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
SIR Disease Model																	

CONSEQUENCE MODELS

Medical Needs

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
AHRQ Hospital Surge Model	■	■	■	■	■	■	■	■	■		■	■					
Hospital Bed Capacity Model	■					■	■	■									
BERM Clinic Staffing Model																	

Transportation

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
(RAIL) - RNAS																	

Population Movement

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
Air Travel Population Movement Model	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
Regional Travel Model																	

Infrastructure Effects

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
Building Damage Randomization Model									■								
HAZUS Data Extractor (**Extraction ONLY)									■								
Sweden Infrastructure Effects Model																	
Flood critical infrastructure effects model																	
HSIP Infrastructure effects model	■	■	▨	■	■	■	■	M	▨	▨	▨	▨	▨	▨	▨	▨	
GIS Utility Slot Model																	

Casualties

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
HPAC	■	■		■	■	■	■	M			▨						
HAZUS Data Extractor (**Extraction ONLY)									■								
AEGL Health Effects Models																	
GIS Utility Slot Model																	

Water Networks

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
EPAnet																	

Flood

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
Flood Inundation Model																	
Flood Population Effects Model																	

Economic Effects

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
ReAcct																	

Model	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
THREAT MODELS																	
Air Dispersion (Plume)																	
HPAC	X	X		X	X	X	X	M			X						
Sweden Plume Model								X									
Disease																	
SIR Disease Model																	
CONSEQUENCE MODELS																	
Medical Needs																	
AHRQ Hospital Surge Model	X	X	X	X	X		X	X	M		X	X					
Hospital Bed Capacity Model	X					X		X									
BERM Clinic Staffing Model																	
Transportation																	
(RAIL) - RNAS																	
Population Movement																	
Air Travel Population Movement Model																	
Regional Travel Model																	
Infrastructure Effects																	
Building Damage Randomization Model									M								
HAZUS Data Extractor (**Extraction ONLY)									M								
Sweden Infrastructure Effects Model								X									
Flood critical infrastructure effects model																	
HSIP Infrastructure effects model	X	X		X	X	X	X	M									
GIS Utility Slot Model																	
Casualties																	
HPAC	X	X		X	X		X	M			X						
HAZUS Data Extractor (**Extraction ONLY)									M								
AEGL Health Effects Models								X									
GIS Utility Slot Model																	
Water Networks																	
EPAnet																	
Flood																	
Flood Inundation Model																	
Flood Population Effects Model																	
Economic Effects																	
ReAcct																	

Column scenario labels:

- NPS 1: Nuclear Detonation – 10-Kiloton Improvised Nuclear Device
- NPS 2: Biological Attack – Aerosol Anthrax
- NPS 3: Biological Disease Outbreak – Pandemic Influenza
- NPS 4: Biological Attack – Plague
- NPS 5: Chemical Attack – Blister Agent
- NPS 6: Chemical Attack – Toxic Industrial Chemicals
- NPS 7: Chemical Attack – Nerve Agent
- NPS 8: Chemical Attack – Chlorine Tank Explosion
- NPS 9: Natural Disaster – Major Earthquake
- NPS 10: Natural Disaster – Major Hurricane
- NPS 11: Radiological Attack – Radiological Dispersal Devices
- NPS 12: Explosives Attack – Bombing Using Improvised Explosive Devices
- NPS 13: Biological Attack – Food Contamination
- NPS 14: Biological Attack – Foreign Animal Disease (Foot and Mouth Disease)
- NPS 15: Cyber Attack
- I.D.: Infrastructure Disruption
- Flood: Flood

2011 - 11

2012 - 01

	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
	Nuclear Detonation – 10-Kiloton Improvised Nuclear Device	Biological Attack – Aerosol Anthrax	Biological Disease Outbreak – Pandemic Influenza	Biological Attack – Plague	Chemical Attack – Blister Agent	Chemical Attack – Toxic Industrial Chemicals	Chemical Attack – Nerve Agent	Chemical Attack – Chlorine Tank Explosion	Natural Disaster – Major Earthquake	Natural Disaster – Major Hurricane	Radiological Attack – Radiological Dispersal Devices	Explosives Attack – Bombing Using Improvised Explosive Devices	Biological Attack – Food Contamination	Biological Attack – Foreign Animal Disease (Foot and Mouth Disease)	Cyber Attack	Infrastructure Disruption	Flood
Threat Models																	
Air Dispersion (Plume)																	
HPAC	X	X		X	X	(X)	X	M			(X)						
Sweden Plume Model								X									
Disease																	
SIR Disease Model			X	X													
Consequence Models																	
Medical Needs																	
AHRQ Hospital Surge Model	X	X	X	X	X	X	X	X	M		X	X					
Hospital Bed Capacity Model	X					X	X	X									
BERM Clinic Staffing Model																	
Transportation																	
(RAIL) - RNAS																	
Population Movement																	
Air Travel Population Movement Model	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)		(X)		(X)	(X)
Regional Travel Model																	
Infrastructure Effects																	
Building Damage Randomization Model									M								
HAZUS Data Extractor (**Extraction ONLY)									M								
Sweden Infrastructure Effects Model	(X)							X								(X)	
Flood critical infrastructure effects model																	
HSIP Infrastructure effects model	X	X	X	X	X	X	X	M	(X)							(X)	
GIS Utility Slot Model																	
Casualties																	
HPAC	X	X		X	X		X	M			(X)						
HAZUS Data Extractor (**Extraction ONLY)									M								
AEGL Health Effects Models					(X)	(X)	(X)	X									
GIS Utility Slot Model																	
Water Networks																	
EPAnet																	
Flood																	
Flood Inundation Model																	
Flood Population Effects Model																	
Economic Effects																	
ReAcct																	

