

# Russian River CSD Local Hazard Mitigation Plan

July 8, 2014

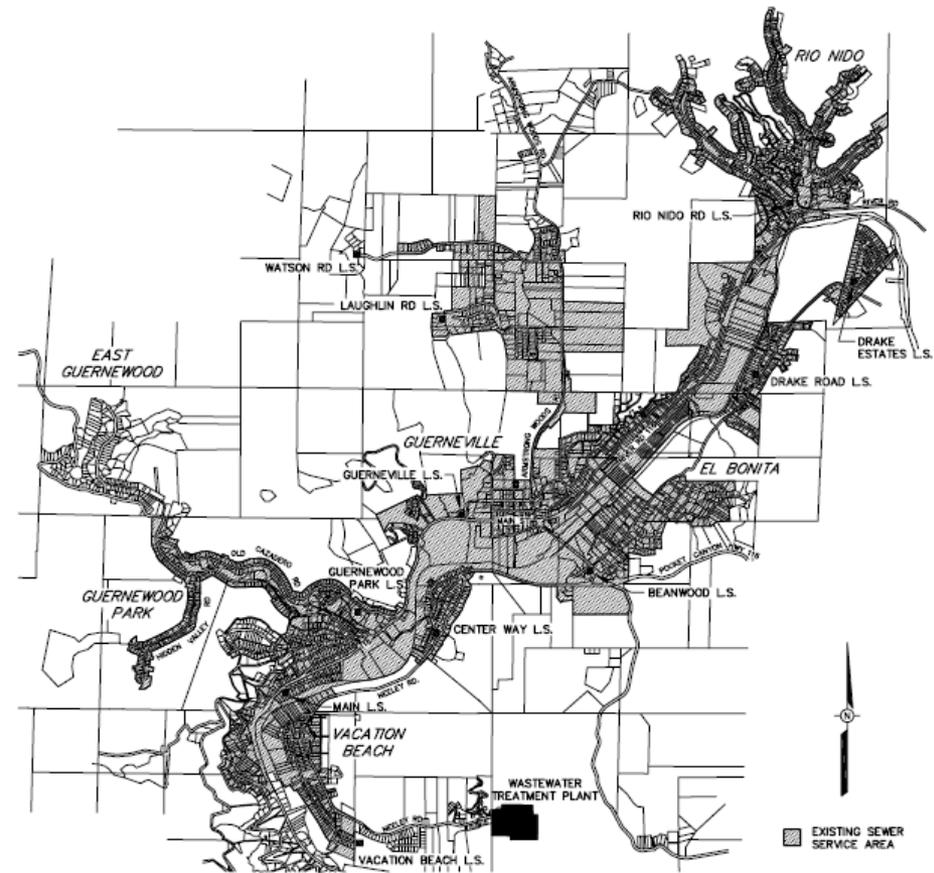
Cordel Stillman, P.E.  
Deputy Chief Engineer

