Risk Communication in Driving Nonstructural Actions

FRM Workshop

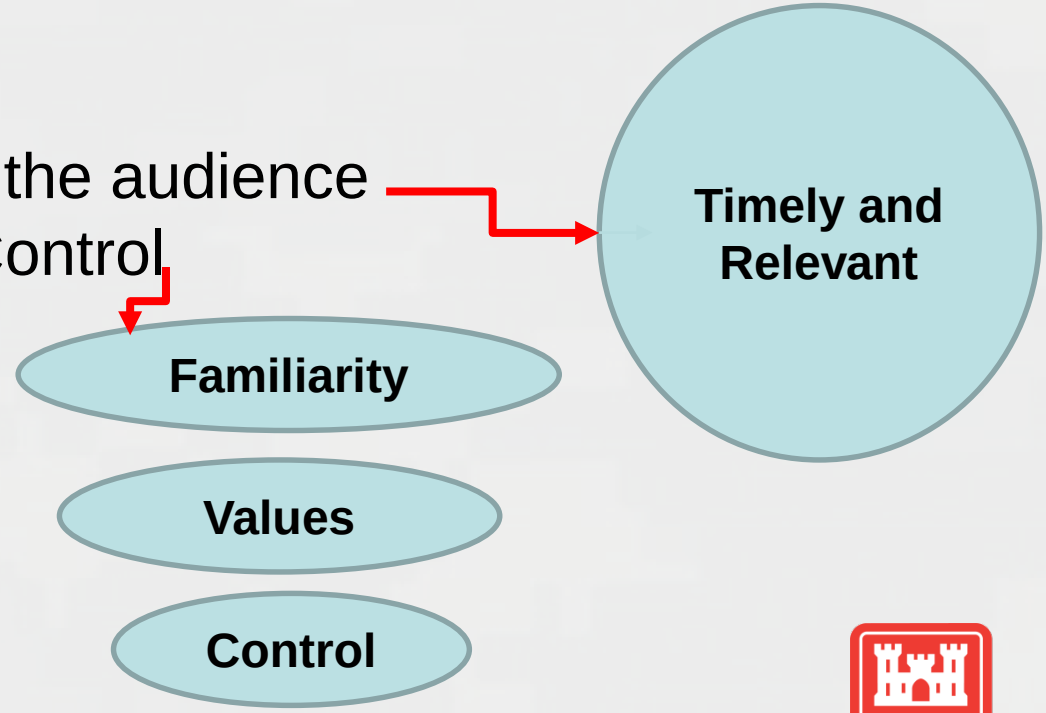
Tony D. Krause
Omaha District, Flood Risk and Floodplain Management

US Army Corps of Engineers
BUILDING STRONG®

Overview

- 3 Projects
  - Communication Webtool and flyer
  - Nebraska Repetitive Loss Database Update
  - Cass County Nonstructural Study

- 2 Keys to Messaging
  - Tailor messaging to the audience
  - Familiarity-Values-Control



Messaging – Risk Communication

Messaging to Drive Change

Monroe's Motivated Sequence

Developed in mid 30's by Alan Monroe at Purdue

Primary Strategy for

- **Political ads**
- **Sales pitch**
- **Social Change Campaigns (smoking, seatbelts, forest fire)**

