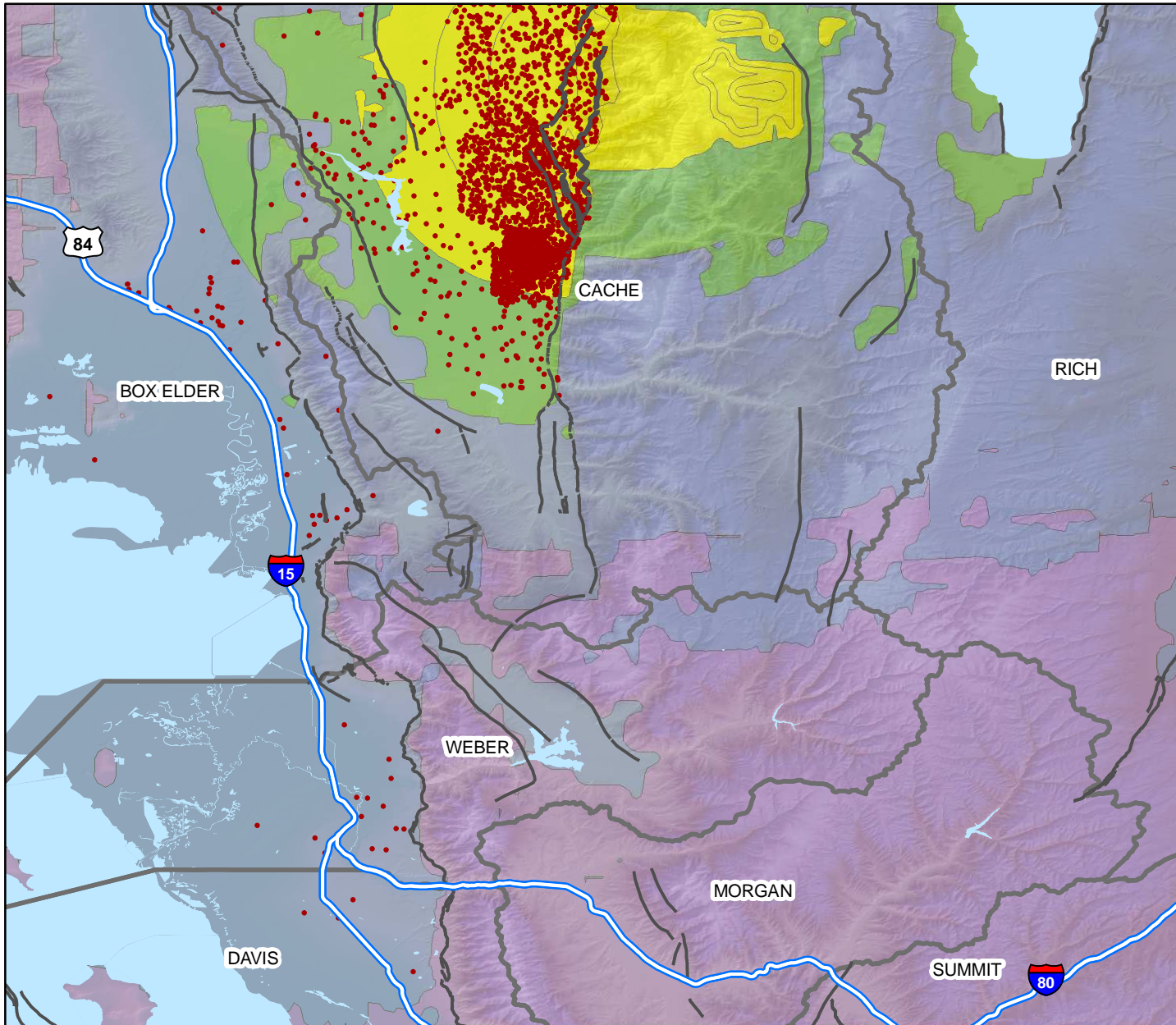
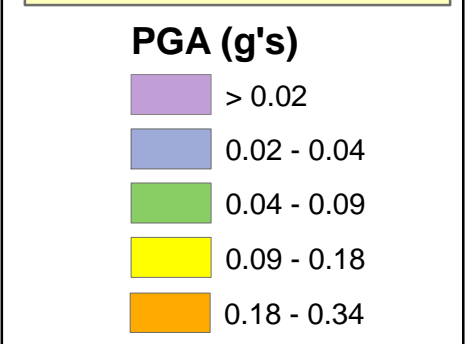


# Direct Building Economic Loss - Earthquake Scenario: Cache Valley, UT



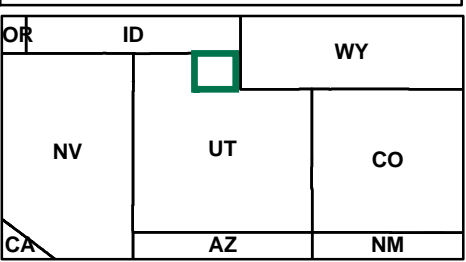
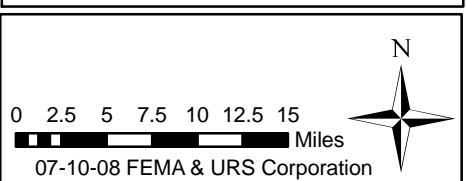
## M 5.7 Cache Valley Earthquake

