

**TENTATIVE AGENDA: Marina Del Rey and King Harbor - Tsunami Response Playbook Workshop**  
**June 4, 2015 1PM-4PM**

**PURPOSE OF WORKSHOP:** The State of California and its partners have completed draft Maritime Tsunami Response Playbooks for Marina Del Rey and King Harbors. The purpose of this workshop is to:

- 1) Familiarize maritime officials with tsunami hazards, and the background and use of the Playbooks;
- 2) Allow maritime officials to review the playbooks and add the needed detail to plans for implementing the Playbooks; and,
- 3) Review one or more scenarios so that maritime officials can practice using the Playbooks.

**TENTATIVE WORKSHOP AGENDA:**

- 1:00-1:10PM Introductions and Purpose of Workshop
- 1:10-1:20PM Tsunami basics and purpose of Playbooks (Wilson)
- 1:20-1:45PM Background on existing State and NOAA tsunami alert messaging (Miller and Boldt)
- 1:45-2:10PM Maritime tsunami hazards, modeling, and on-going mitigation guidance work (Lynett)
- 2:10-2:40PM Tsunami Response Playbook Approach (Wilson)
- 2:40-2:50PM BREAK
- 2:50-3:00PM Discussion/Exercise – Walk participants through local/regional source scenario (large event from Cascadia source)
- 3:00-3:20PM Discussion/Exercise – Walk participants through distant source scenario (large event off Chilean coast)
- 3:30-3:45PM Questions for further discussion:
- 1) Do harbor officials understand use of Playbooks?
  - 2) Would they be useful for tsunami response planning?
  - 3) How can Playbooks be integrated into harbor response plans?
  - 4) Do harbor officials want help using products to incorporate into “Local Hazard Mitigation Plans” to get funding for harbor improvements?
- 3:45-4:00PM Closing discussion on planning and future/additional needs

# Uses of Maritime Tsunami Response and Mitigation Playbooks

1. Harbor-specific information for all tsunami planning
2. Identifies areas within harbor where strong currents/damage occurs
3. Provides multiple response options based on tsunamis of different sizes
4. Provides guidance on harbor improvement/mitigation and potential funding sources
5. Real-time MINIMUM response recommendation from State specific to event from distant source