Campaign Ad

http://www.youtube.com/watch?v=lOo4y__V6Ds

http://www.youtube.com/watch?v=Emkbj7Q5psg

http://www.youtube.com/watch?v=1VM2eLhvsSM

Messaging – Risk Communication

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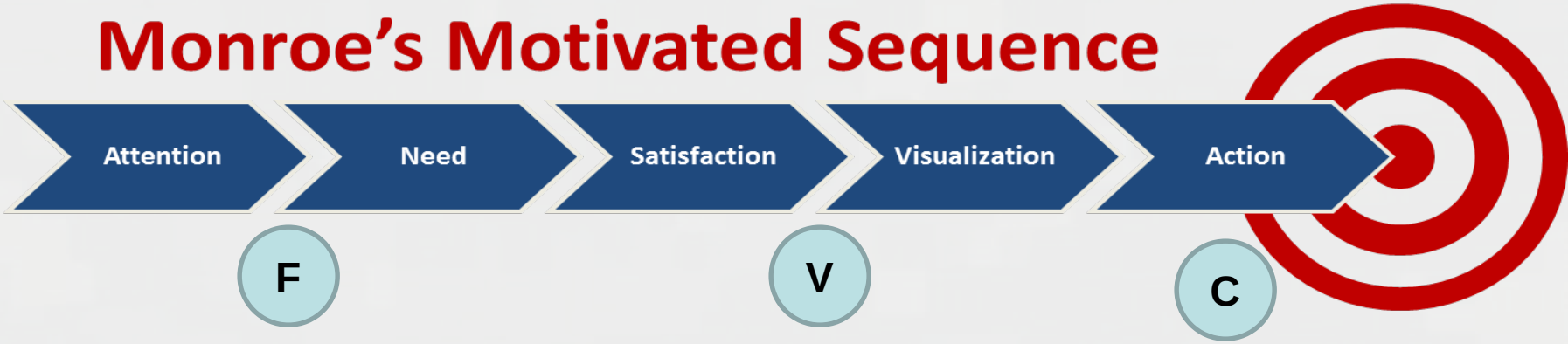


Messaging to Drive Change

F **•Familiarity - There is a issue**

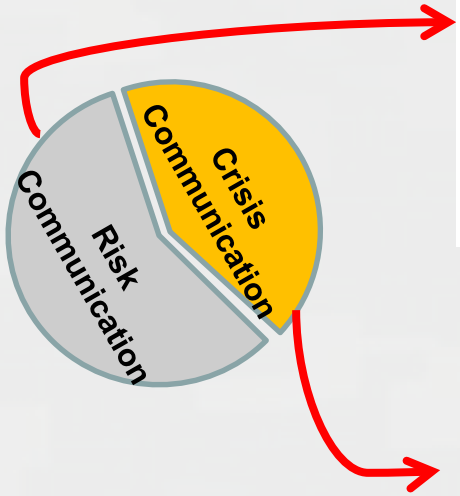
V **•Values - It impacts things important to me**