● 1 Dot = \$10,000

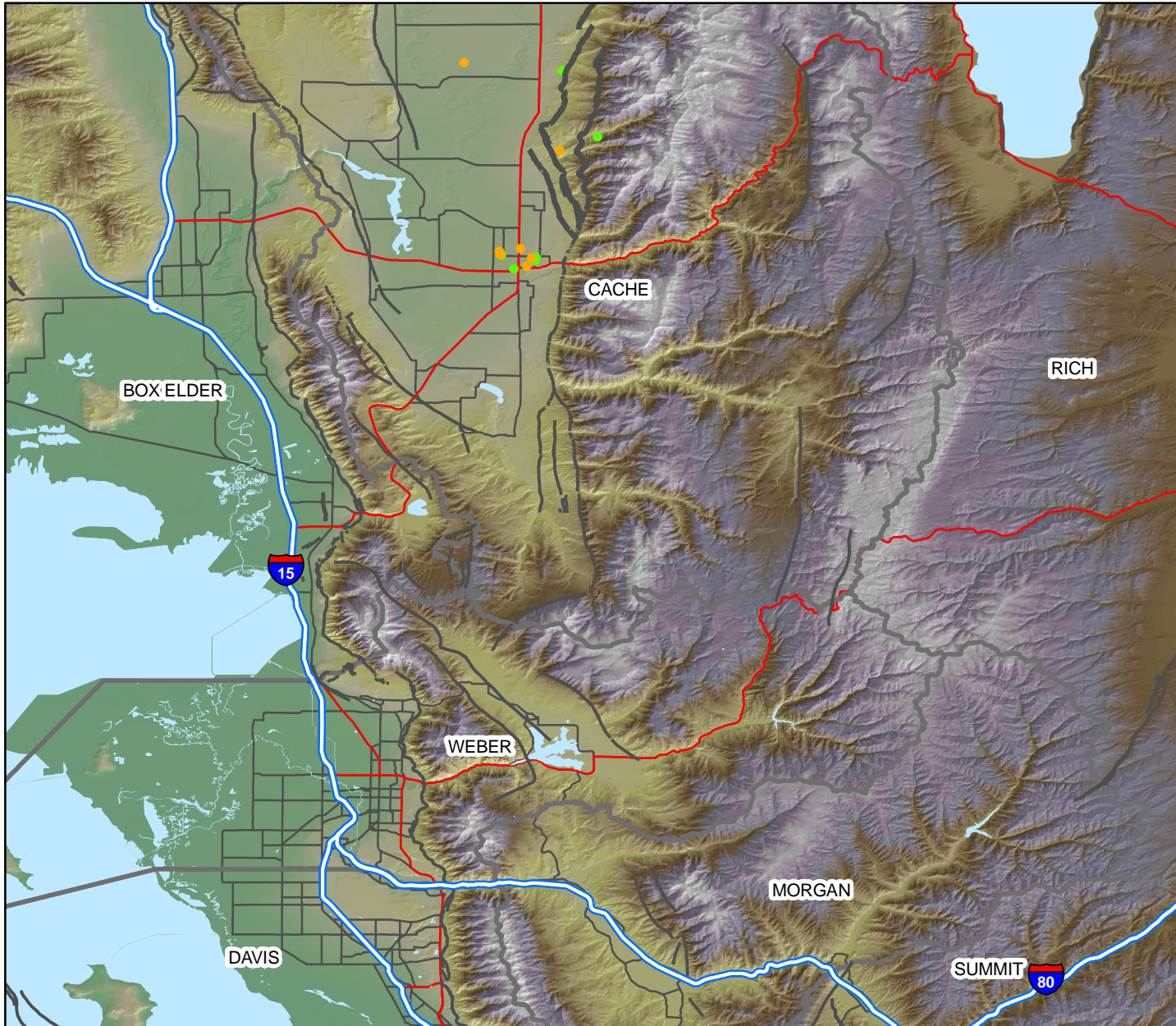


County	Cost Structural Damage	Cost Non-Structural Damage	Total Loss (Including Contents)
Box Elder	\$135	\$232	\$508
Cache	\$3,715	\$14,020	\$27,519
Weber	\$14	\$98	\$184
<b>Total</b>	<b>\$3,864</b>	<b>\$14,350</b>	<b>\$28,211</b>

\* All values are thousands of dollars



# Estimated Displaced Households & Short Term Public Shelter Needs - Earthquake Scenario: Cache Valley, UT

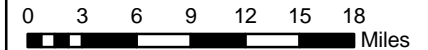


## M 5.7 Cache Valley Earthquake

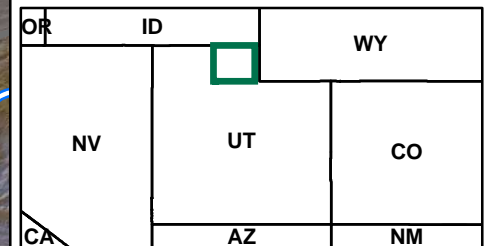
	Total #
Public Shelter Needs (Individuals)	7
Displaced Households	8

- 1 Dot = 1 Displaced Household\*
  - 1 Dot = 1 Public Shelter Need (Individuals)\*
- \* delineated by census tract

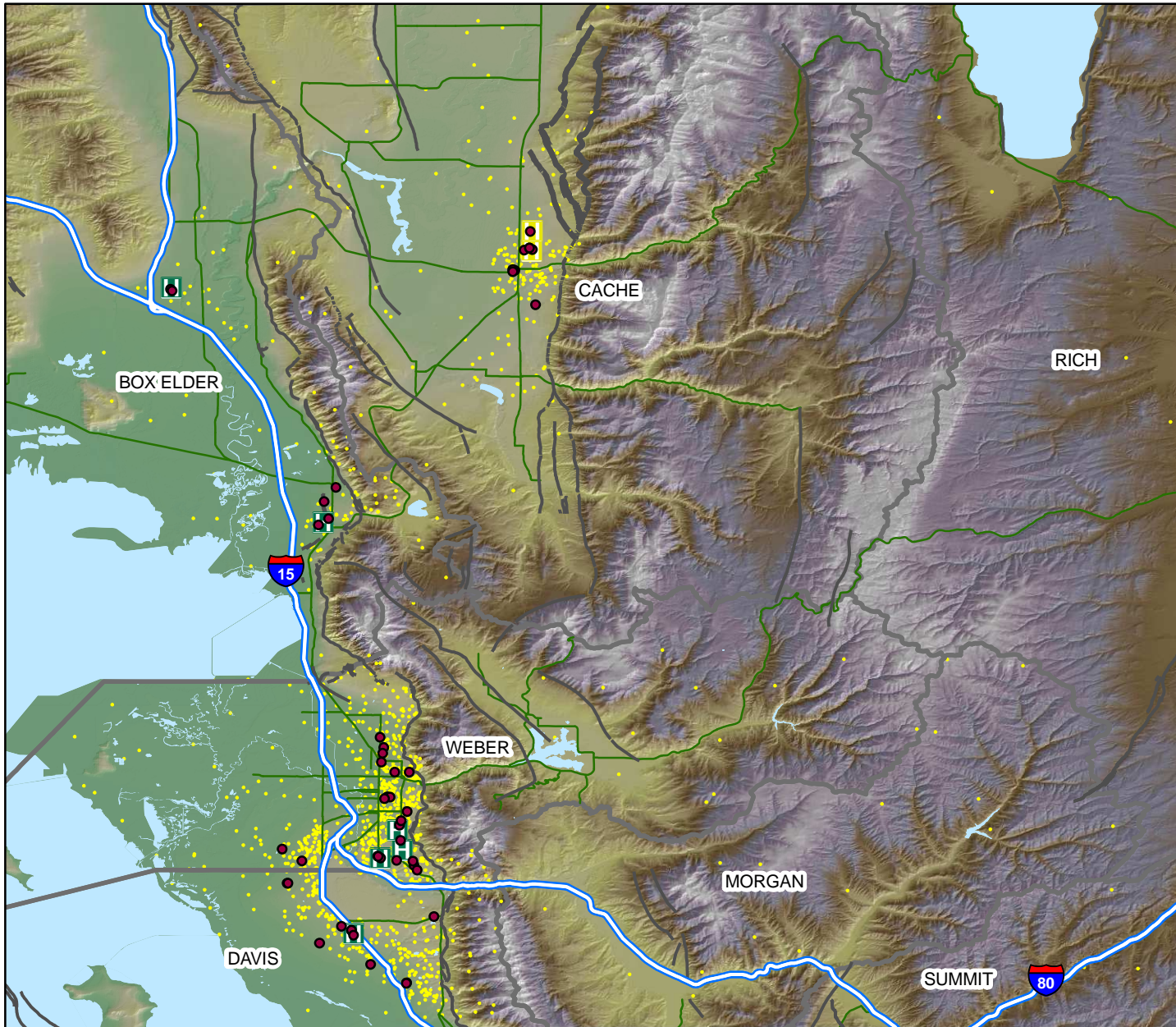
- Roads**
- Interstate
  - Highway
  - Major Road
- Counties**



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# Distribution of Elderly, Impaired Hospitals (Day 1), & Hospital Bed Availability - Earthquake Scenario: Cache Valley, UT



## M 5.7 Cache Valley Earthquake

### Highway Functionality - Day 1

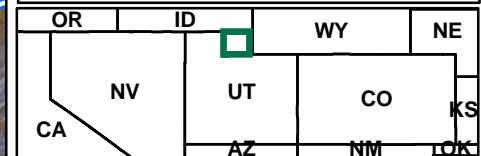
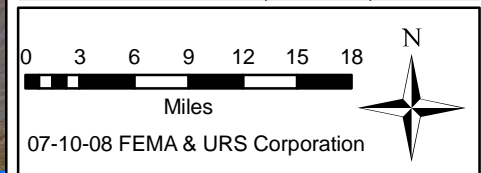
Damage is expressed as the percentage chance that a given highway or bridge segment will be functional at Day 1.

