

# Alaska State Emergency Operations Center (SEOC)

## *Earthquake and Tsunami Alert and Warning*



# SEOC Mission

- ❑ Execute State disaster authorities per Alaska Statute 26.23
- ❑ Support local communities in their disaster response operations
- ❑ Coordinated statewide disaster response across all state, interstate, federal and international agencies, volunteer organizations, and private sector cooperators.
- ❑ Provide situational awareness in support of State policy and decision making
- ❑ Account for State response costs
- ❑ Technical review of local, State, and federal disaster declarations



# SEOC Organization

- ❑ Scalable staffing to meet the State's emergency operations needs 24-hours a day (SEOC Levels 1 to 4)
- ❑ Incident Command System with representatives from State, Federal, and volunteer organizations.
- ❑ Deployable Operations Staff for Incident Management or Liaison in local communities
- ❑ Deployable equipment to support State and local disaster response.
- ❑ Continuity of Operations (COOP) in alternate sites



# Alaska's Governance

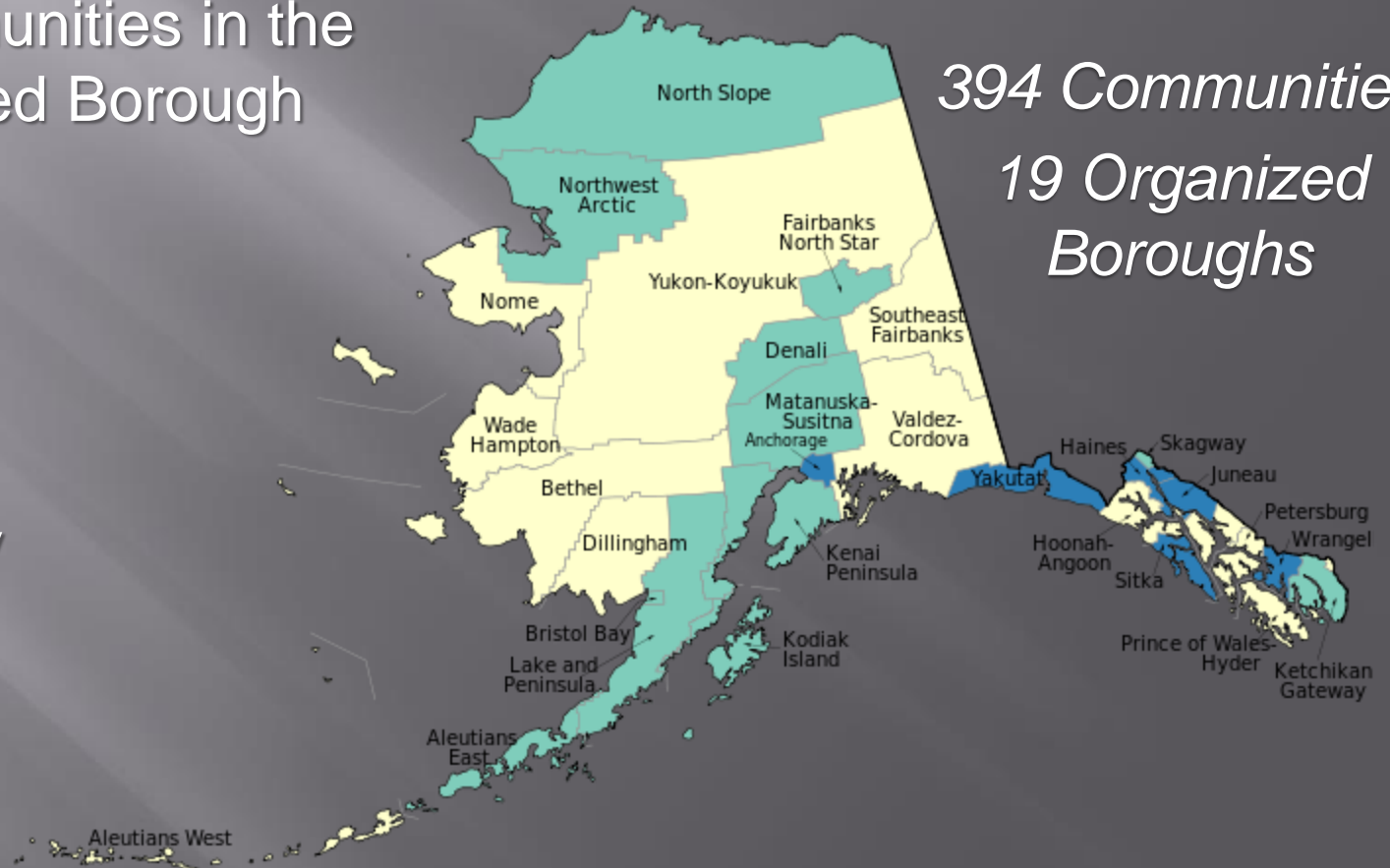
## Boroughs *and* The Unorganized Borough

### Major Communities in the Unorganized Borough

- Bethel
- Cordova
- Craig
- Deltana
- Dillingham
- Hooper Bay
- Metlakatla
- Nome
- Petersburg
- Tok
- Unalaska
- Valdez

*394 Communities*

*19 Organized  
Boroughs*



# Critical Alaskan Emergencies

- Earthquakes
- Tsunamis
- Floods
- Volcanoes
- Hazardous Materials Events
- Severe Storms
- Building Fires
- Wildland Fires
- Avalanches
- Terrorism
- Pandemic Flu
- Infrastructure Loss