Curran Price, P.E.  
W.A. Engineer

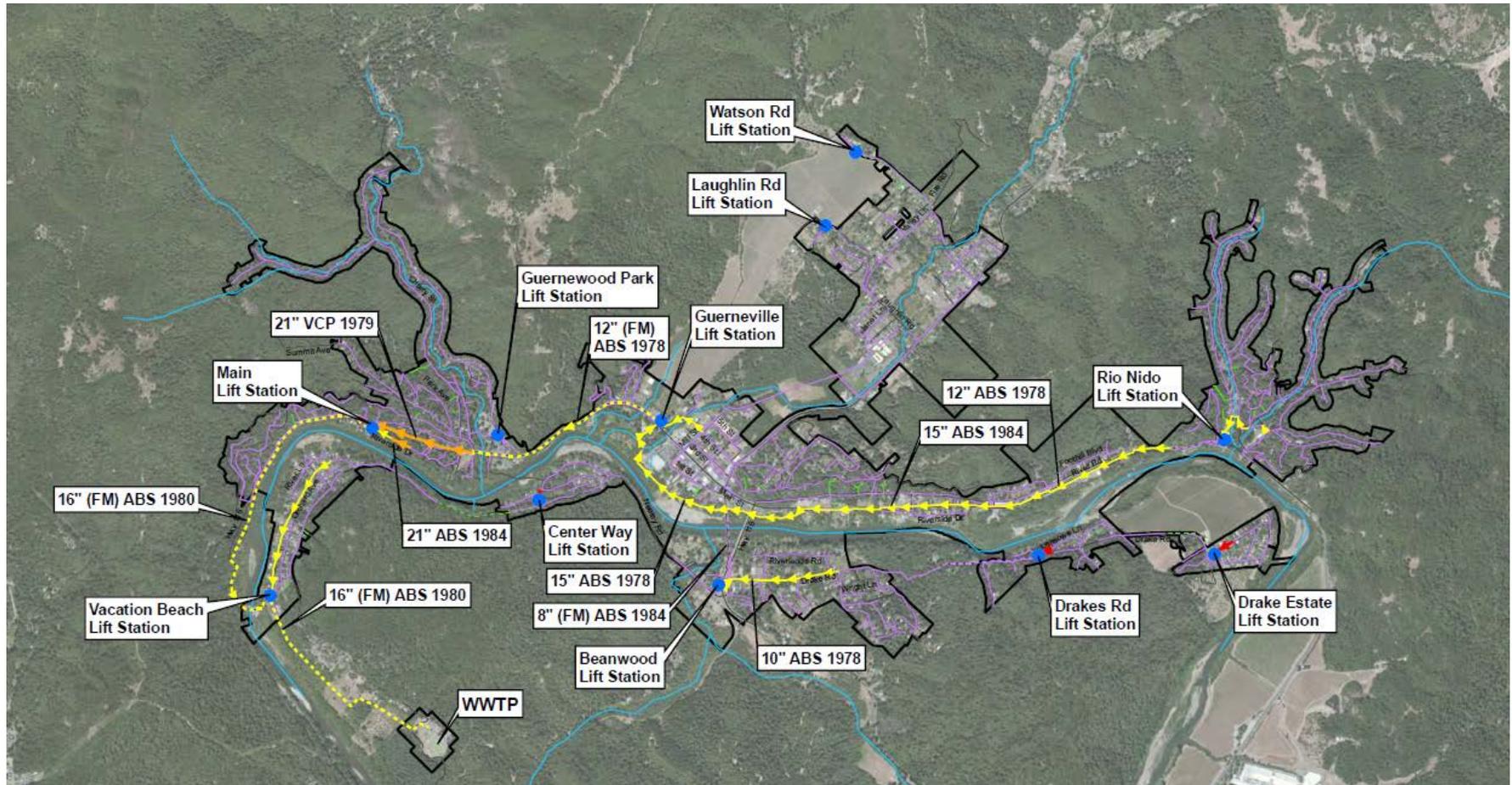


# Sanitation District

- Serves approximately 3,300 parcels
- Treatment plant operational in 1983
- Treats an average dry weather flow of 0.3 MGD