- 1 Dot = 30 People over 65
- Highway
- 100%
- Nursing Home

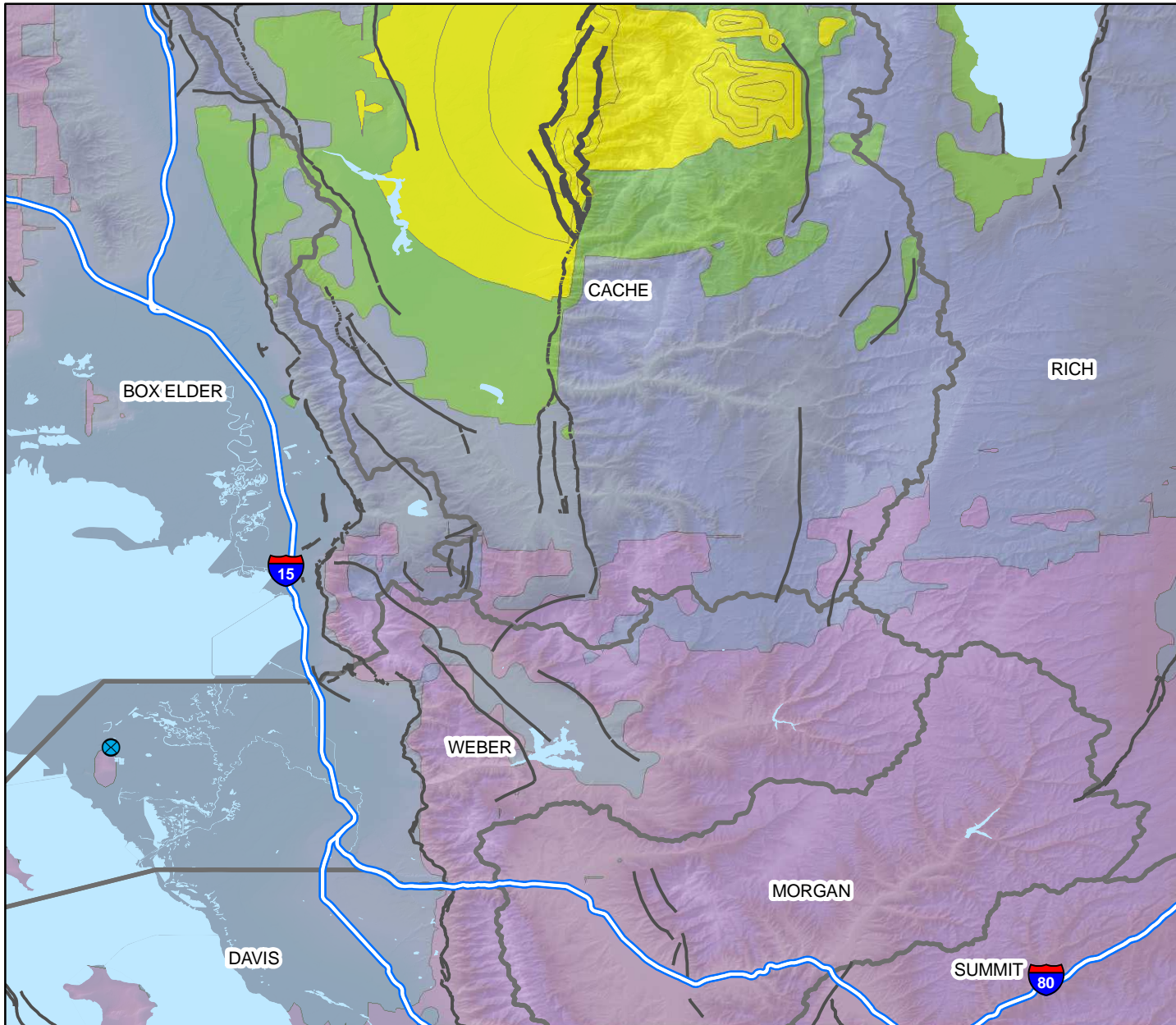
### Impaired Hospitals at Day 1

Damage is expressed as the percentage chance that a given hospital will be functional at Day 1. H < 99%  
H > 99%

County	Total # Hospital Beds	Hospital Beds Available
Box Elder	107	107
Cache	158	156
Carbon	84	84
Davis	468	468
Duchesne	42	42
Juab	31	31
Millard	40	40
Salt Lake	3,440	3,440
Sanpete	44	44
Tooele	118	118
Utah	1,013	1,013
Wasatch	20	20
Weber	655	655
<b>Total</b>	<b>6,220</b>	<b>6,218</b>



# Electrical, Natural Gas, and Oil Facility Damage - Earthquake Scenario: Cache Valley, UT



## M 5.7 Cache Valley Earthquake

### Utility Damage (at least moderate)

Damage is expressed as the percentage chance that a given Utility System will realize at least moderate damage.

#### PGA (g's)

- > 0.02
- 0.02 - 0.04
- 0.04 - 0.09
- 0.09 - 0.18
- 0.18 - 0.34

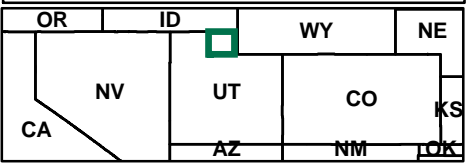
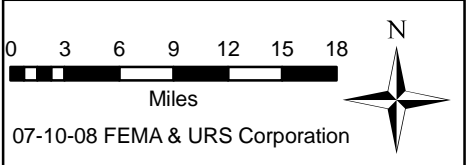
- #### Oil Facility
- < 20%
  - 20% - 60%
  - > 60%