# SEOC Earthquake and Tsunami Operational Monitoring



# National Alert and Warning System (NAWAS) Phone

*Direct connection to..*

- ✓ National Weather Service Forecast Offices
- ✓ Tsunami Warning Center
- ✓ FEMA
- ✓ Lower 48 States and Canada

*Direct connection to..*

- ✓ Community Dispatch Centers
- ✓ US Coast Guard
- ✓ Alaska State Troopers



# Integrated Earthquake Display

CISN Display, Version 1.7

File View Layers Event Tools Help Settings

**CISNdisplay** The California Integrated Seismic Network. Partner with the Advanced National Seismic System **ANSS**

**Date/Time** M

2015/10/27	22:49:41	5.2
2015/10/28	14:04:55	5.0
S 2015/10/28	20:48:41	5.8
T 2015/10/29	02:49:28	5.6
2015/10/30	03:18:42	5.1
2015/10/30	06:58:58	5.0
2015/10/30	07:18:21	5.0
2015/10/30	10:27:01	5.1
● 2015/10/30	11:26:44	5.1
2015/10/31	04:43:57	5.3
● 2015/11/01	03:48:48	5.3
● 2015/11/01	05:42:11	5.3
S 2015/11/01	15:16:15	5.9
S 2015/11/01	21:09:42	5.5
2015/11/02	03:04:08	5.2
2015/11/02	03:35:03	5.1
T 2015/11/02	08:15:34	5.9
2015/11/02	08:24:26	5.2
2015/11/02	08:27:55	5.0
T 2015/11/02	08:31:18	5.3
2015/11/02	13:40:36	5.0
2015/11/02	16:36:47	5.2
● 2015/11/03	01:10:44	5.2

**Magnitude** Age

- ≥ 0
- ≥ 1 last hour
- ≥ 2 last day
- ≥ 3 last week
- ≥ 4 ≥ 7 days
- ≥ 5
- ≥ 6
- ≥ 7

Event ID: 200041ht Status: **Verified** Data Source: us - USGS NEIC  
 Date: Nov 3, 2015 Magnitude: 5.2 Latitude: 13.475  
 Time: 01:10:44.80 GMT Depth: 21.7 miles Longitude: 146.030  
 Note: 86 miles E of HAGATNA, Guam

Info Products

Notice: Earthquake data may be preliminary and subject to change.

Lat -37.623, Lon 20.604

Connected to QuakeWatch3 (UC Berkeley)

9:17 AM 11/3/2015



# Disaster Email System – First Class

Operations		- 8/7/2008 10:26 AM
My Shared Documents		- 12/3/2007 3:58 PM
Voice Greetings		- 8/7/2007 1:59 PM
Mailbox	1K	8/7/2007 8:40 AM
Bookmarks		- 2/3/2007 8:58 PM
Web Publishing		- 2/3/2007 8:58 PM
Instant Messaging		- 2/3/2007 8:58 PM
Workspaces		- 2/3/2007 8:58 PM
Trash Can		- 2/3/2007 8:58 PM
File Storage		- 2/3/2007 8:58 PM
Documents		- 2/3/2007 8:58 PM
Contacts		- 2/3/2007 8:58 PM
Calendar		- 2/3/2007 8:58 PM
DHS&EM Response Unit		- 2/8/2005 11:56 AM
Emer Assist/Threat-Warning Form		- 6/4/2004 2:45 PM
Tsunami Watches and Warnings		- 3/5/2003 12:57 PM
Wx River Products		- 3/5/2003 12:56 PM
Wx Watches and Warnings		- 3/5/2003 12:50 PM
SECC Incident Info		- 10/8/2001 1:11 PM
SECC	SECC Staff Forum	- 9/26/2001 10:35 AM
DHS&EM Community Services		- 2/25/1998 8:13 AM
DHS&EM Logistics Support (911)		- 11/4/1997 11:49 AM
Tsunami & Pacific EQs		- 8/26/1996 3:20 PM
AK Earthquake Info Ctr	from Internet mail list	- 2/27/1996 10:50 AM
AK Volcano Observatory	from Internet mailing list	- 2/27/1996 10:49 AM
DHS&EM Situation Update		- 12/11/1995 1:17 PM
Conferences		- 1/13/1991 3:26 PM

MWS-WCATWC Tsunami Warning/Advisory

WEAK51 PAAQ 050901  
TSUAKI

BULLETIN  
PUBLIC TSUNAMI MESSAGE NUMBER 1  
MWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK  
1201 AM AKST SAT JAN 5 2013

...A TSUNAMI WARNING IS NOW IN EFFECT...

...A TSUNAMI ADVISORY IS NOW IN EFFECT...

WARNINGS/ADVISORIES/WATCHES - UPDATED

-----  
TSUNAMI WARNING IN EFFECT FOR...

\* THE COASTAL AREAS OF BRITISH COLUMBIA AND ALASKA FROM THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA TO CAPE SUCKLING ALASKA/LOCATED 75 MILES SE OF CORDOVA/

TSUNAMI ADVISORY IN EFFECT FOR...