Threat and Consequence Model Matrix — National Planning Scenarios (NPS)

Column key:
- NPS 1: Nuclear Detonation – 10-Kiloton Improvised Nuclear Device
- NPS 2: Biological Attack – Aerosol Anthrax
- NPS 3: Biological Disease Outbreak – Pandemic Influenza
- NPS 4: Biological Attack – Plague
- NPS 5: Chemical Attack – Blister Agent
- NPS 6: Chemical Attack – Toxic Industrial Chemicals
- NPS 7: Chemical Attack – Nerve Agent
- NPS 8: Chemical Attack – Chlorine Tank Explosion
- NPS 9: Natural Disaster – Major Earthquake
- NPS 10: Natural Disaster – Major Hurricane
- NPS 11: Radiological Attack – Radiological Dispersal Devices
- NPS 12: Explosives Attack – Bombing Using Improvised Explosive Devices
- NPS 13: Biological Attack – Food Contamination
- NPS 14: Biological Attack – Foreign Animal Disease (Foot and Mouth Disease)
- NPS 15: Cyber Attack
- I.D.: Infrastructure Disruption
- Flood: Flood

Model	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
Threat Models																	
Air Dispersion (Plume)																	
HPAC	X	X		X	X	·	X	M			·						
Sweden Plume Model								X									
Disease																	
SIR Disease Model			X	X													
Consequence Models																	
Medical Needs																	
AHRQ Hospital Surge Model	X	X	X	X	X	X	X	X	M		X	X					
Hospital Bed Capacity Model	X					X		X									
BERM Clinic Staffing Model		X	X	X			·										
Transportation																	
(RAIL) - RNAS	·								·		·	·				X	
Population Movement																	
Air Travel Population Movement Model	·	·	·	·	·	·	·	·	·	·	·	·		·	·	·	
Regional Travel Model	·	X	X	X	·		X	·	·	·	·	·		·		·	
Infrastructure Effects																	
Building Damage Randomization Model									M								
HAZUS Data Extractor (**Extraction ONLY)									M								
Sweden Infrastructure Effects Model	·							X	·							·	
Flood critical infrastructure effects model																	
HSIP Infrastructure effects model	X	X	·	X	X		X	M									
GIS Utility Slot Model		X	X	X			X										
Casualties																	
HPAC	X	X		X	X		X	M			·						
HAZUS Data Extractor (**Extraction ONLY)									M								
AEGL Health Effects Models					·				X								
GIS Utility Slot Model		X	X	X			X										
Water Networks																	
EPAnet									·							X	
Flood																	
Flood Inundation Model																	
Flood Population Effects Model																	
Economic Effects																	
ReAcct	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·

2012 - 05

Model	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood
Column scenario	Nuclear Detonation – 10-Kiloton Improvised Nuclear Device	Biological Attack – Aerosol Anthrax	Biological Disease Outbreak – Pandemic Influenza	Biological Attack – Plague	Chemical Attack – Blister Agent	Chemical Attack – Toxic Industrial Chemicals	Chemical Attack – Nerve Agent	Chemical Attack – Chlorine Tank Explosion	Natural Disaster – Major Earthquake	Natural Disaster – Major Hurricane	Radiological Attack – Radiological Dispersal Devices	Explosives Attack – Bombing Using Improvised Explosive Devices	Biological Attack – Food Contamination	Biological Attack – Foreign Animal Disease (Foot and Mouth Disease)	Cyber Attack	Infrastructure Disruption	Flood
Threat Models																	
Air Dispersion (Plume)																	
HPAC	X	X		X	X	X	X	M			X						
Sweden Plume Model								X									
Disease																	
SIR Disease Model			X	X													
Consequence Models																	
Medical Needs																	
AHRQ Hospital Surge Model	X	X	X	X	X		X	X	M		X	X					
Hospital Bed Capacity Model	X					X		X									
BERM Clinic Staffing Model		X	X	X													
Transportation																	
(RAIL) - RNAS																X	
Population Movement																	
Air Travel Population Movement Model																	
Regional Travel Model		X	X	X			X										
Infrastructure Effects																	
Building Damage Randomization Model									M								
HAZUS Data Extractor (**Extraction ONLY)									M								
Sweden Infrastructure Effects Model								X									
Flood critical infrastructure effects model																	X
HSIP Infrastructure effects model	X	X	X	X	X	X	X	M									
GIS Utility Slot Model		X	X	X	X		X										
Casualties																	
HPAC	X	X		X	X		X	M			X						
HAZUS Data Extractor (**Extraction ONLY)									M								
AEGL Health Effects Models					X			X									
GIS Utility Slot Model		X	X	X			X										
Water Networks																	
EPAnet									X							X	
Flood																	
Flood Inundation Model																	X
Flood Population Effects Model																	X
Economic Effects																	
ReAcct																M	

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