#### Electric Power Facility

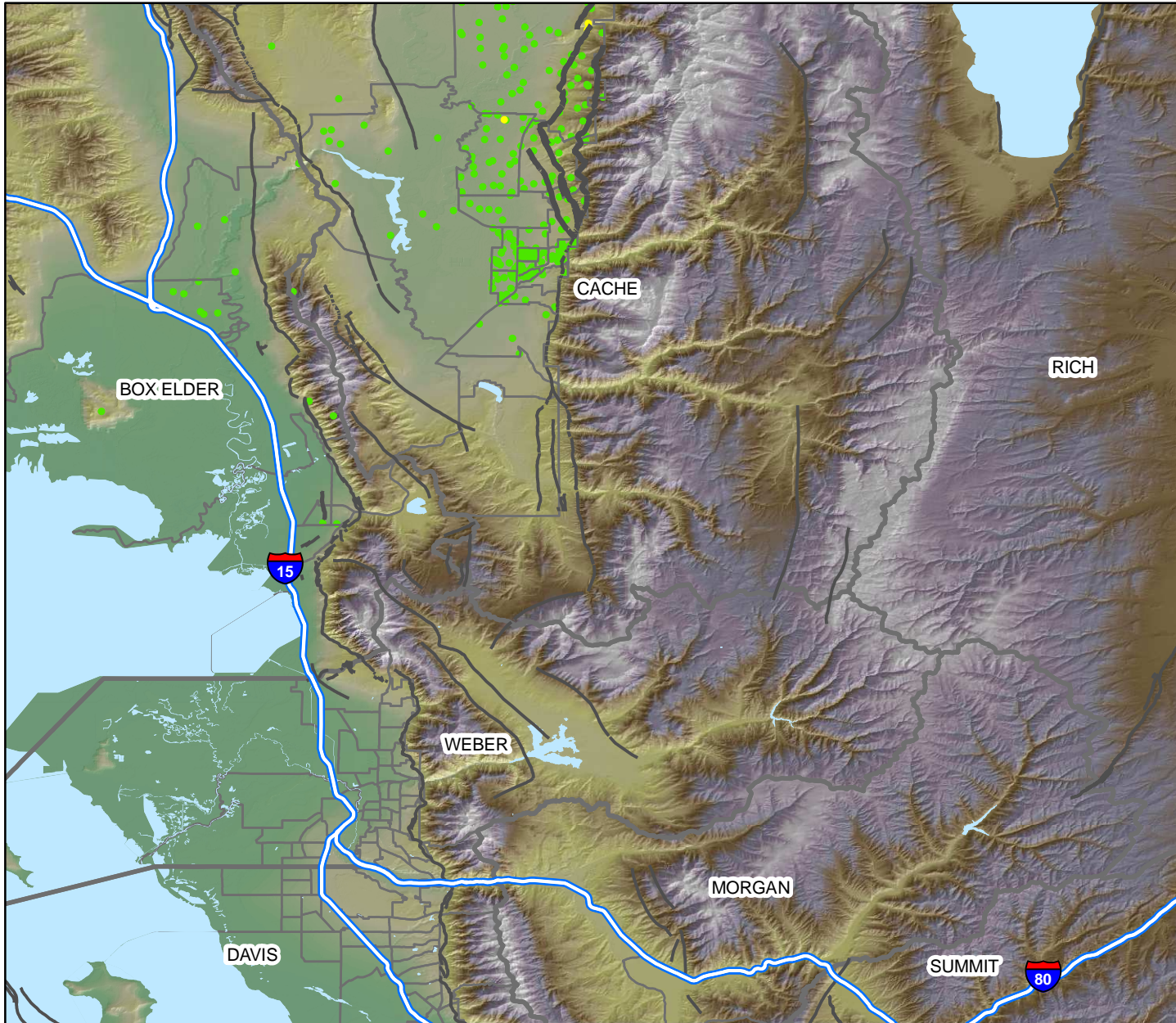
- ⊗ < 20%
- ⊗ 20% - 60%
- ⊗ > 60%

#### Natural Gas Facility

- < 20%
- 20% - 60%
- > 60%



# Estimated Building Inspection Needs - Earthquake Scenario: Cache Valley, UT

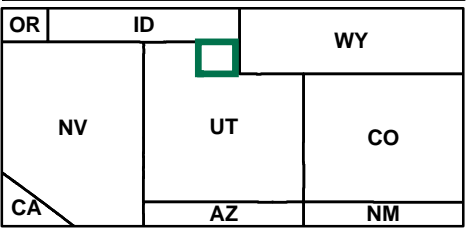
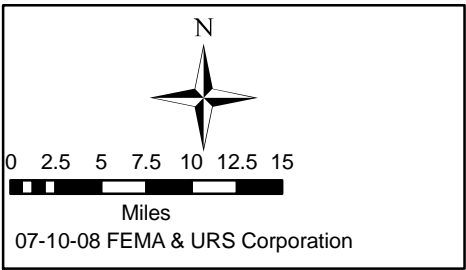


## M 5.7 Cache Valley Earthquake

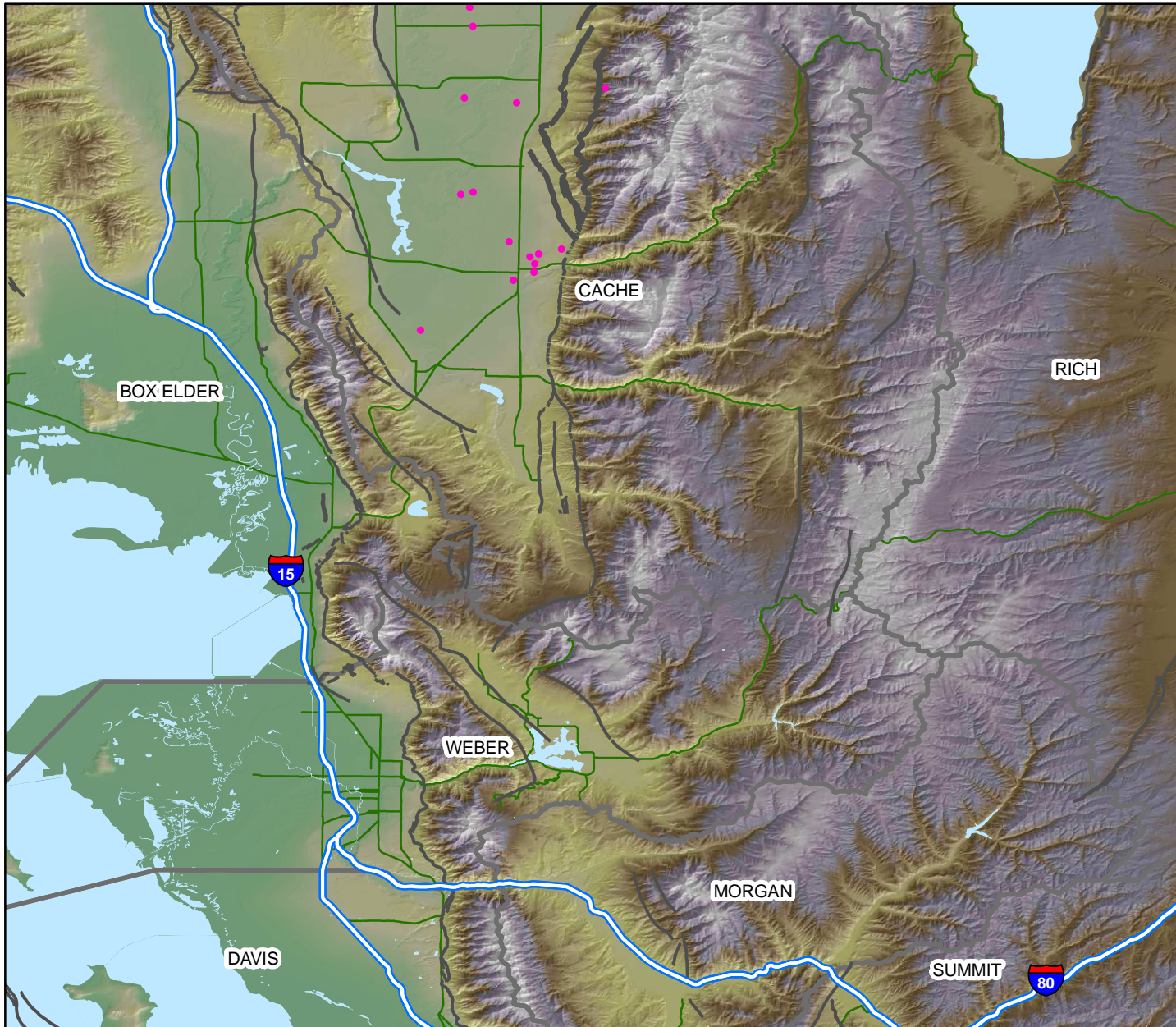
	Estimated # of Structures	Estimated # of Inspectors Needed
Red (Complete)	1	1
Yellow (Extensive)	28	3
Light Green (Slight/Moderate)	2,746	37
<b>Total</b>	<b>2,775</b>	<b>41</b>

\*Estimated number of inspectors needed to complete inspections in 30 days.