\* THE COASTAL AREAS OF BRITISH COLUMBIA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA

\* THE COASTAL AREAS OF ALASKA FROM CAPE SUCKLING ALASKA/LOCATED 75 MILES SE OF CORDOVA/ TO KENNEDY ENTRANCE ALASKA/LOCATED 40 MILES SW OF HOMER/

PRELIMINARY EARTHQUAKE PARAMETERS

-----  
\* MAGNITUDE 7.7  
\* ORIGIN TIME 2358 AKST JAN 04 2013  
0058 PST JAN 05 2013  
0858 UTC JAN 05 2013  
\* COORDINATES 55.3 NORTH 134.9 WEST  
\* DEPTH 3 MILES  
\* LOCATION 90 MILES NW OF DIXON ENTRANCE ALASKA  
210 MILES S OF JUNEAU ALASKA

# Internet Resources - Earthquake

**Geophysical Institute**  
UNIVERSITY OF ALASKA FAIRBANKS

**Alaska Earthquake Center**  
Geophysical Institute, UAF

The Alaska Earthquake Center was established by Alaska statute in 1986. AEC's mandate is to collect, analyze and archive seismic event data for the state of Alaska, providing information and assistance to the public as well as state and local agencies. The AEC records data from an integrated network of more than 400 seismic sites distributed across the state and serves as the regional data center locating and reporting about 20,000 earthquakes per year.

**Recent Earthquakes**   **Earthquake Preparedness**

**USGS**

7 Days, Magnitude 4.5+ Worldwide

68 earthquakes - [Download](#)  
Updated: 2015-11-03 11:21:25 UTC  
Showing event times using UTC

Magnitude	Location	Time (UTC)	Depth (km)
4.5	69km SE of Atka, Alaska	2015-11-03 11:21:25 UTC	57.8 km
4.5	86km SSE of Atka, Alaska	2015-11-02 10:32:22 UTC	63.1 km
5.3	91km SE of Atka, Alaska	2015-11-02 08:31:18 UTC	36.4 km
5.0	41km NNE of Atka, Alaska	2015-11-02 09:27:55 UTC	27.8 km
5.2	84km SE of Atka, Alaska	2015-11-02 08:24:26 UTC	41.0 km
5.9	80km SE of Atka, Alaska	2015-11-02 08:15:34 UTC	21.1 km
5.6	14km S of Little Sitkin Island, Alaska	2015-10-29 02:49:28 UTC	87.6 km

Didn't find what you were looking for?  
Change your "Settings" to view more earthquakes.  
[Which earthquakes are included on the map and list?](#)  
[Feel something not shown - report it here.](#)

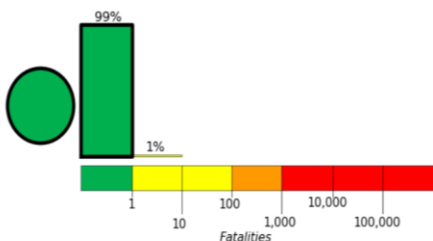
Gener M5.9 - 80km SE of Atka, Alaska

**Cur**   **Tsu**   **Educatic**   **GI Seis**   **Conta**

III DYE12   IV ShakeMap   GREEN PAGER

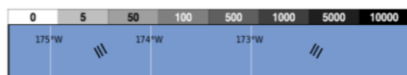
Impact - PAGER  
Data Source US\*

Estimated Fatalities

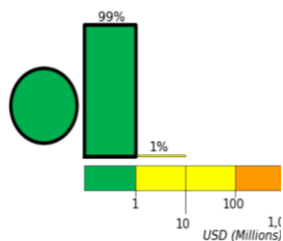


Green alert for shaking-related fatalities and economic losses. There is a low likelihood of casualties and damage.

Estimated Population Exposure to Earthquake Shaking



Estimated Economic Losses



Structure Information Summary

Overall, the population in this region resides in struct earthquake shaking, though some vulnerable struct

M5.9 - 80km SE of Atka, Alaska

III DYE12   IV ShakeMap   GREEN PAGER

Impact - Shakemap  
Data Source US\*

Intensity   PGA (%g)   PGV (cm/s)   PSA 0.3s (%g)   PSA 1.0s (%g)



# Internet Resources - Tsunami

- + Products
- + Catalogs
- + Education
- + Exercises
- + Tsunami Ready
- + User Guides
- + Map/Help FAQ
- + Tides
- + Tsunami Warning Centers

Atom  
XML CapXML

Follow us!



## Advisory

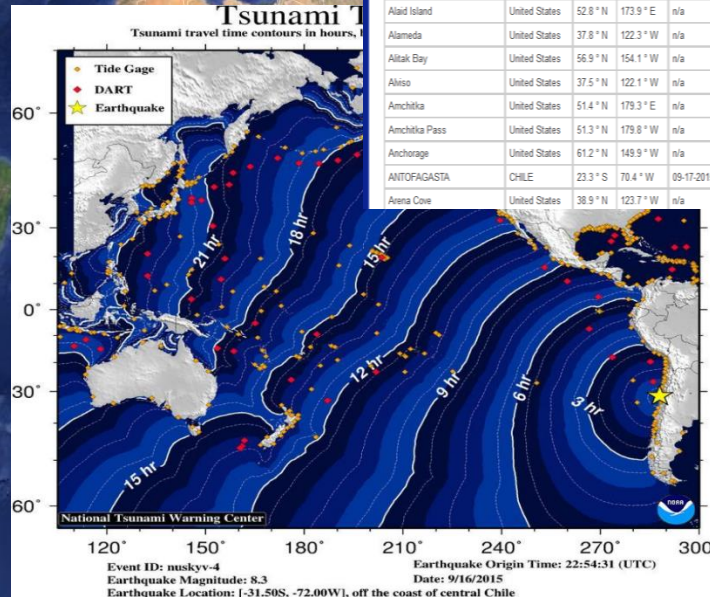


### Event Details

**Location:** off the coast of central Chile  
**Magnitude:** 8.3, **Depth:** 6.2 (Mi.)  
**Lat:** 31.5° S **Lon:** 72° W  
**Origin Time:** 9/16/2015, 2:54:31 PM