# Collection System



# Treatment Plant



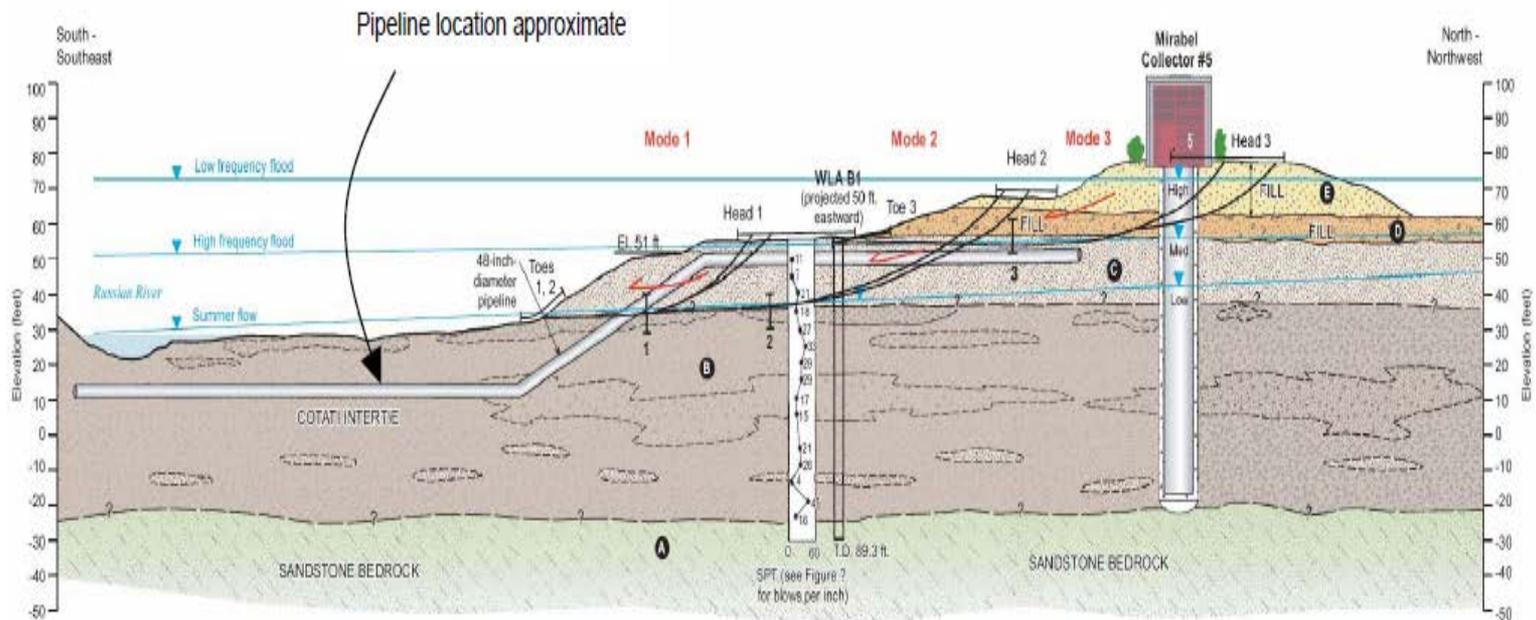
# Local Hazard Mitigation Plan (LHMP)

- Identify local natural hazards
- Identify the District's vulnerabilities to natural hazards
- Identify mitigation goals, strategies, and actions to increase the sanitation systems resiliency to natural hazards
- Qualify for FEMA grant funding