- 1 Dot = 10 (by census tract)
- Red Tag (Complete Damage)
- Yellow Tag (Extensive Damage)
- Green Tag (Slight/Moderate Damage)



# Estimated Concrete, Steel Debris and Highway Damage - Earthquake Scenario: Cache Valley, UT

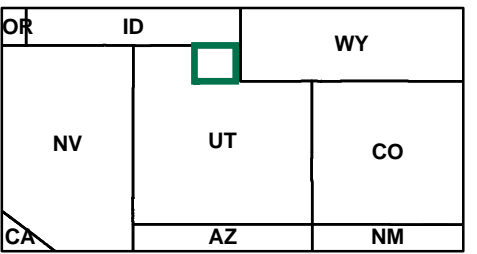
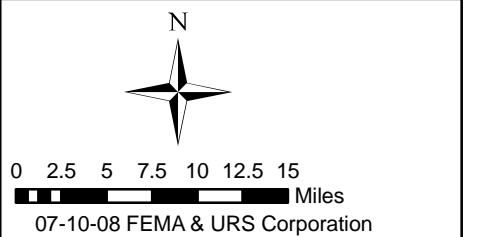


## M 5.7 Cache Valley Earthquake

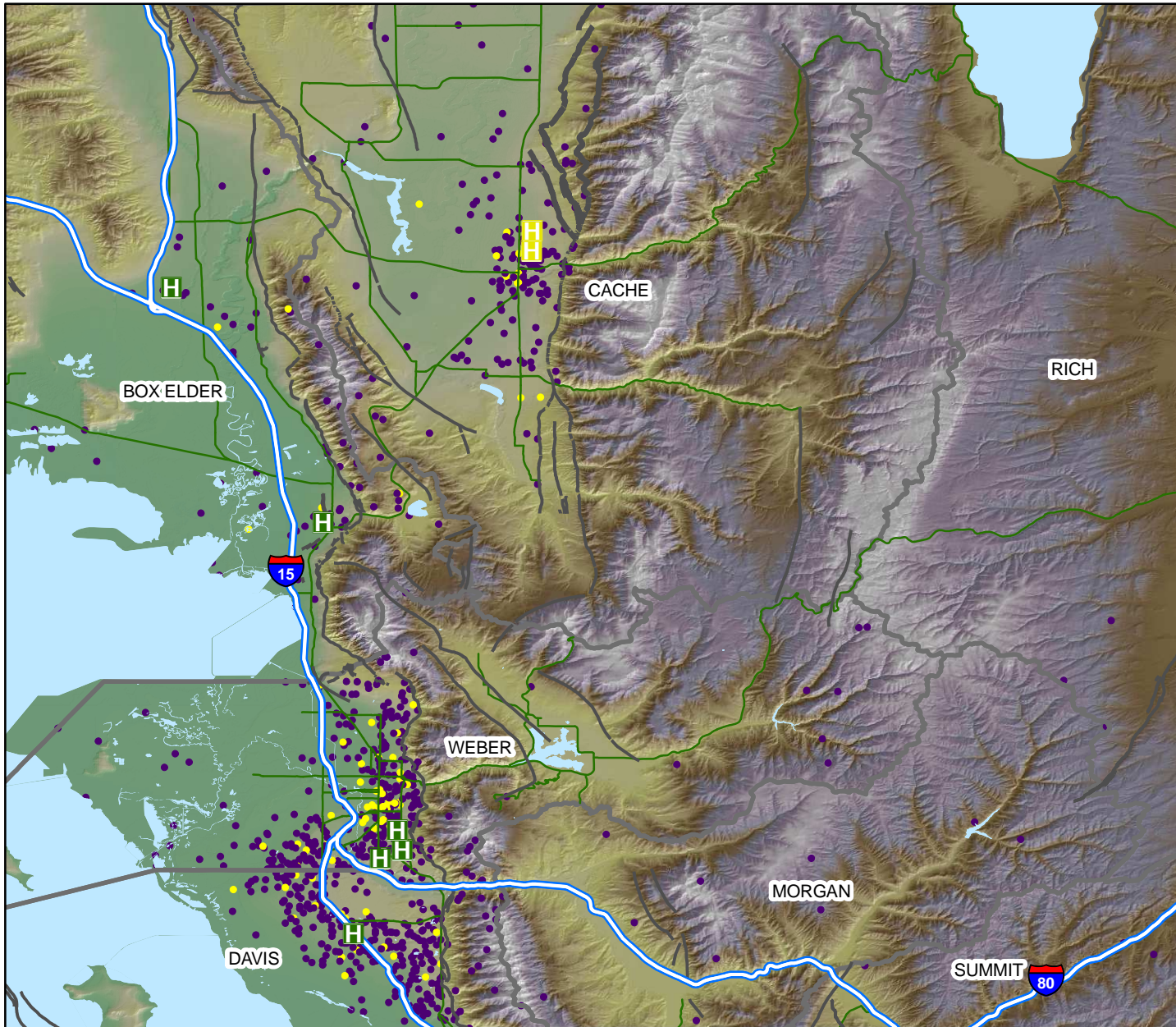
- 1 Dot = 1 thousand tons of Concrete and Steel Debris (by census tract)
- Counties
- Highway Damage (at least moderate)**
- < 5% Damage is expressed as the percentage chance that a Highway segment will realize at least moderate damage.
- 5% - 10%
- > 10%

County	Brick and Wood (tons)	Concrete and Steel (tons)	Estimated Truck Loads*
Box Elder	1,000	0	40
Cache	15,000	2,000	680
<b>Total</b>	<b>16,000</b>	<b>2,000</b>	<b>720</b>

\* Truck loads estimated at 25 tons per truck



# Demographic Distribution and Highway Functionality (Day 1) - Earthquake Scenario: Cache Valley, UT



## M 5.7 Cache Valley Earthquake

### Highway Functionality - Day 1

Damage is expressed as the percentage chance that a given highway or bridge segment will be functional at Day 1.

Highway

- < 90%
- 90% - 95%
- > 95%

### Demographics

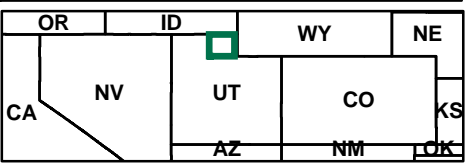
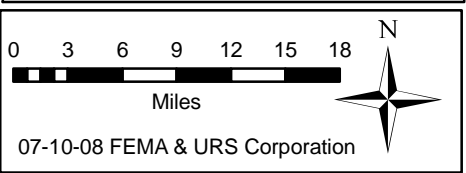
1 Dot = 500 People (by census tract)

