



# RAPID ASSESSMENT OF FLOOD RISK IN VERMONT MOBILE HOME PARKS



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# Motivation

Flooding in 2011 disproportionately affected mobile homes

In recovery phase need to determine where existing vulnerabilities can be mitigated



Photo courtesy of K. Hamshaw

# 2011 Flooding

**154 mobile homes in 14 parks  
damaged in two flooding events**



**15% of homes damaged during  
Irene were mobile homes**

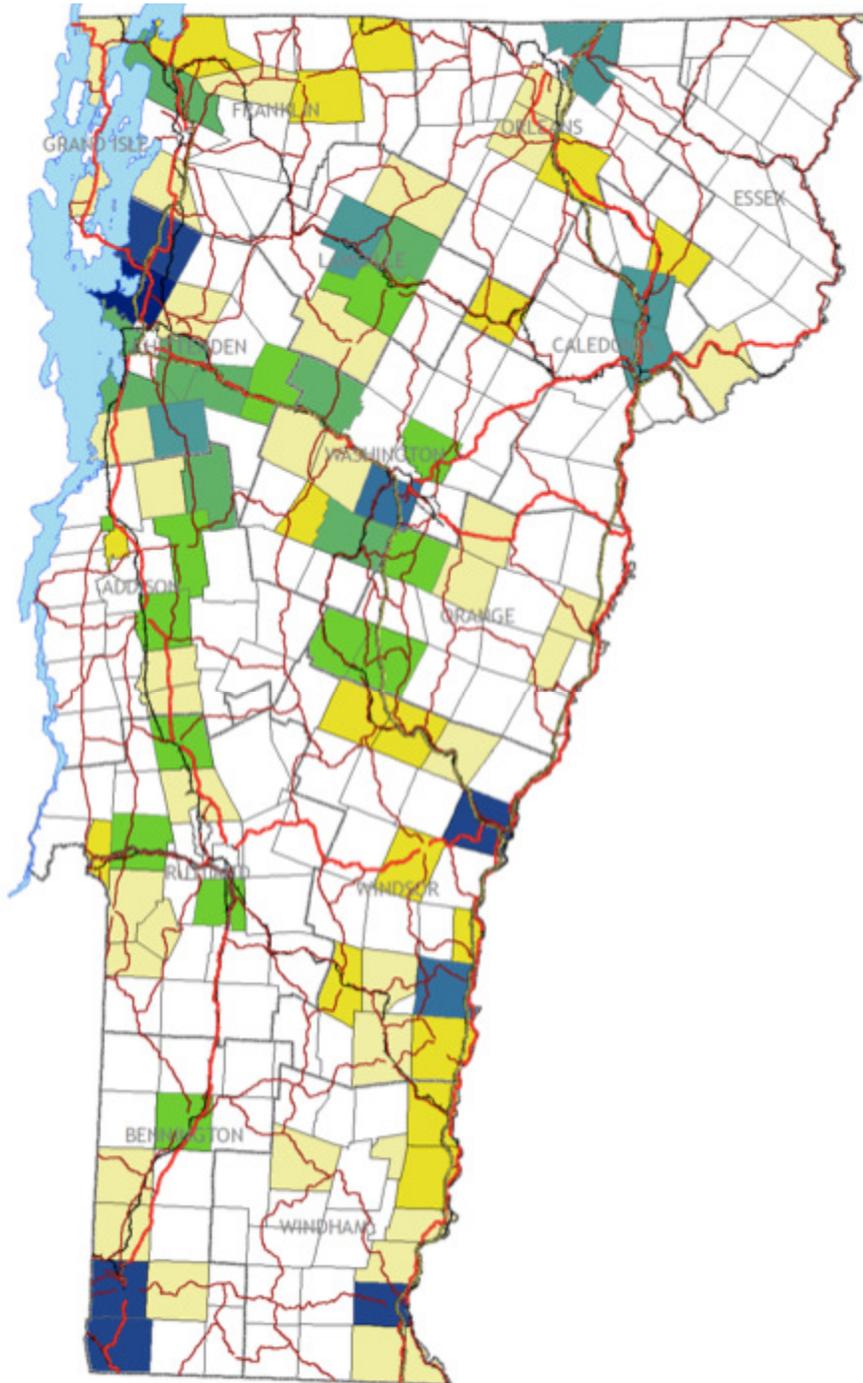


Photos courtesy of K. Hamshaw

# Mobile Home Park Damage from Irene



Photos courtesy of D. Baker



# Mobile Home Parks in Vermont

- 248 Mobile Home Parks in Vermont with 7,194 lots
- Very low vacancy rate (4.7%) statewide
- 65% of parks constructed prior to Act 250