# FEMA Grant Funds

- Water Transmission-Awarded over \$10 million in Project funding



# Natural Hazards

- Earthquake
- Flooding
- Landslides
- Fires



# Flooding

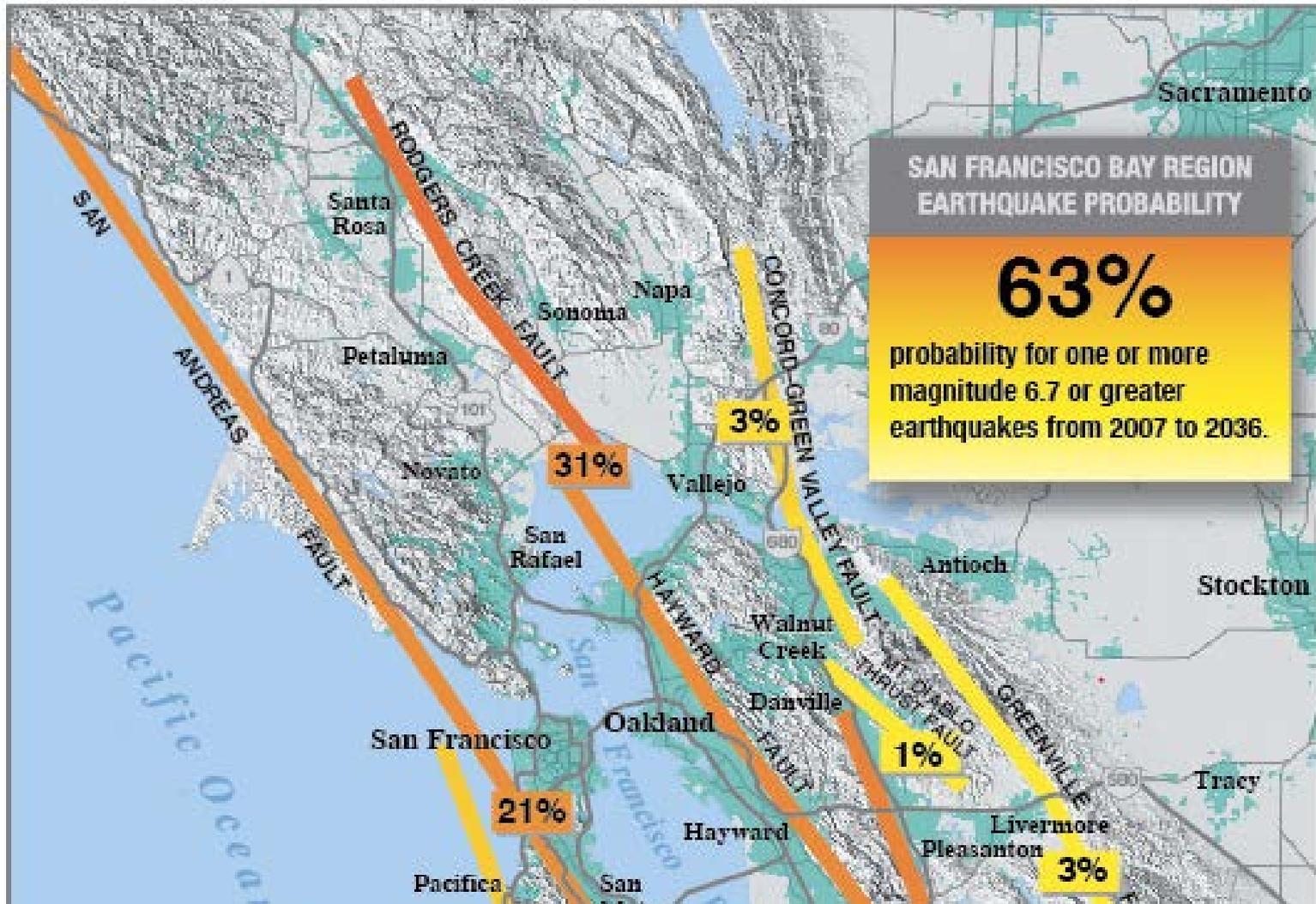


# Landslides

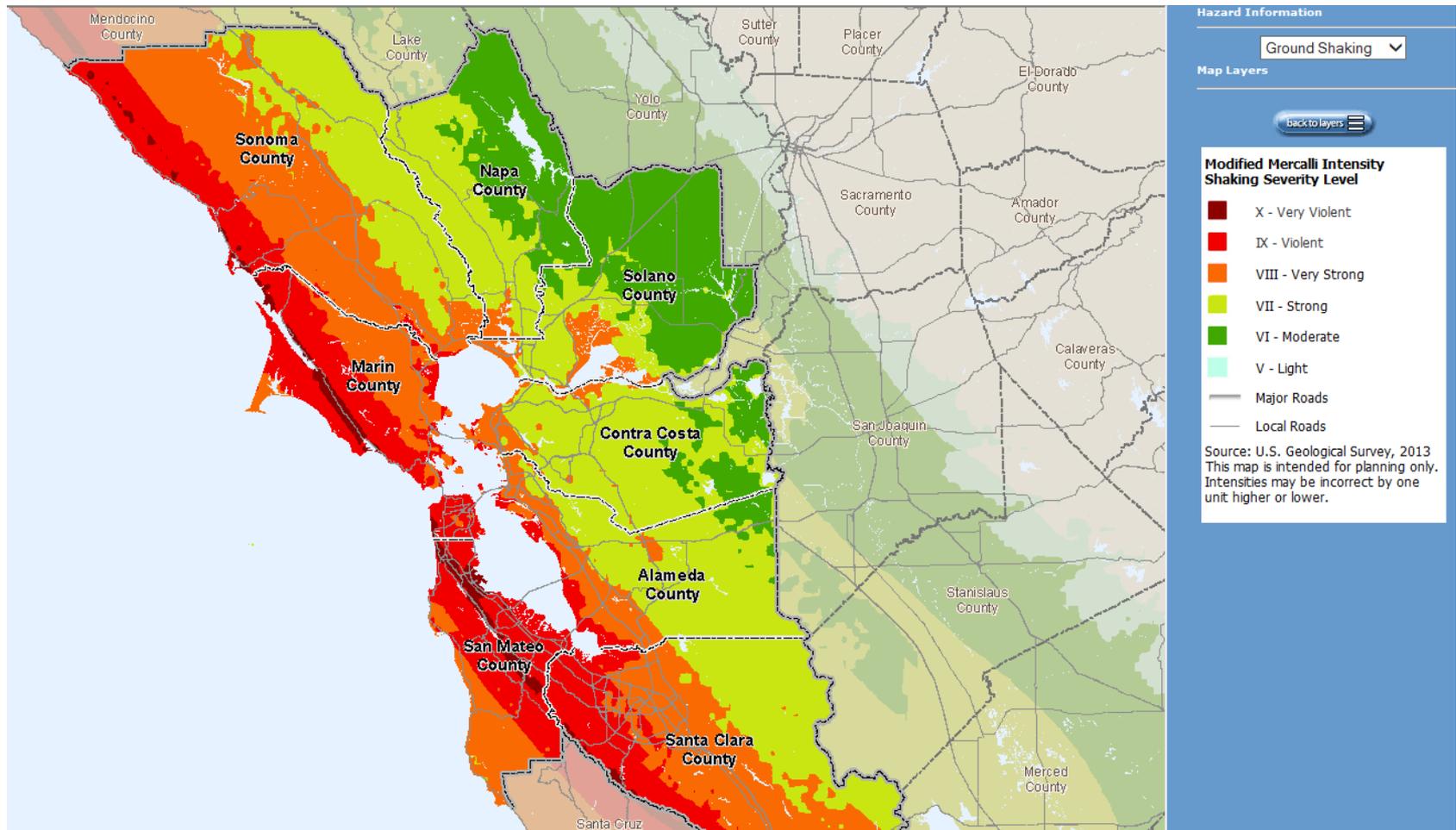
---



# Earthquakes



# Earthquakes



# Christchurch Earthquake



*Figure A-35. Flotation of Sewer Lift Station, April 2011*

- 7.1 Sept 2010 and 6.3 Feb 2011
- Significant damage at the treatment plant
- 31% of Collection system damaged
- Over 400,000 tons of silt/sand removed at the treatment plant