- English Speaking
- Potentially Non-English Speaking

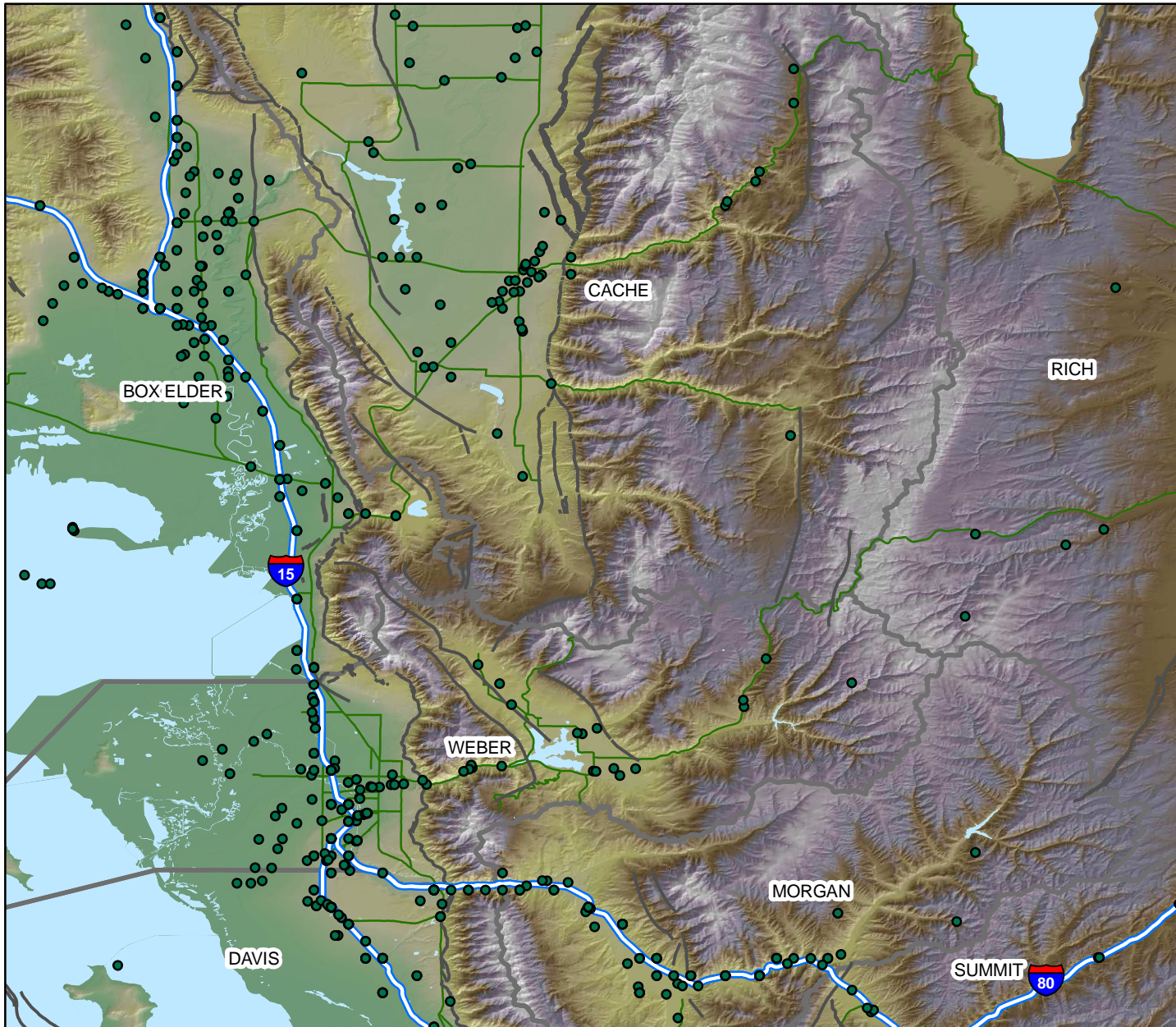
### Impaired Hospitals (Day1)

Damage is expressed as the percentage chance that a given hospital will be functional on Day 1.

- H < 99%
- H > 99%



# Estimated Highway Infrastructure Damage - Earthquake Scenario: Cache Valley, UT



## M 5.7 Cache Valley Earthquake

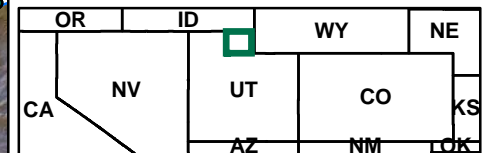
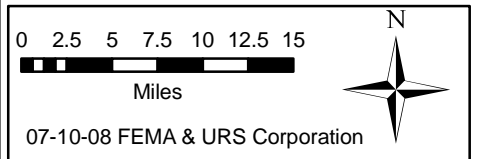
### Highway Damage (at least moderate)

Damage is expressed as the percentage chance that a given Bridge or Highway segment will realize at least moderate damage.

Highway Segment	Major Roadway Bridge
— < 5%	● < 20%
— 5% - 10%	● 20% - 60%
— > 10%	● > 60%

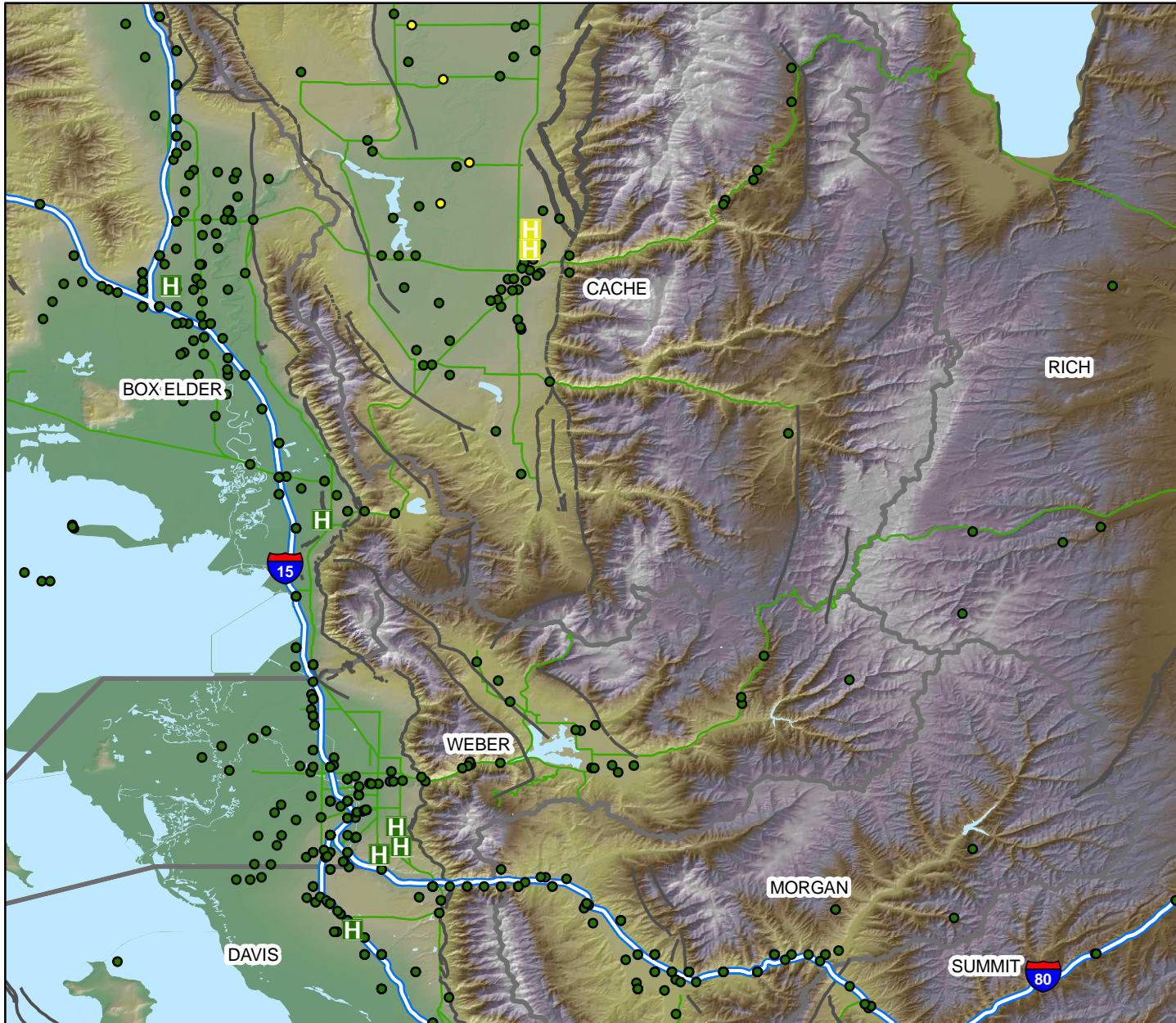
County	# of Bridges Needing Inspection	# of Bridge Engineers Needed*
Box Elder	230	31
Cache	62	2
Davis	131	17
Morgan	80	11
Rich	23	3
Summit	155	21
Weber	141	19
<b>Total</b>	<b>822</b>	<b>73</b>

\* 2 engineers can inspect 5 bridges a day for 3 days





# Impaired Hospitals (Day 1), Hospital Bed Availability, & Highway Functionality - Earthquake Scenario: Cache Valley, UT



## M 5.7 Cache Valley Earthquake

### Highway Functionality - Day 1

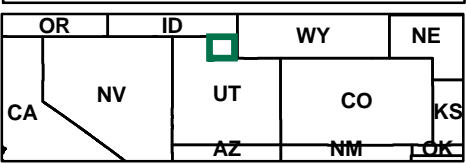
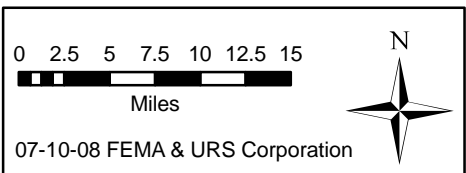
Damage is expressed as the percentage chance that a given highway or bridge segment will be functional at Day 1.