Source: VT Mobile Home Park Registry Report 2010

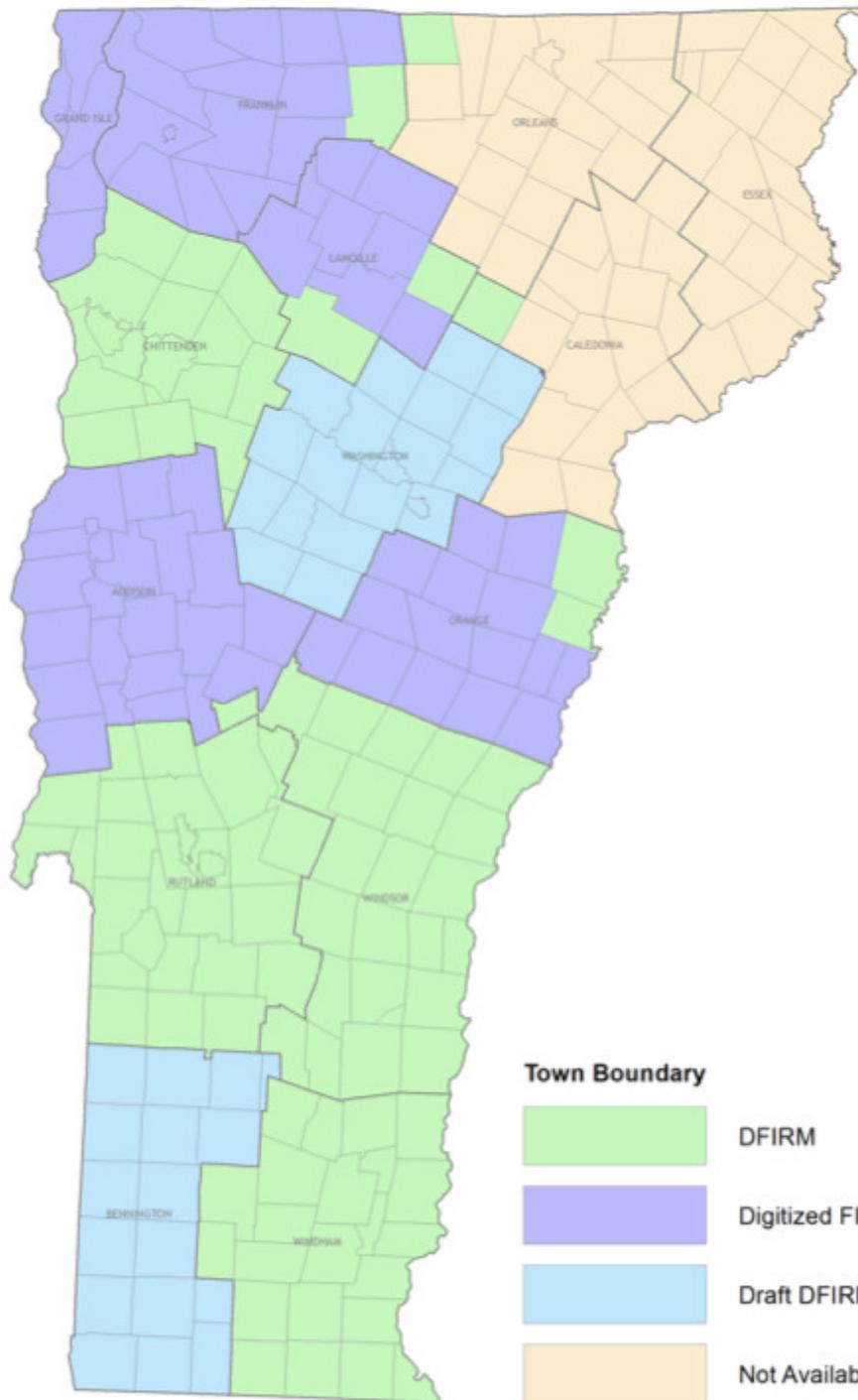
# Data Sources



- Mobile Home Park Registry
  - ▣ Provides locations and characteristics of each mobile home park in Vermont
- E-911 Site Data
  - ▣ Individual points for each mobile home in Vermont.
- Digital Town Parcel Data
  - ▣ Parcel boundaries for mobile home parks
- Flood Hazard Area Data
  - ▣ Best available digital floodplain boundary data