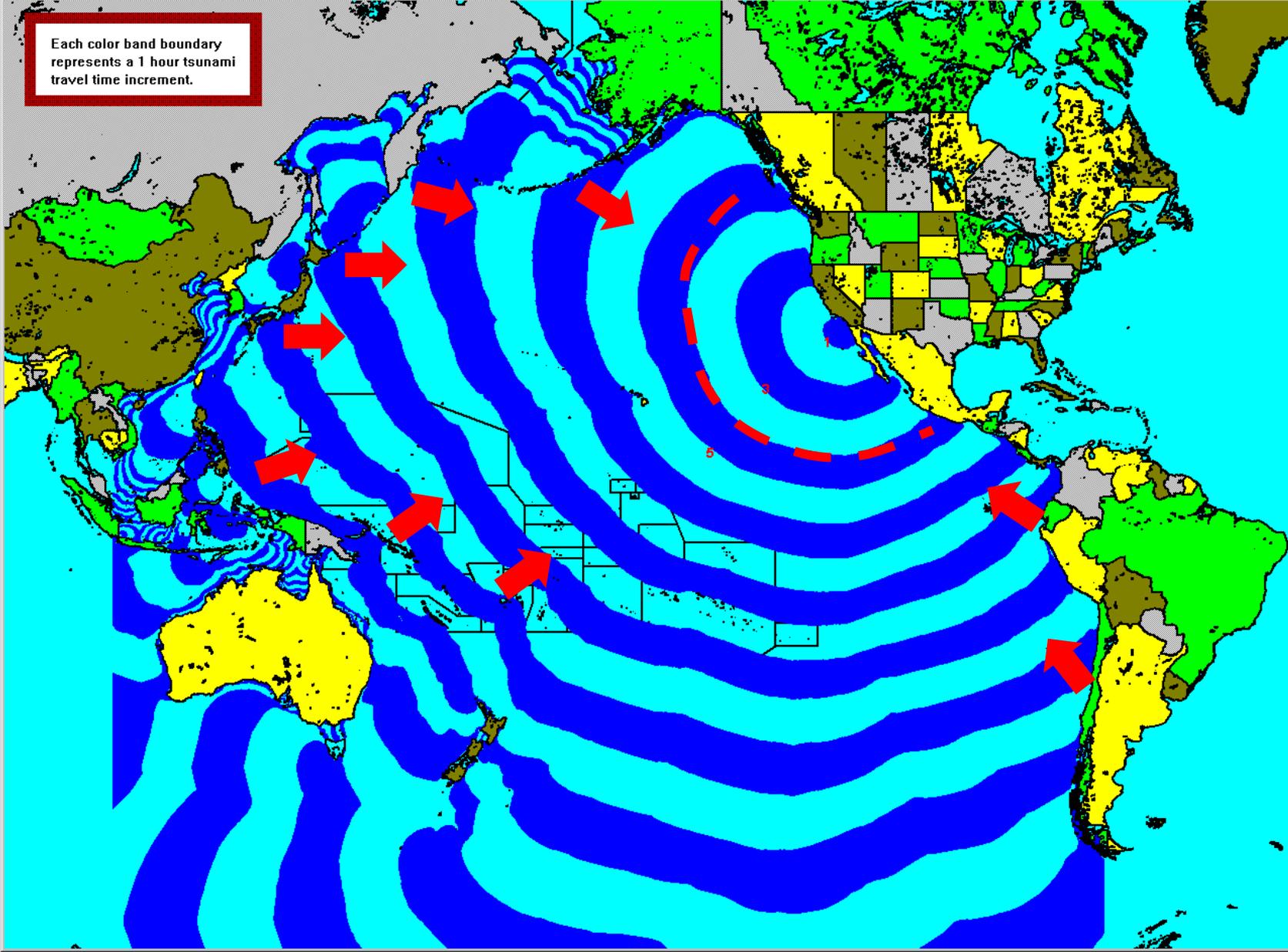


# **Table-top exercise use of Playbook**

# Decision-making – From Advisory/Warning to Tsunami Arrival in Los Angeles Co.



Each color band boundary represents a 1 hour tsunami travel time increment.



Provided via email  
and text from  
NTWC at:  
12:05 PM

WEAK51 PAAQ 232113

TSUAK1

BULLETIN

PUBLIC TSUNAMI MESSAGE NUMBER 1

NWS NATIONAL TSUNAMI WARNING CENTER PALMER AK

1205 PM PDT WED OCT 14 2014

THIS BULLETIN APPLIES TO AREAS WITHIN ALASKA...BRITISH COLUMBIA...  
WASHINGTON...OREGON AND CALIFORNIA.

... TSUNAMI INFORMATION BULLETIN ...

THIS BULLETIN IS FOR INFORMATION ONLY.

THIS BULLETIN IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY  
NATIONAL AND LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE  
DECISIONS REGARDING THE OFFICIAL STATE OF ALERT IN THEIR AREA AND  
ANY ACTIONS TO BE TAKEN IN RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - ~~1200PDT~~ 14 OCT 2014  
COORDINATES - 24.0 SOUTH 71.0 WEST  
DEPTH - 6 MILES  
LOCATION - NORTHERN CHILE  
MAGNITUDE - 8.3

EVALUATION

EARTHQUAKES OF THIS SIZE ARE KNOWN TO GENERATE TSUNAMIS  
POTENTIALLY DANGEROUS TO COASTS OUTSIDE THE SOURCE REGION.  
THE NATIONAL TSUNAMI WARNING CENTER IS INVESTIGATING  
THE EVENT TO DETERMINE THE LEVEL OF DANGER. MORE INFORMATION  
WILL BE ISSUED AS IT BECOMES AVAILABLE.

THIS WILL BE THE ONLY BULLETIN ISSUED FOR THIS EVENT UNLESS  
ADDITIONAL INFORMATION BECOMES AVAILABLE.

THE U.S. NATIONAL TSUNAMI WARNING CENTER WILL ISSUE PRODUCTS  
FOR ALASKA...BRITISH COLUMBIA...WASHINGTON...OREGON...CALIFORNIA.

NEXT UPDATE AND ADDITIONAL INFORMATION

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\* THIS MESSAGE WILL BE UPDATED WITHIN 30 MINUTES.