Bridge Seg.	Highway
● < 99%	— < 90%
● > 99%	— 90% - 95%
	— > 95%

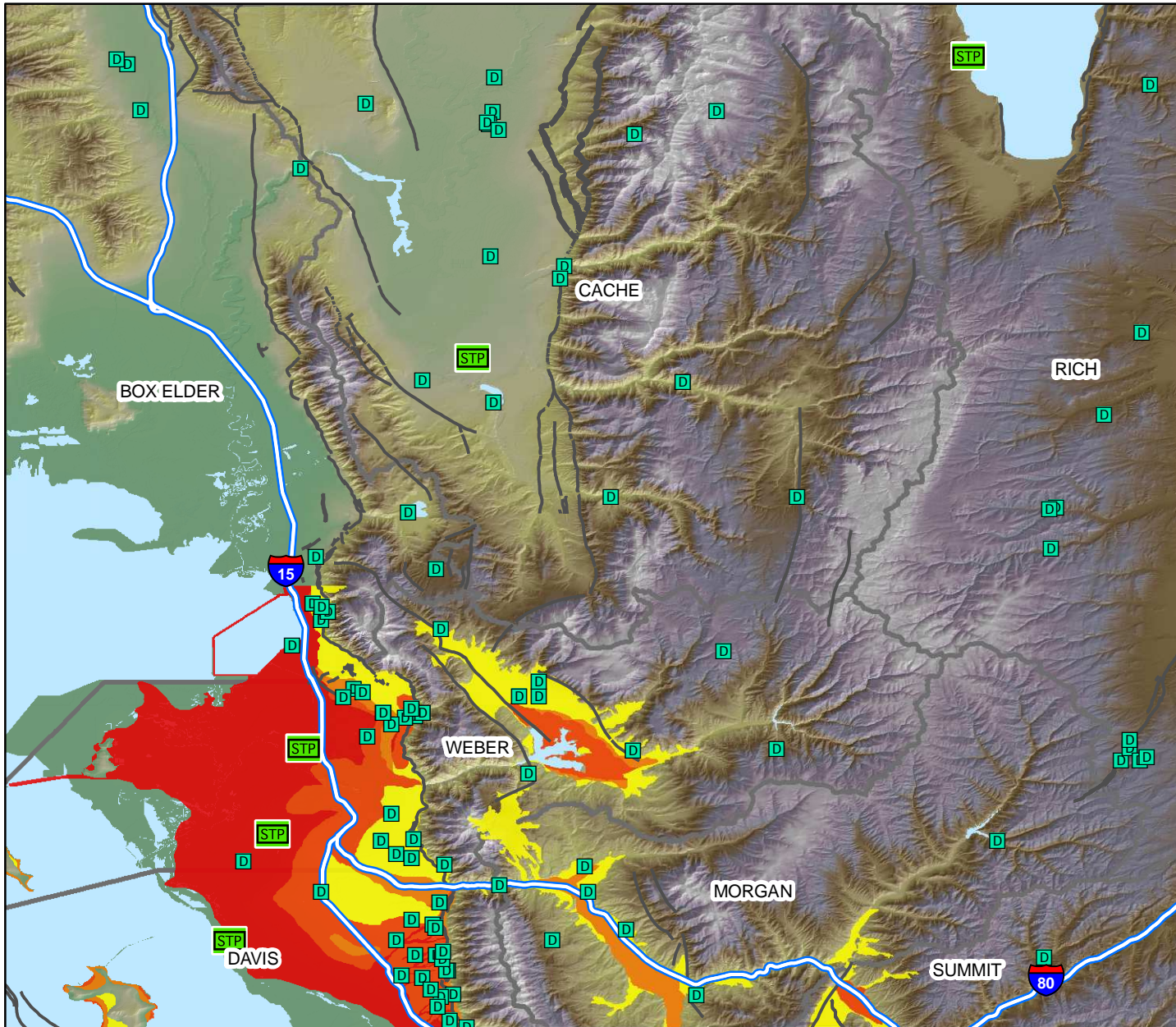
### Impaired Hospitals at Day 1

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County	Total # Hospital Beds	Hospital Beds Available
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Sanpete	44	44
Tooele	118	118
Utah	1,013	1,013
Wasatch	20	20
Weber	655	655
<b>Total</b>	<b>6,220</b>	<b>6,218</b>



# Water Line, Sewage Treatment Facility Distribution and Liquefaction Susceptibility - Earthquake Scenario: Cache Valley, UT



## M 5.7 Cache Valley Earthquake

### Liquefaction Susceptibility

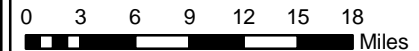


STP Sewage Treatment Facilities

D Dams

County	# Households without Potable Water (at Day 1)	Daily Potable Water Needs Per Person (Gallons/day)	Number of Truckloads needed Daily
None	0	0	0

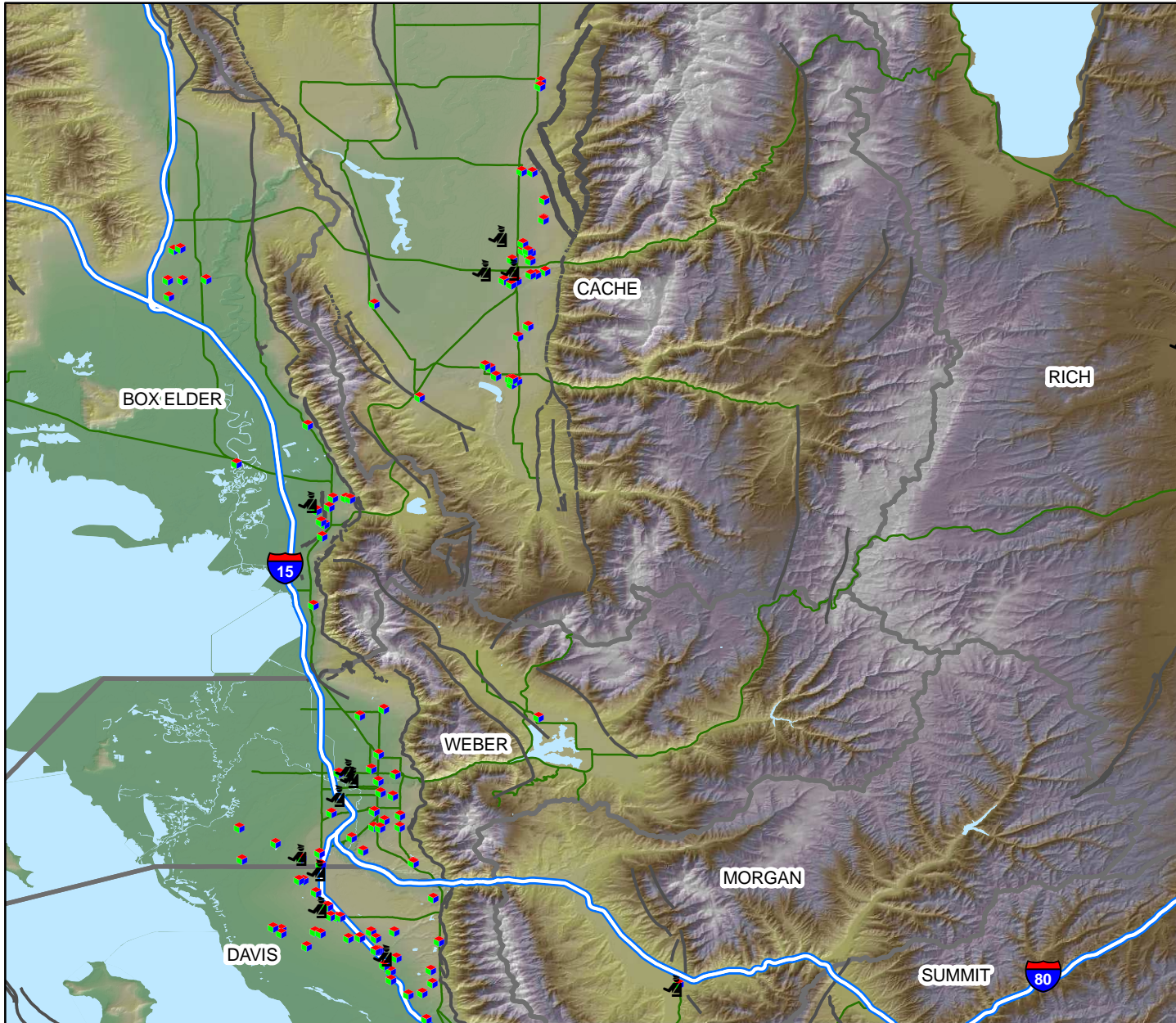
\* Based on U.S. Army Corp Mission Guidebook  
(Daily water is based on an estimated 3 people per household. One truck can transport an estimated 5000 gallons of water.)