C **•Control - I can do something about it**

Risk Communication Tools

http://floods.dnr.nebraska.gov/

Floods.dnr.nebraska.gov



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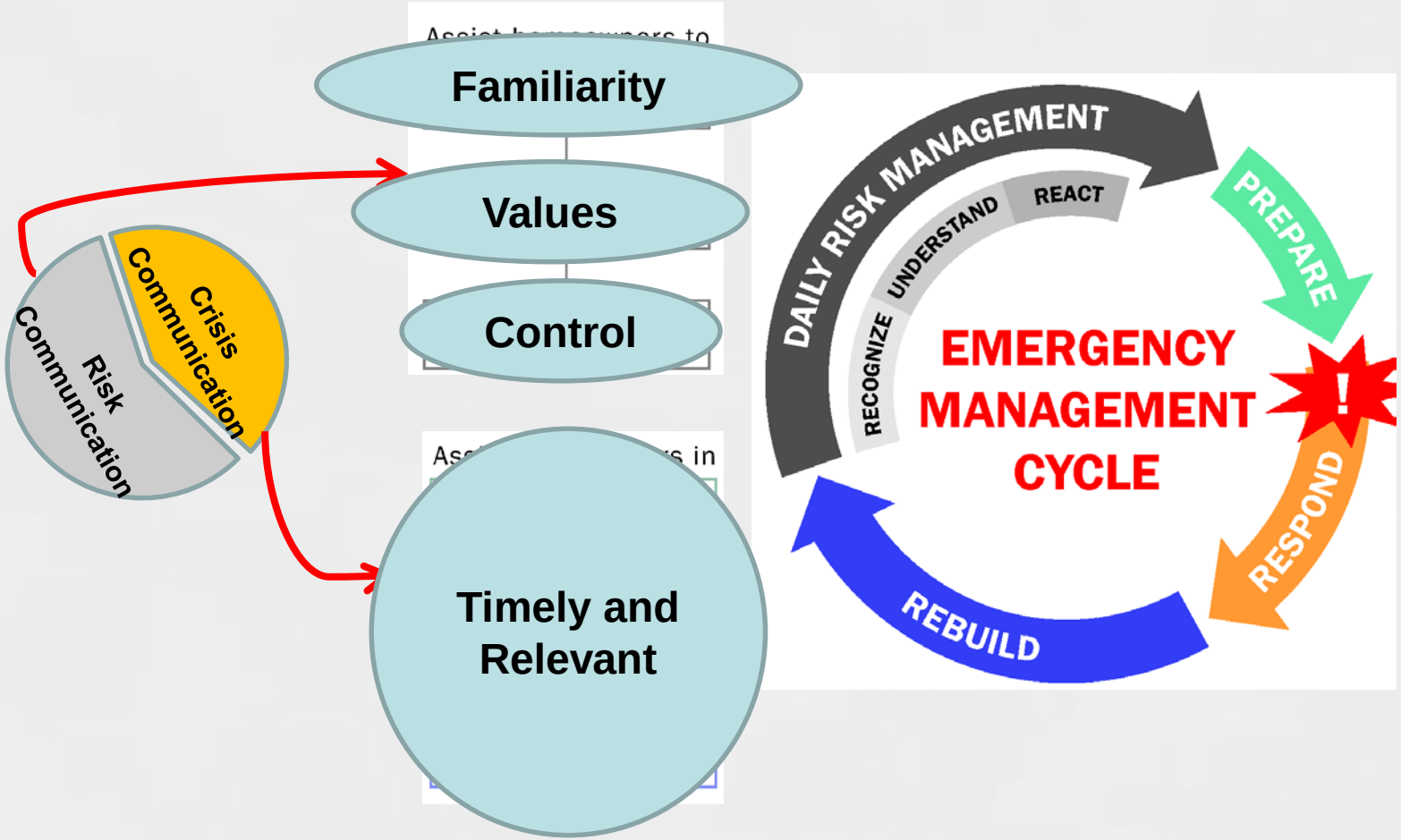

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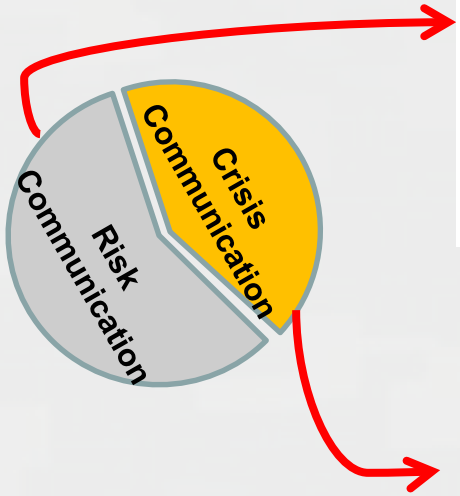


Repetitive Loss Database

- Repetitive Loss Database
  - Update the state rep-loss database
    - Convert to Geospatial
    - Improve Data Quality
      - Property Address vs Owner Address
      - Data age
      - Mitigation
  - Process
    - ArcMap
    - Desk Audit (assessors pages, street view, etc.)
    - Field Audit

Lexington, NE

(homeowner evaluating insurance despite not having a loan)

Familiarity

Values

Control

Doniphan, NE

(homeowner had mitigated structure but wasn't reflected in database)

Repetitive Loss Database

May 2015 Flooding

BUILDING STRONG®

Hebron, NE

Hebron, NE

Timely and Relevant

Familiarity

Values

Control

Hebron, NE

(homeowner evaluating ICC as a means to move structure onto higher elevation at same property)

Dewitt, NE

Timely and Relevant

Dewitt, NE

(homeowner was unaware that they had flood insurance)

Timely and Relevant

Dewitt, NE

(homeowner had let insurance lapse)