\* REFER TO THE INTERNET SITE [NTWC.ARH.NOAA.GOV](http://NTWC.ARH.NOAA.GOV) FOR MORE  
INFORMATION.

\* PACIFIC COASTAL RESIDENTS OUTSIDE CALIFORNIA... OREGON...  
WASHINGTON... BRITISH COLUMBIA AND ALASKA SHOULD REFER TO THE  
PACIFIC TSUNAMI WARNING CENTER MESSAGE

Provided via email  
and text from  
NTWC at:  
12:30 PM

WEAK51 PAAQ 282113  
TSUAK1

BULLETIN  
PUBLIC TSUNAMI MESSAGE NUMBER 2  
NWS NATIONAL TSUNAMI WARNING CENTER PALMER AK  
1230 PST WED OCT 14 2014

UPDATES IN THIS MESSAGE INCLUDE A REVISED MAGNITUDE.  
UPDATES IN THIS MESSAGE INCLUDE MODIFIED ALERT AREAS.

...THE TSUNAMI WATCH IS NOW IN EFFECT...

WARNINGS/ADVISORIES/WATCHES - UPDATED

-----  
TSUNAMI WATCH IN EFFECT FOR...

\* US AND CANADIAN PACIFIC COASTS IN NORTH AMERICA -  
THE LEVEL OF TSUNAMI DANGER IS BEING EVALUATED. FURTHER  
INFORMATION WILL BE PROVIDED IN SUPPLEMENTARY MESSAGES.

PRELIMINARY EARTHQUAKE PARAMETERS - UPDATED

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\* MAGNITUDE 8.9  
\* ORIGIN TIME 1100 AKDT OCT 14 2014  
1200 PDT OCT 14 2014  
2000 UTC OCT 14 2014  
\* COORDINATES 24.0 SOUTH 71.0 WEST  
\* DEPTH 6 MILES  
\* LOCATION NORTHERN CHILE

NEXT UPDATE AND ADDITIONAL INFORMATION

-----  
\* THIS MESSAGE WILL BE UPDATED WITHIN 30 MINUTES.  
  
\* REFER TO THE INTERNET SITE [NTWC.ARH.NOAA.GOV](http://NTWC.ARH.NOAA.GOV) FOR MORE  
INFORMATION.  
  
\* PACIFIC COASTAL RESIDENTS OUTSIDE CALIFORNIA... OREGON...  
WASHINGTON... BRITISH COLUMBIA AND ALASKA SHOULD REFER TO THE  
PACIFIC TSUNAMI WARNING CENTER MESSAGE

Provided via email and text from  
NTWC at: 1:30 PM

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BULLETIN  
PUBLIC TSUNAMI MESSAGE NUMBER 4  
NWS NATIONAL TSUNAMI WARNING CENTER PALMER AK  
1330 PST WED OCT 14 2014

UPDATES IN THIS MESSAGE INCLUDE MODIFIED ALERT AREAS.

...THE TSUNAMI ADVISORY IS NOW IN EFFECT...

WARNINGS/ADVISORIES/WATCHES - UPDATED

-----  
TSUNAMI ADVISORY IN EFFECT FOR...

\* THE COASTAL AREAS OF US AND CANADIAN PACIFIC COASTS IN NORTH AMERICA INCLUDING CALIFORNIA...OREGON...WASHINGTON...BRITISH COLUMBIA...ALASKA

IMPACTS FOR TSUNAMI ADVISORY AREAS

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\* POTENTIAL STRONG, DAMAGING CURRENTS ARE POSSIBLE AND MAY CONTINUE FOR MANY HOURS AFTER TSUNAMI ARRIVAL.

\* THE FIRST WAVE MAY NOT BE THE LARGEST.

RECOMMENDED ACTIONS - UPDATED

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\* BE ALERT TO INSTRUCTIONS FROM YOUR LOCAL EMERGENCY OFFICIALS.

\* DO NOT GO TO THE COAST TO OBSERVE THE TSUNAMI.

\* DO NOT RETURN TO THE COAST UNTIL LOCAL EMERGENCY OFFICIALS INDICATE IT IS SAFE TO DO SO.