# Digital Flood Hazard Area Data

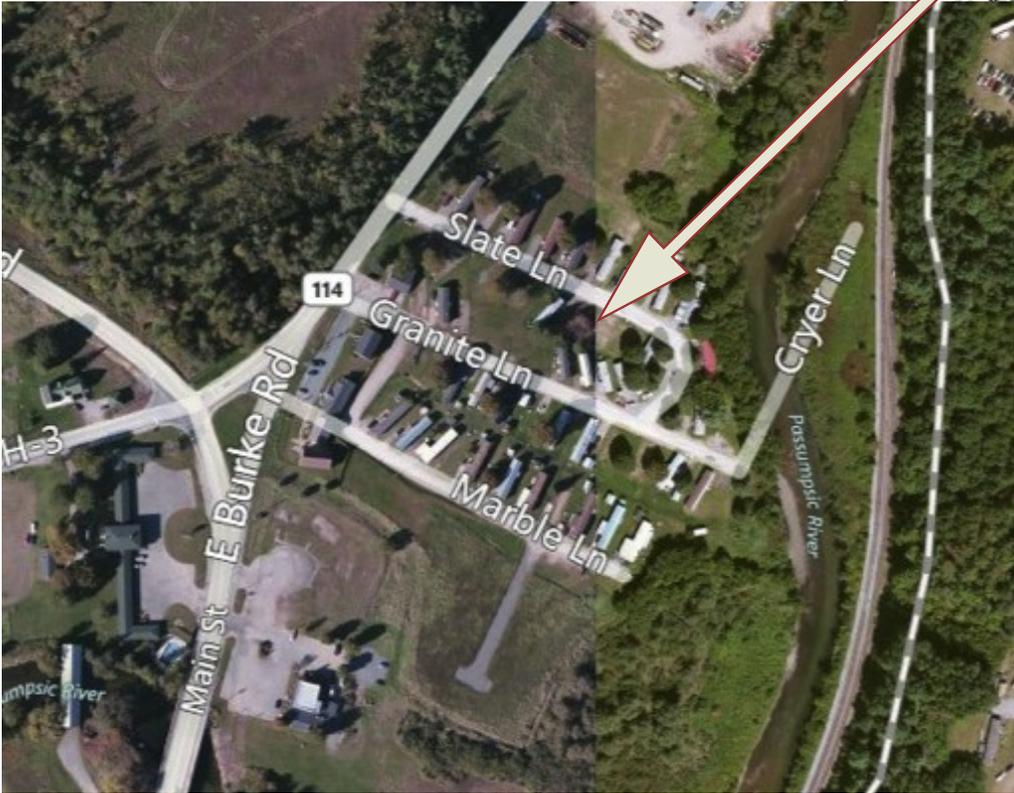
- A patchwork of available data
- Best data available in most populous areas



Flood Hazard Data Source Available	Number of Mobile Homes	% of Mobile Homes
DFIRM	3,726	52.4%
Draft DFIRM	1,330	18.7%
Digitized FIRM Maps	1,479	20.8%
River Setback & FIRM Map	570	8.0%
<b>TOTAL</b>	<b>7,105</b>	<b>100.0%</b>