- ⚠ - **Advisory** Ragged Point, California (50 miles NW of San Luis Obispo) - San Onofre State Beach, California (45 miles SE of L.A.) at: 9/16/2015, 5:43:43 PM

- Alert Layer  
  Latest Event  
 Previous 20  
  Observations  
  Forecasts  
  Tide Gauges  
  Dart Buoys  
  NTWC Break Points Layer



### Event Observations and Forecasts

Bulletin Identifier	Bulletin Value
Event Magnitude :	8.3
Event Depth :	6.2 Mi.
Event Lat :	31.5° S
Event Lon :	72° W
Event Origin Time :	Wed 16 Sep 2015 22:54:31 PM UTC 9/16/2015, 2:54:31 PM
Bulletin Issue Time :	Thu 17 Sep 2015 01:43:43 AM UTC 9/16/2015, 5:43:43 PM
Total number of sites :	264

Note: Times are local to your browser, unless otherwise indicated

Location	Country	Lat	Lon	Obs Max Time (UTC)	Obs Height	Fcst. Height	Fcst. Arr Time (UTC)	TWC
Adak	United States	51.9° N	176.6° W	n/a		0.7 feet	09-17-2015 17:25:26	NTWC
Agony Point	United States	51.8° N	176.1° W	n/a		0.4 feet	09-17-2015 17:05:26	NTWC
Alutian	United States	54.1° N	165.8° W	n/a		0.7 feet	09-17-2015 17:07:26	NTWC
Alaid Island	United States	52.8° N	173.9° E	n/a		0.4 feet	09-17-2015 18:05:26	NTWC
Alameda	United States	37.8° N	122.3° W	n/a		0.1 feet	09-17-2015 13:19:26	NTWC
Allak Bay	United States	56.9° N	154.1° W	n/a			09-17-2015 17:50:26	NTWC
Alviso	United States	37.5° N	122.1° W	n/a		0.1 feet	09-17-2015 14:31:26	NTWC
Amchitka	United States	51.4° N	179.3° E	n/a			09-17-2015 17:22:26	NTWC
Amchitka Pass	United States	51.3° N	179.8° W	n/a			09-17-2015 17:12:26	NTWC
Anchorage	United States	61.2° N	149.9° W	n/a			09-17-2015 21:15:26	NTWC
ANTOFAGASTA	CHILE	23.3° S	70.4° W	09-17-2015 01:00:00	1.3 feet		08-28-2015 21:24:00	NTWC
Aysen Cove	United States	38.9° N	123.7° W	n/a		0.4 feet	09-17-2015 12:37:26	NTWC

# SEOC Earthquake Checklist

## EARTHQUAKE

Reaction Parameters:

MAGNITUDE **6.0 OR HIGHER** OR  
DAMAGE REPORTED

**Date: 10/4/2013**

Document Created: July 2012

OPR: SEOC Manager

Last Modified by: Sept 2015  
MAF

Annual Review Due: Sep 2016  
or sooner as required



**SEOC**

**\*\* IF A TSUNAMI WATCH OR WARNING IS ISSUED, COMPLETE THAT CHECKLIST FIRST \*\***  
earthquakes less than M 6.0 and close to population centers may be felt significantly with resulting damages. Use discretion and initiate calls to check for damages from quakes under M 6.0 when they occur near populated areas or are shallow.

### 1. COLLECT INFORMATION

\_\_ Initiate the "Event Information Sheet".

\_\_ Contact communities within a 100 mile radius of the epicenter determine extent of damage and to determine if assistance is needed.

➤ **Work with Alaska Earthquake Center (AEC) to determine communities most at risk. Office 474-7320 or AEC Duty Officer Cell 347-5905**

➤ If can't get ahold of AEC go to <http://earthquake.usgs.gov/earthquake> and collect information regarding location, depth, intensity, and damage/casualty estimates. Links towards bottom of website to visit include "PAGER" and "ShakeMap"

➤ Increase the calling radius as needed if damage is reported.

### 2. IF THE SITUATION EXCEEDS YOUR ABILITY TO MANAGE, COMPLETE THE FOLLOWING:

\_\_ Activate SEOC (See *Standard SEOC Activation Procedures* - Y:\Operations\SEOC Operations\2013 Checklists\Standard SEOC Activation Procedure) recalling Division staff and liaisons as needed to assist in contacting communities and facilitate responding to incoming calls.

\_\_ Notify Public Information Officers Jeremy Zidek: 441-2337; Julie Baker: 419-566-3929; Michelle Torres: 521-9330

\_\_ When time permits, advise AEC of damaged communities: 474-7320 or 347-5905 (duty officer).

\_\_ Contact AKNG JOC and notify: duty officer: 854-1931 (cell) 428-6365 (office).