FORECASTS AND/OR OBSERVATIONS OF TSUNAMI ACTIVITY

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SITE                   FORECAST  
                          START OF  
                          OF TSUNAMI  
-----  
\* CALIFORNIA  
SAN DIEGO           0030 PDT OCT 15  
SAN PEDRO           0100 PDT OCT 15  
SAN FRANCISCO      0145 PDT OCT 15  
CRESCENT CITY      0230 PDT OCT 15

PRELIMINARY EARTHQUAKE PARAMETERS - UPDATED

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\* MAGNITUDE           8.9  
\* ORIGIN TIME         1100 AKDT OCT 14 2014  
                          1200 PDT OCT 14 2014  
                          2000 UTC OCT 14 2014  
\* COORDINATES         24.0 SOUTH 71.0 WEST  
\* DEPTH                6 MILES  
\* LOCATION            NORTHERN CHILE

NEXT UPDATE AND ADDITIONAL INFORMATION

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\* THIS MESSAGE WILL BE UPDATED WITHIN 30 MINUTES.

\* REFER TO THE INTERNET SITE [NTWC.ARH.NOAA.GOV](http://NTWC.ARH.NOAA.GOV) FOR MORE INFORMATION.

\* PACIFIC COASTAL RESIDENTS OUTSIDE CALIFORNIA... OREGON... WASHINGTON... BRITISH COLUMBIA AND ALASKA SHOULD REFER TO THE PACIFIC TSUNAMI WARNING CENTER MESSAGE

Provided on National Tsunami  
Warning Center website at:  
1:30 PM

Location	Country	Lat	Lon	<a href="#">Obs Max Time (PDT)</a>	<a href="#">Obs Height</a>	<a href="#">Fcst. Height</a>	<a href="#">Fcst. Arr Time (PDT)</a>	<a href="#">TWC</a>
Two Harbors (west)	United States	33.4 ° N	118.5 ° W	n/a		0.8 m	10/15/2014 0:55	NTWC
Two Harbors	United States	33.4 ° N	118.5 ° W	n/a		0.8 m	10/15/2014 0:55	NTWC
Dana Point	United States	33.4 ° N	117.6 ° W	n/a		0.7 m	10/15/2014 0:45	NTWC
Laguna Beach	United States	33.5 ° N	117.7 ° W	n/a		0.8 m	10/15/2014 0:51	NTWC
Newport Beach	United States	33.5 ° N	117.8 ° W	n/a		0.8 m	10/15/2014 0:52	NTWC
Huntington Beach	United States	33.6 ° N	117.9 ° W	n/a		0.7 m	10/15/2014 0:55	NTWC
Los Angeles Harbor	United States	33.7 ° N	118.3 ° W	n/a		0.6 m	10/15/2014 1:00	NTWC
Seal Beach	United States	33.7 ° N	118.1 ° W	n/a		0.7 m	10/15/2014 0:56	NTWC
Middle Harbor	United States	33.8 ° N	118.2 ° W	n/a		0.7 m	10/15/2014 1:03	NTWC
Long Beach	United States	33.8 ° N	118.2 ° W	n/a		0.7 m	10/15/2014 1:00	NTWC
Redondo Beach	United States	33.9 ° N	118.4 ° W	n/a		0.8 m	10/15/2014 1:08	NTWC
Santa Cruz Island	United States	34.0 ° N	119.8 ° W	n/a		0.6 m	10/15/2014 1:13	NTWC
Santa Monica	United States	34.0 ° N	118.5 ° W	n/a		0.8 m	10/15/2014 1:10	NTWC
Malibu	United States	34.0 ° N	118.7 ° W	n/a		0.7 m	10/15/2014 1:11	NTWC
Port Hueneme	United States	34.1 ° N	119.2 ° W	n/a		0.7 m	10/15/2014 1:20	NTWC
Channel Islands Harbor	United States	34.2 ° N	119.2 ° W	n/a		0.6 m	10/15/2014 1:22	NTWC
Ventura	United States	34.3 ° N	119.3 ° W	n/a		0.8 m	10/15/2014 1:24	NTWC
Rincon Point	United States	34.4 ° N	119.5 ° W	n/a		0.8 m	10/15/2014 1:24	NTWC

Provided to all harbors by NWS Weather  
Forecast Office and/or State EOC at: 1:45 PM