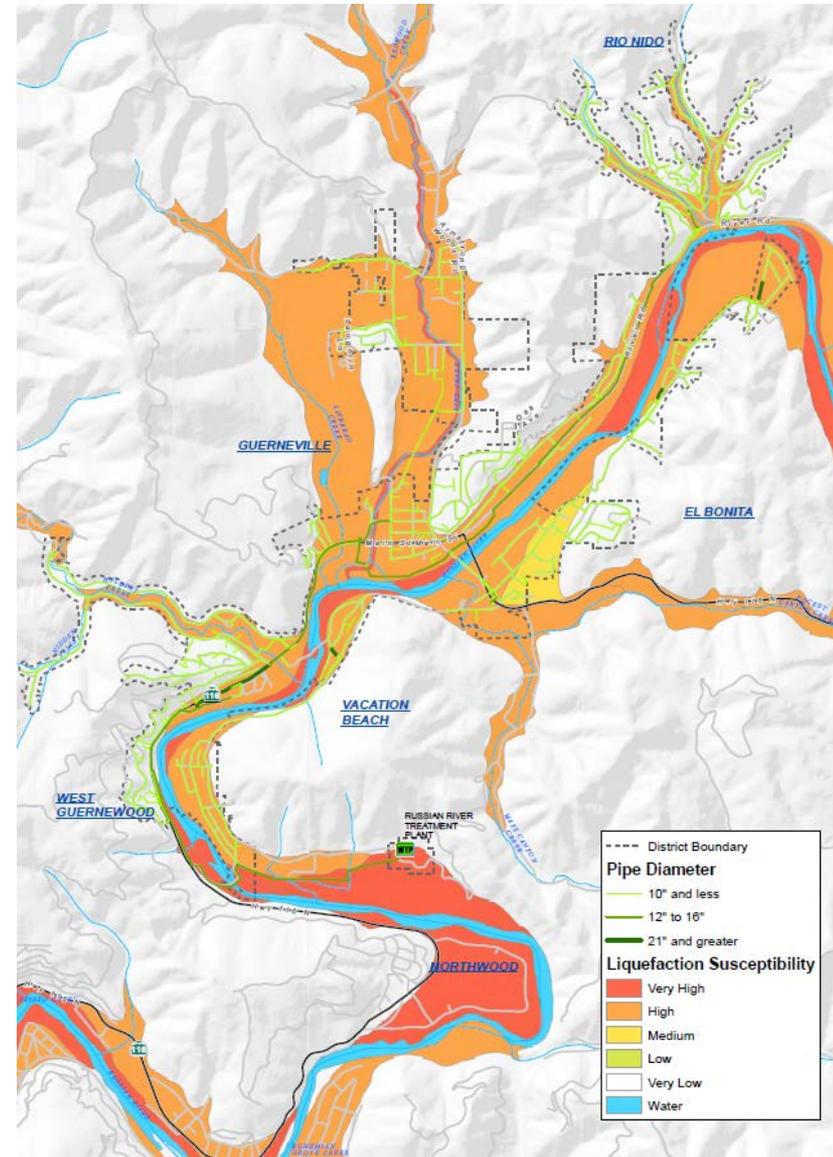
# Christchurch Earthquake



- 1.5 foot wide cracks and settlement shut down treatment plant ponds
- Flotation of manholes and lift station
- Pipe Breaks and Leaks
- Raw sewage dumped directly into rivers and streams
- Sewage Leaks estimated at 10 MGD of sewage 5 weeks after earthquake
- Portable toilets deployed throughout the city
- Repair of sewers took 3 to 10 times longer than water pipes

# Liquefaction

- Saturated Soils
- High liquefaction near Creeks
- Differential Settlement
- Lateral Spread
- M8.0 - Estimated 42 breaks/leaks



# Mitigation Actions

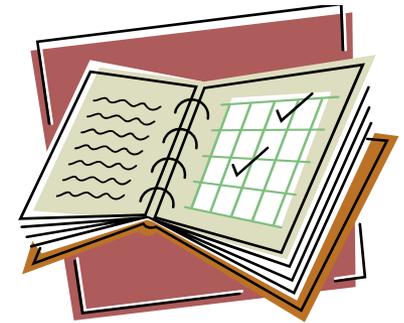
- Protect the treatment plant from debris flows
- Seismically anchor and retrofit equipment at the treatment plant
- Retrofit collection system in very high or high liquefaction zones
- Obtain emergency response equipment
- Increase storage capacity
- Stabilize creek banks or replace sewers near creek bank failures



A ruined residence, Santa Rosa, Cal., after the earthquake, April 18, 1906.

# LHMP Anticipated Schedule

- Summer 2014: Identify vulnerabilities and mitigation actions
- Fall 2014: Publish draft LHMP
- Winter 2014:
  - Incorporate comments into the LHMP
  - Seek County Approval of the plan
  - Submit to Cal OES for Approval
- Spring 2015: Receive final approval from Cal-OES



# Contact Us

Cordel Stillman, P.E.  
[Cordel.Stillman@scwa.ca.gov](mailto:Cordel.Stillman@scwa.ca.gov)



Curran Price, P.E.  
[Curran.Price@scwa.ca.gov](mailto:Curran.Price@scwa.ca.gov)  
(707)524-1179