\_\_ Contact DOT&PF liaison and request they prepare a status of airports and major roads, marine ports, or airports within the affected communities: Dan Monteleone work 269-9323; cell 317-9883

\_\_ Contact the Alaska Railroad (ARR) EOC to determine if they have any Rail system failures, damages or shut downs. 24/7 Dispatch: 907-265-2330 or 907-265-2421

### 3. PROCEED TO STANDARD SEOC ACTIVATION PROCEDURES AS NEEDED

# SEOC Tsunami Checklist

<p><b>TSUNAMI</b> <b>Reaction Parameters:</b> Tsunami Warning or Advisory has been issued.  Date of Warning:</p>	<p>Document Created: May 2006 OPR: SEOC Manager Last Modified by: MWR Feb. 2015  Annual Review Due: <b>Feb. 2015</b> or sooner as required</p>	<p>State of <b>Alaska</b> Department of Military and Veterans Affairs Homeland Security &amp; Emergency Management <b>SEOC</b></p>
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## TSUNAMI WARNING

**WARNING DEFINITION:** Inundating waves (3 feet or more) are possible. Full evacuation from inundation areas suggested.

- \_\_: \_\_ **1. RECEIVE WARNING FROM NATIONAL TSUNAMI WARNING CENTER (NTWC )** using WEPA41 Warning Message from one of the following sources:
- FirstClass Tsunami Warning Conference or First Class SECC Duty Officer Conference
  - NTWC Web site <http://ntwc.arh.noaa.gov/>
  - NAWAS broadcast from NTWC
- \_\_: \_\_ **2. VERIFY TSUNAMI WARNING BROADCAST OVER EMERGENCY ALERT SYSTEM (EAS)** through one of the following:
- The broadcast went through EMnet by message to FirstClass SECC Conference or Duty Officer email
  - Contact with Anchorage Weather Forecast Office (WFO) (907-266-5172)
  - Verifying the broadcast over TV or Radio
- IF WARNING HAS NOT BEEN BROADCAST OVER EAS...**
- a. Have Anchorage WFO broadcast the warning (907-266-5172). If they cannot...
  - b. Use EMnet to broadcast the message (*refer to the EMnet Tsunami Warning Instructions*) if you cannot...
  - c. Contact MATCOM and have them use EMnet to broadcast the warning (907-352-5401 or ALMR) or...
  - d. Contact Fairbanks AST and have them use EMnet to broadcast the warning (907-451-5100 or ALMR) or...
  - e. If EMnet fails, use legacy EAS system in SEOC radio frame room or AST Fairbanks to broadcast EAS.
- \_\_: \_\_ **3. VERIFY THAT THE WARNING (WEPA41) HAS BEEN READ OVER AKWAS.** If not read it on AKWAS. If you cannot, have MATCOM read it over AKWAS, or failing that have AST Fairbanks read it over AKWAS.

### AKWAS TSUNAMI ROLL CALL SCRIPT

- a. Activate the AKWAS alert signal for 4 seconds...
- b. Broadcast:  
***"This is Alaska State Control with a Tsunami Warning Message. This is Alaska State Control with a Tsunami Warning Message. The following stations standby for roll call..."***

Roll call the AKWAS Stations with tsunami warning responsibility listed below:

#### **AKWAS TSUNAMI WARNING RESPONSIBILITY STATIONS:**

- Bristol Bay Borough
- Cordova
- Homer Police Department
- Juneau Coast Guard
- Juneau Police Department
- Ketchikan
- Kodiak City
- Kodiak Coast Guard
- Seward
- Sitka
- Soldotna State Troopers
- Unalaska Public Safety
- Valdez
- Whittier Police Department

Full "Live Code" system test annually during the March anniversary week of the 1964 Great Alaska Earthquake.

# SEOC Tsunami Community Contact

## TSUNAMI COMMUNITY CONTACT INFORMATION SHEET - SEOC

Call received by (Call-taker's name):

CONTACT NAME:	DATE:	TIME:
---------------	-------	-------

COMMUNITY LOCATION – (MUNICIPALITY/CITY/VILLAGE/COMMUNITY):
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**COMMUNICATIONS INFORMATION / CALL BACK NUMBERS:**

Phone<sup>1</sup>: Landline:  Cell:  Satellite:  (check phone type)

Phone<sup>2</sup>: Landline:  Cell:  Satellite:  (check phone type)

Phone<sup>3</sup>: Landline:  Cell:  Satellite:  (check phone type)

Radio: NOAA Weather Receiver:  Marine Radio:  ALMR:  (which Talkgroup Monitored?) Ham  (freq?)

FAX -                      EMAIL -

**EMERGENCY PREPAREDNESS ACTIONS TAKEN BY COMMUNITY:**

Siren Activation / Hazard Area Public Warning Issued?

Evacuation? Total Number Evacuated?:                      Method of Evacuation? (foot, auto, other)

Shelter(s) Opened?

Shelter Name	Location	Number Sheltered	Capacity	Communications at Shelter (List Phone / Satellite numbers, etc.)

Harbor Cleared?

Roads in Coastal Hazard Areas Closed?

Emergency Operations Center (EOC) Opened? Location?                      Communications at EOC?

Other Actions (describe)?

### EARTHQUAKE DAMAGE (from ground shaking/movement):

### WAVE ARRIVAL (If safe to report...)

	Arrival time	Wave Height	Distance Inundated inland/onshore
1 <sup>st</sup> Wave			
2 <sup>nd</sup> Wave			
3 <sup>rd</sup> Wave			
4 <sup>th</sup> Wave			

### RESPONSE ACTIONS TAKEN BY COMMUNITY

Brief Description of Current Situation noting Immediate Dangers to Life and Property?