County	Communities/Harbors	Recommended MINIMUM Tsunami Response Playbook Plan, based on tsunami forecast amplitude (wave height)	<b>Tsunami forecast amplitude</b> (wave height), in METERS above existing conditions, from National Tsunami Warning Center	<b>FASTER flood elevation</b> (in METERS above Mean Sea Level; considers tsunami forecast amplitude, storm and tidal conditions, error and runup) FOR DETERMINING IF PILES WILL BE OVERTOPPED
Ventura	Ventura Harbor	Response Plan B	0.8	2.02
Ventura	Oxnard Harbor entrance	Response Plan A	0.6	1.74
Ventura	Oxnard Harbor channel	Response Plan A	0.6	1.74
Ventura	Port Hueneme	Response Plan B	0.7	1.88
Los Angeles	Marina Del Rey	Response Plan C	0.8	2.02
Los Angeles	Redondo Beach	Response Plan C	0.8	2.02
Los Angeles	Port of Los Angeles	Response Plan B	0.6	1.74
Los Angeles	Port of Long Beach	Response Plan B	0.7	1.88
Los Angeles	Long Beach (Naples)	Response Plan B	0.7	1.88
Los Angeles	Catalina (Two Harbors)	Response Plan B	0.8	2.21
Los Angeles	Catalina (Avalon)	Response Plan B	0.8	1.14

# Evaluation of docks overtopping piles using FASTER water-level value

Elevation where dock  
overtops pile

Elevation of piles above MSL = 3.1m

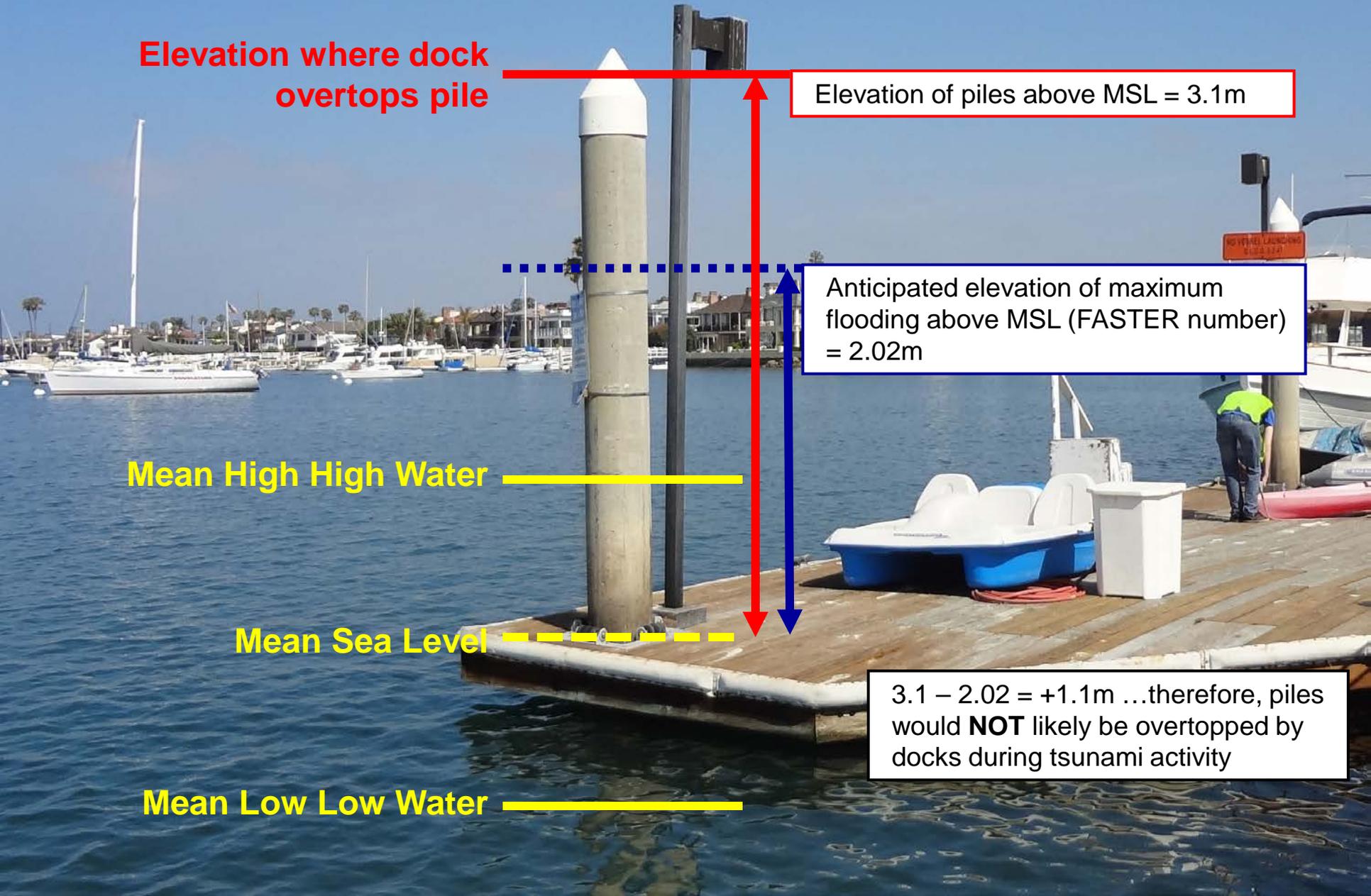
Anticipated elevation of maximum  
flooding above MSL (FASTER number)  
= 2.02m