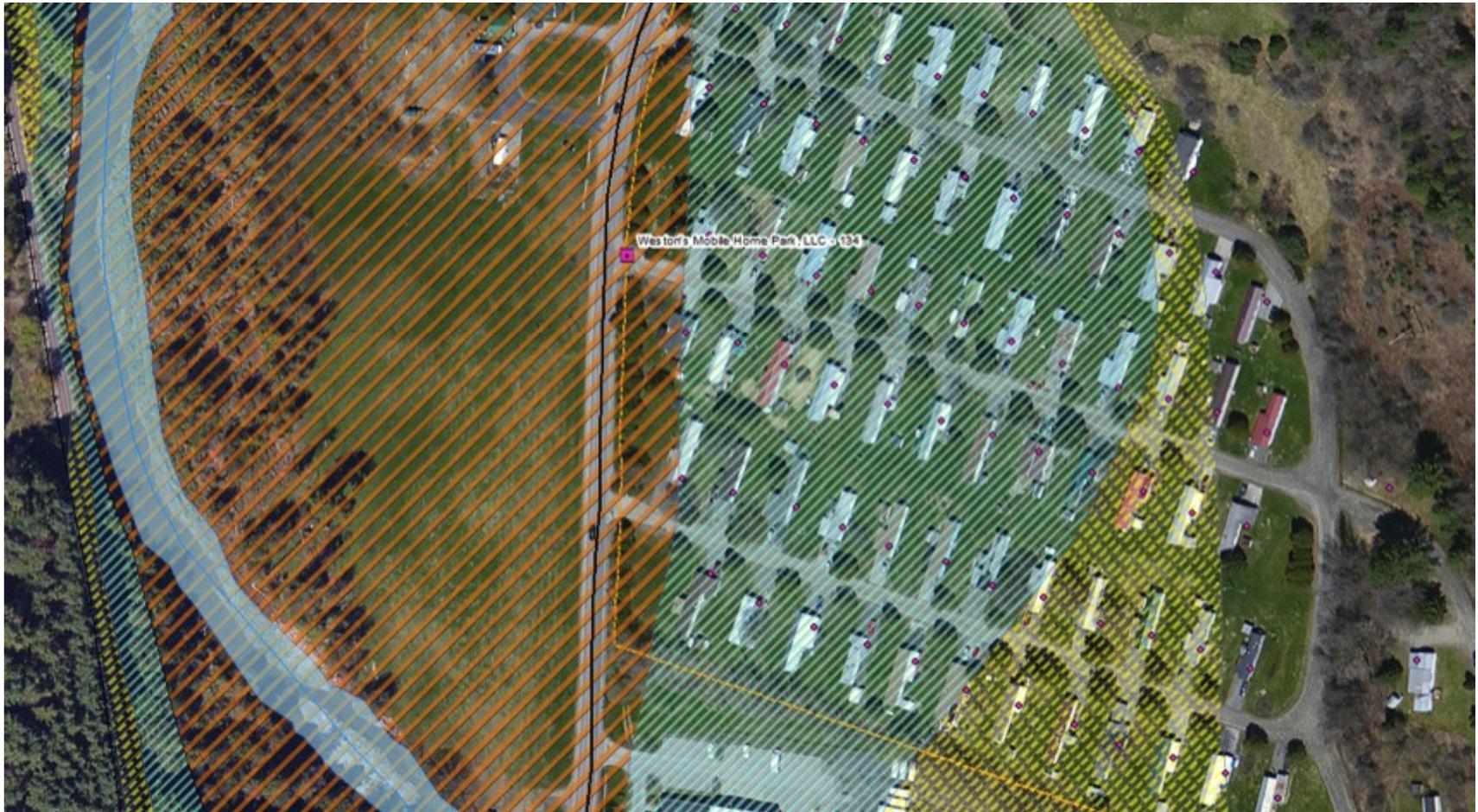
# What about the Northeast Kingdom?

Stream bank setback recommendations from River Corridor Guide



Parks identified within stream buffer compared to paper FIRM

# Flood Hazard Analysis



Weston's Mobile Home Park, Berlin

# Flood Hazard Analysis



Richards Mobile Home Park, Bethel

# Flood Hazard Analysis



Richards Mobile Home Park, Bethel

# Mobile Home Parks at Risk to Flooding

Highest Flood Hazard Zone Within Park	Number of Mobile Home Parks	% of Mobile Home Parks
FLOODWAY	15	6.1%
100 YEAR FLOOD	30	12.1%
500 YEAR FLOOD	5	2.0%
NONE	197	79.8%
<b>TOTAL</b>	<b>247</b>	<b>100.0%</b>

- 20.2% of mobile home parks have at least one lot located in a flood hazard area
- 31.9% of parks have portion of property in floodplain

11.7% of all mobile home lots in parks are located in a flood hazard area

Flood Hazard	Number of Mobile Homes located in Parks	% of all Mobile Homes located in Parks
FLOODWAY	140	2.0%
100 YEAR FLOOD	562	7.9%
500 YEAR FLOOD	125	1.8%
NONE	6,278	88.3%
<b>Total</b>	<b>7,105</b>	<b>100.0%</b>

# Mobile Home Parks vs. Other Housing

## Percentage of Housing Type Located in a Flood Hazard Area

Mobile Homes located in  
Parks  
**11.7%**

Mobile Homes on Private  
Land  
**6.3%**

Single Family Homes  
**4%**

Flood Hazard	Number of Mobile Homes located in Parks	% of all Mobile Homes located in Parks	Number of Single Family Homes	% of Single Family Homes	Number of Mobile Homes on Private Land	% of Mobile Homes on Private Land
FLOODWAY	140	2.0%	717	0.4%	91	0.6%
100 YEAR FLOOD or 50'/100' River Setback	562	7.9%	5,811	2.9%	801	4.9%
500 YEAR FLOOD	125	1.8%	1,419	0.7%	140	0.8%
NONE	6,278	88.3%	189,648	96.0%	15,444	93.7%
<b>Total</b>	<b>7,105</b>	<b>100.0%</b>	<b>197,595</b>	<b>100.0%</b>	<b>16,476</b>	<b>100.0%</b>

# Limitations of *Rapid Assessment*

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- Does not determine susceptibility of actual home since elevations are not considered
  - ▣ Similar studies could make use of LiDAR
- National Flood Insurance Program (NFIP) maps only consider inundation based flooding
  - ▣ Incorporate available Fluvial Erosion Hazard (FEH) data to account for erosion and flash flood risk

# Acknowledgments



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- Ned Swanberg, *Flood Management Program, DEC*