### SEARCH AND RESCUE OPERATIONS (Describe briefly):

### CASUALTY INFORMATION

INJURED:	MISSING:	DECEASED:
----------	----------	-----------

REQUIRED ASSISTANCE (Describe the needed equipment, personnel, and supplies):

# Emergency Alert System (EAS)

EMnet EAS Encoder

File Tools

Quick Alert

Choose Alert Type: tsunami warning

Alert Duration: 1:00

Choose Destinations

Areas to Alert

AK - All Alaska, dhsemduyofficer@alaska.gov, mva.dhsem.operations@alaska.gov

Message Type: Alert

Event Category: Met

Urgency: Immediate

Severity: Severe

Certainty: Likely

English (U.S.)

URL for Additional Information: <http://www.tsunami.gov>

Headline: EAS Tsunami Warning

Description: 99 characters

COPY AND PASTE WARNING INFORMATION FROM THE WEPA 41 PRODUCT AT [HTTP://WWW.TSUNAMI.GOV](http://www.tsunami.gov) INTO THIS BOX

Short Text

A tsunami warning has been issued for all Alaska. Tune to your local TV or radio station or go to <http://www.tsunami.gov>.

Recommended action

Record Audio

Pre-recorded Audio

Attachments

Size M:SS

Comlabs

Comms. Labs. Ariz.

EAS Must Carry

Siren Activation: NONE

Repeat Voice Message: Don't Repeat

Attach Files

Preview Alert

Stop Preview

Save Alert

Clear Alert

Activate

SAME: ZCZC-CIV-TSW-002000+0100-3121732-AK000

Improved ability through testing and technology for *regionalized* warning dissemination.

Sirens and local mass notification systems - a local community responsibility.

# Rapid Call System - Code Red

1 2 3 Go!

Select a scenario Tsunami Warning Select an audience Tsunami Warning Select a message Tsunami Warning Launch the scenario

Select Audience Audience Information

Add or use an existing audience:  
Tsunami Warning

Add Contact CONTACT DELETE CONTACT SELECTION

Add All Call selection: ALL CALL DELETE ALL CALL SELECTION

Save Audience for future use

Tsunami Warning

BACK TO SCENARIO CONTINUE TO MESSAGES

## RAPID NOTIFICATION

➤ *local community leaders*

➤ *SEOC staff*

✓ Telephone

✓ Email

✓ Text

1 2 3 Go!

Select a scenario Tsunami Warning Select an audience Tsunami Warning Select a message Tsunami Warning Launch the scenario