Mean High High Water

Mean Sea Level

Mean Low Low Water

$3.1 - 2.02 = +1.1\text{m}$  ...therefore, piles  
would **NOT** likely be overtopped by  
docks during tsunami activity



## APPENDIX

### Quick Reference Page for Determining Real-Time Maritime Tsunami Response Activities

**Step 1:** Obtain basic information about the earthquake and tsunami from National Tsunami Warning Center in Alaska, regional National Weather Service office, and/or county emergency manager. **NOTE: Tsunami Alert Level may change in first couple hours after the earthquake; WATCH may be upgraded to ADVISORY or WARNING.**

Earthquake location \_\_\_\_\_

Earthquake magnitude \_\_\_\_\_

Tsunami Alert level (circle one)    WATCH    ADVISORY    WARNING

**Closest forecasted tsunami amplitude/wave height** \_\_\_\_\_

Forecasted tsunami arrival time \_\_\_\_\_

**Step 2:** Tsunami evacuation and response will depend on the amount of time before the tsunami arrival. Four (4) hours is considered the threshold time needed for evacuation. As a quick reference, we offer the following guidance:

**1) If less than four hours before tsunami arrival, we recommend the following:**

- ADVISORY – evacuate beaches, harbor docks, and piers
- WARNING – evacuate entire maximum on-land evacuation zone, or follow guidance provided by local emergency manager

**2) If greater than four hours before tsunami arrival, and your harbor has fully developed its tsunami response Playbook plans, the harbor can utilize the FORECAST AMPLITUDE from Step 1 on the table on the right to identify the appropriate response plan to use.**

Reference Pages for Details in Maritime Playbook	Scenario Playbook Plan Letter	Peak Amp./Wave Ht. at Harbor (in meters, above existing conditions at harbor entrance)
	(No action)	< 0.2
Page 8-9	A	0.5
Page 10-11	B	0.7
Page 12-13	C	0.9
Page 14-15	D	1.5
Page 16-17	E	2.0

State and NWS recommend MINIMUM Maritime Tsunami Response Playbook Plan for harbors to use for distant-sources events greater than four hours travel time.

The harbor can refer to the playbook guidance document for the specific pages and instructions to follow.

# Playbook Plan C

(based on 2010 M8.8 Chile Event)

Background Information:

Alert level = Advisory  
 Peak Amplitude = 0.9 meters  
 Peak Velocity = 7 knots  
 Projected duration of strong currents (see location map below):  
 3-6 knots = 20 hrs; 6-9 knots = 5 hrs; >9 knots = 0 hrs

Specific Instructions:

- Follow general guidance for Advisory-level tsunamis (Page 5)
- Strong currents and potential scour are expected in areas identified in blue and gold on the map to the right. Consider relocating vessels located within 100 meters (300 feet) of these areas.
- Specific areas where vessels should be relocated from and docks secured:
  - ..... (completed with maritime community input)

Safe areas for repositioning vessels within King Harbor:

.....(completed with maritime community input)

**Time thresholds for currents >3 knots.....>6 knots.....>9 knots**  
 (Colors below represent HOURS of potential activity for blue, yellow, and red zones on opposite page)