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OR	ID	WY
NV	UT	CO
CA	AZ	NM

# Correctional and Daycare Facilities, Impaired Hospitals (Day 1), and Highway Functionality - Earthquake Scenario: Cache Valley, UT



## M 5.7 Cache Valley Earthquake

**Highway Functionality - Day 1**  
 Damage is expressed as the percentage chance that a given highway or bridge segment will be functional at Day 1.

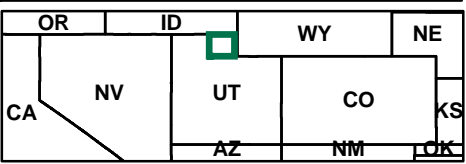
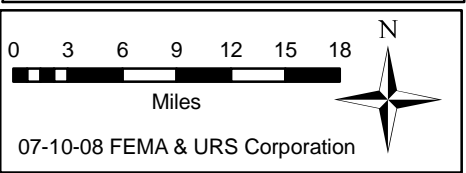
Highway

- < 90%
- 90% - 95%
- > 95%

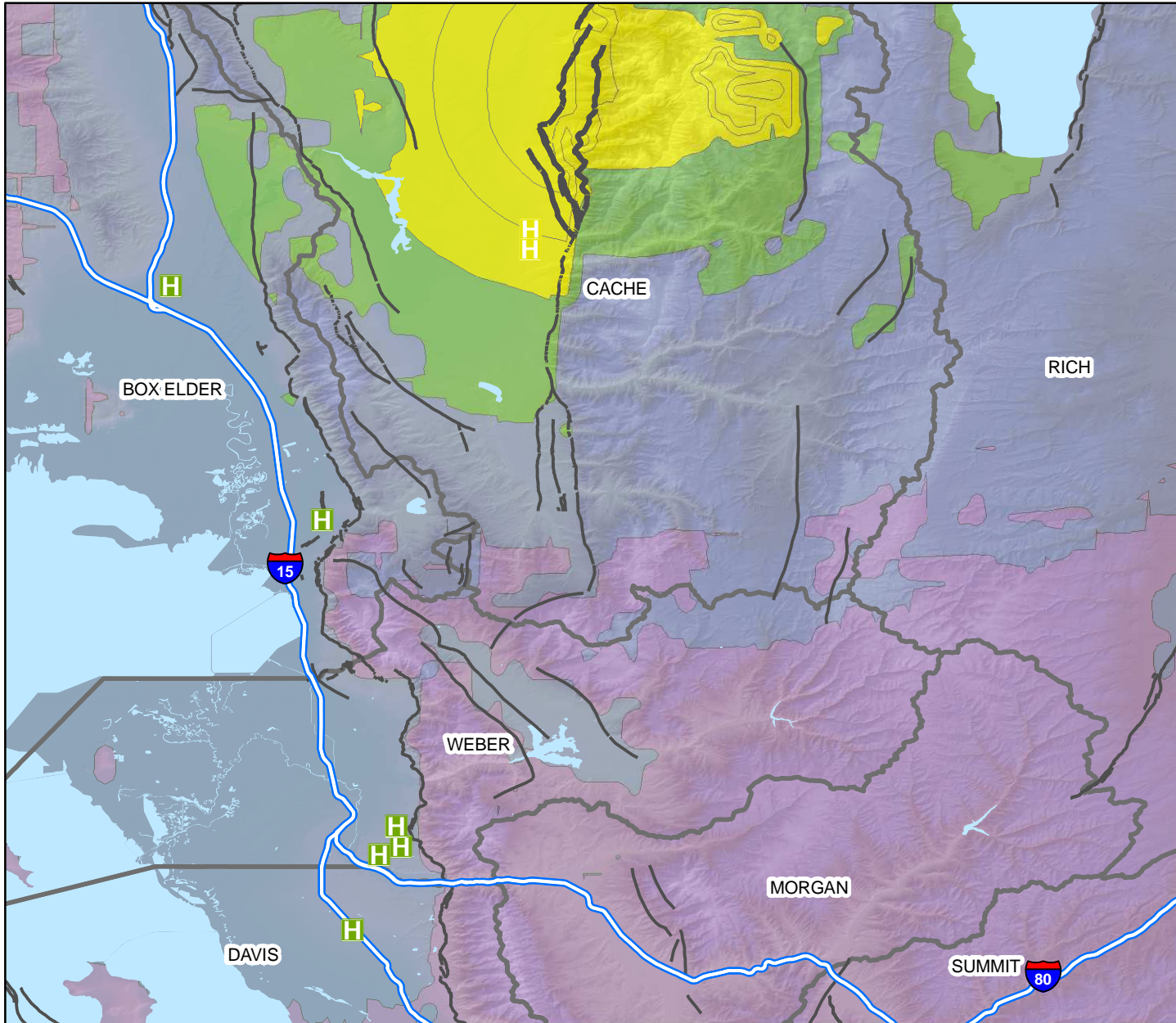
**Impaired Hospitals at Day 1**  
 Damage is expressed as the percentage chance that a given hospital will be functional at Day 1.

- < 99%
- > 99%

- Correctional Facilities
- Daycare Facilities



# Potential Search and Rescue Needs - Earthquake Scenario: Cache Valley, UT



## M 5.7 Cache Valley Earthquake

### Impaired Hospitals (Day 1)

**H** < 99%    Damage is expressed as the percentage chance that a given hospital will be functional on Day 1.  
**H** > 99%

**PGA (g's)**  
 > 0.02  
 0.02 - 0.04  
 0.04 - 0.09  
 0.09 - 0.18  
 0.18 - 0.34

Structure Type	Red (Complete)	Collapse Rates for Complete Damage	Total Collapse
Wood	0	3%	0
Steel	0	6%	0
Concrete	0	10%	0
Precast	0	13%	0
Reinforced			
Masonry	0	10%	0
Unreinforced			
Masonry	1	15%	0
Manufactured			
Housing	0	3%	0
<b>Total</b>	<b>1</b>		<b>0</b>

\*Severity Level 3 is defined as injuries that require hospitalization and can become life threatening if not promptly treated.

0 3 6 9 12 15 18 Miles

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OR	ID	WY
NV	UT	CO
CA	AZ	NM