Select Message Message Editor

Tsunami Warning

CHANGE MESSAGE

CREATE NEW MESSAGE

PREVIEW

SAVE PRIMARY VOICE NEXT

BACK TO AUDIENCE CONTINUE TO LAUNCH OPTIONS





APPENDIX G: Tsunami Warning Dissemination

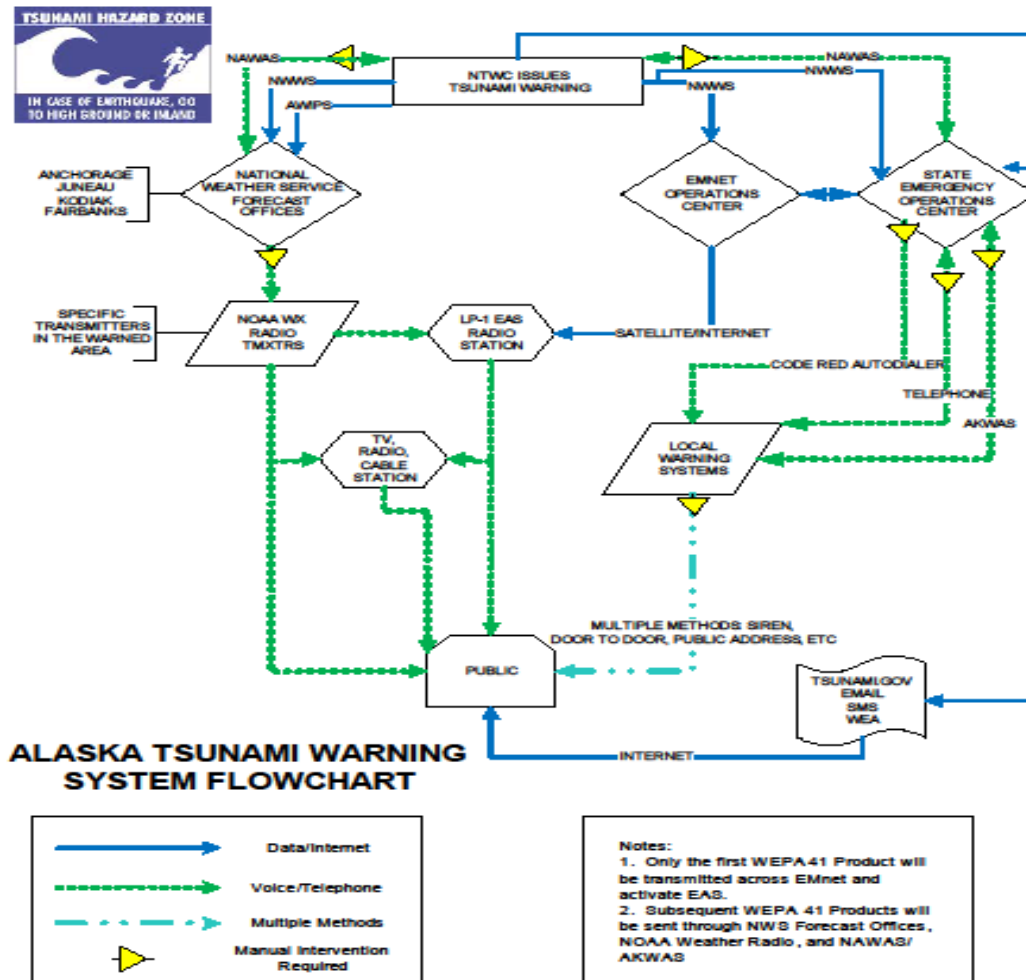
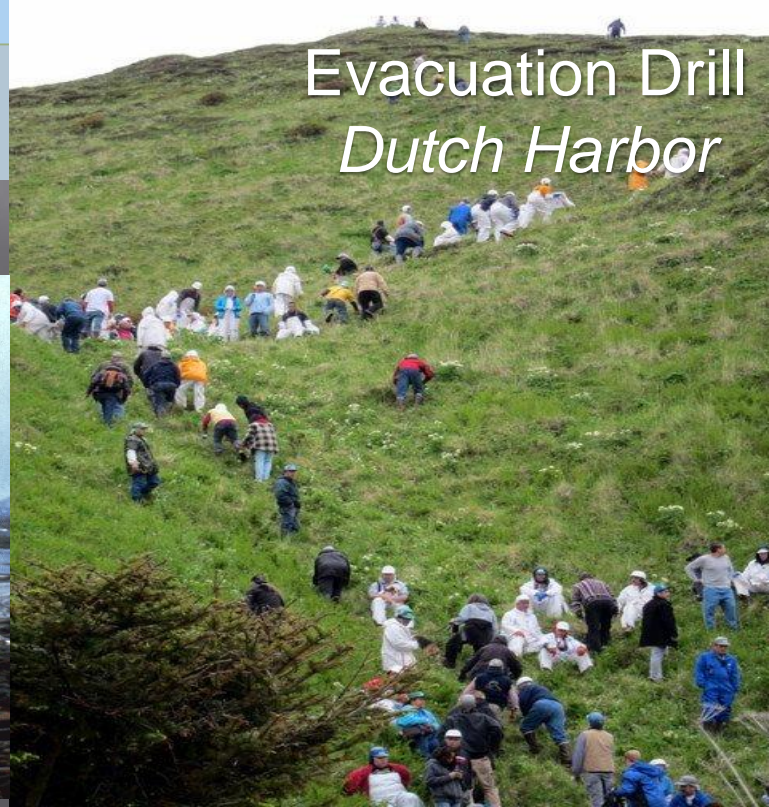
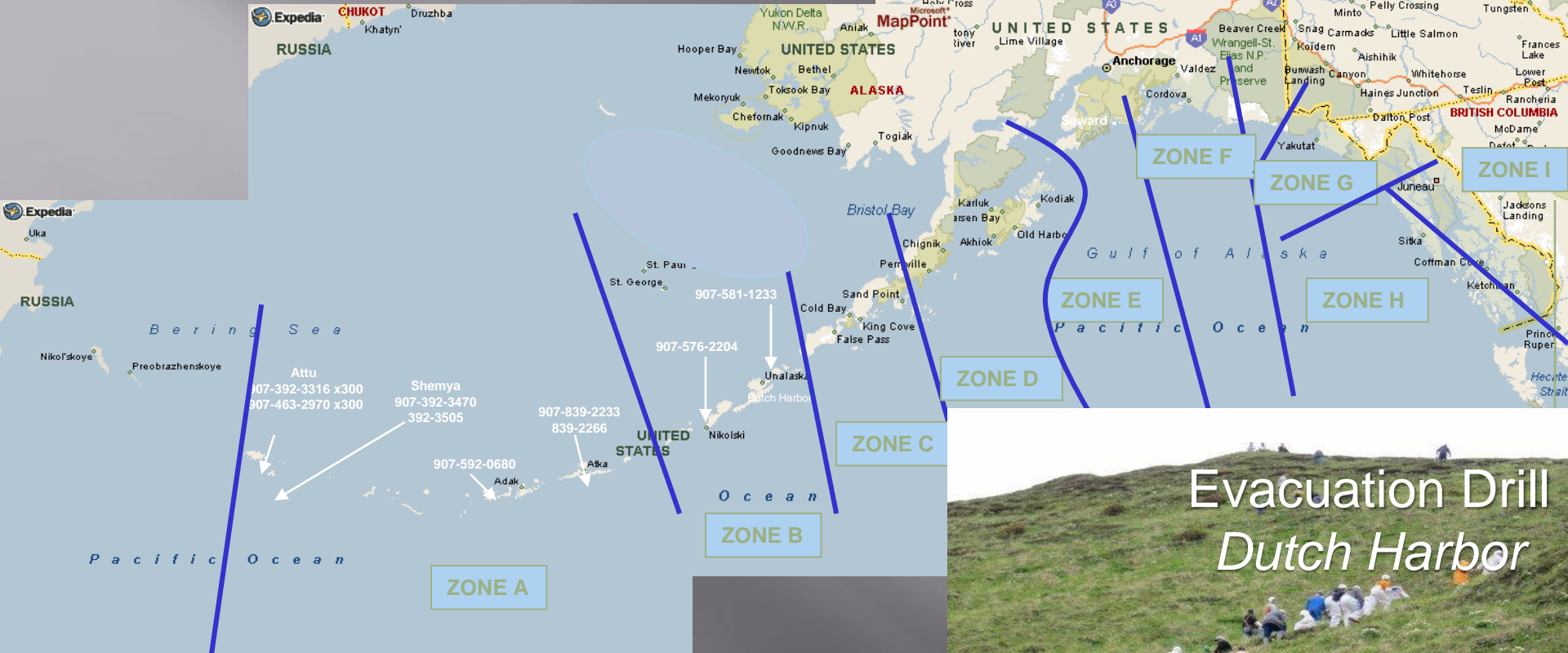


Figure G1: Tsunami Warning Dissemination

TSUNAMI  
WARNING  
PROCESS

# Alaska Tsunami Zones



# Alaska Earthquakes

2002 Denali Fault - Mag 7.9



1964 Good Friday - Mag 9.2



January 2016  
Mag 7.1 - Earthquake  
161 miles SW of Anchorage - 1:30 AM

Kenai gas leak - four homes  
destroyed by fire

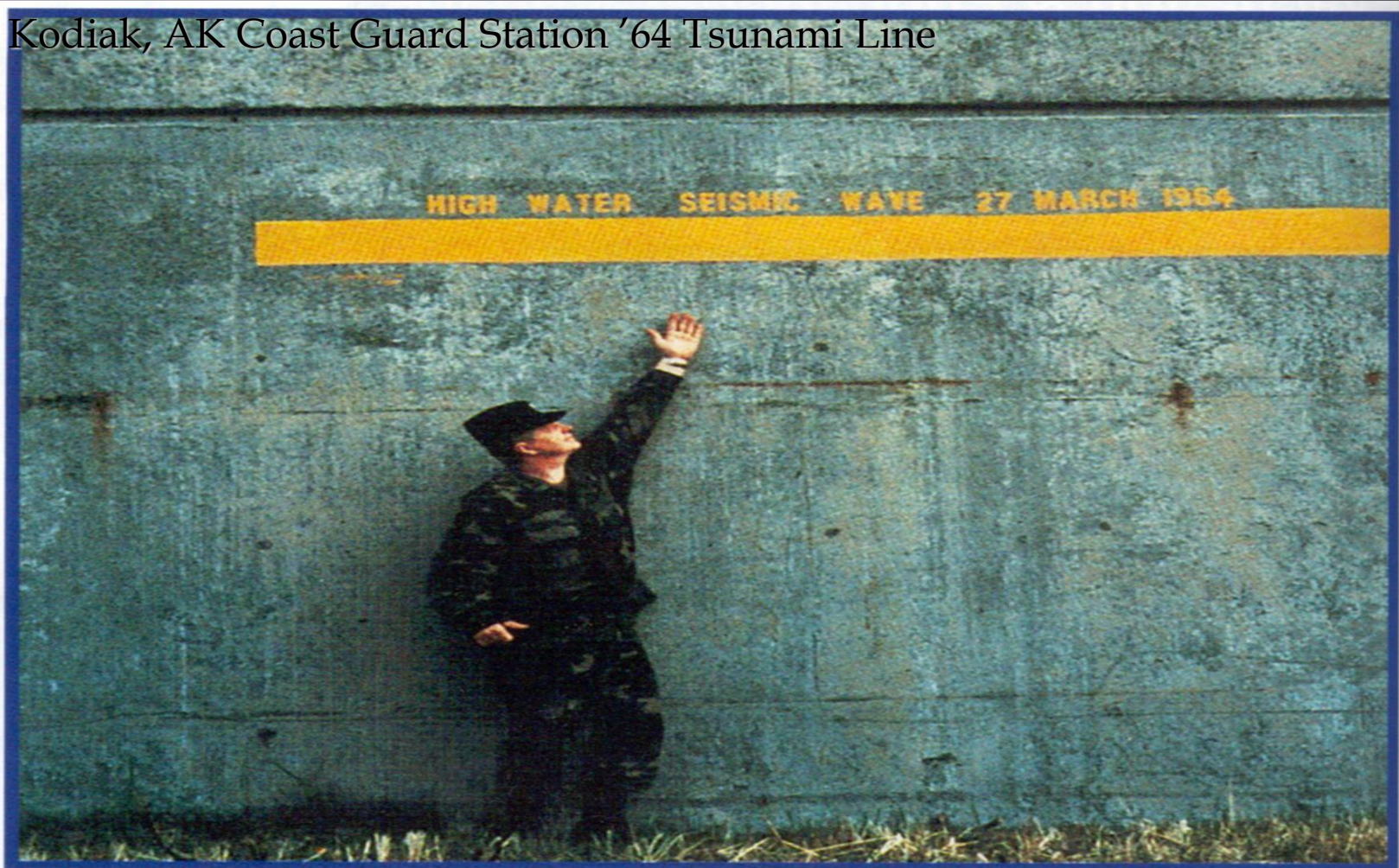


# 2016 January - 7.1 Mag Earthquake Damages in Anchorage



# Alaska's SEOC – Serving Alaska

Kodiak, AK Coast Guard Station '64 Tsunami Line



1964 tsunami high water mark on Coast Guard facility in Kodiak, Alaska. Photo: Chris Jonientz-Trisler, FEMA.