Beatrice, NE

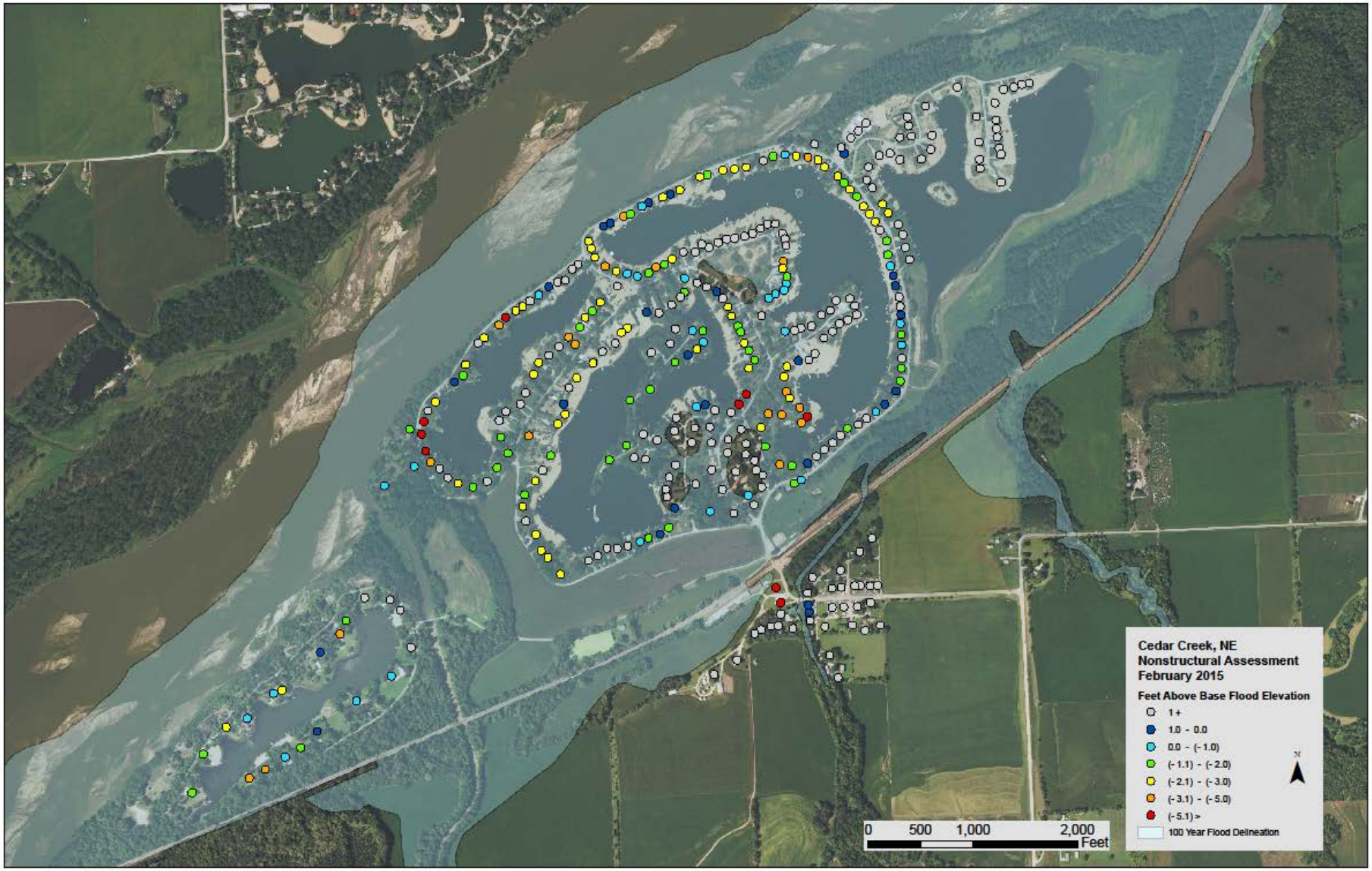
(pre-buyout program)

Beatrice, NE

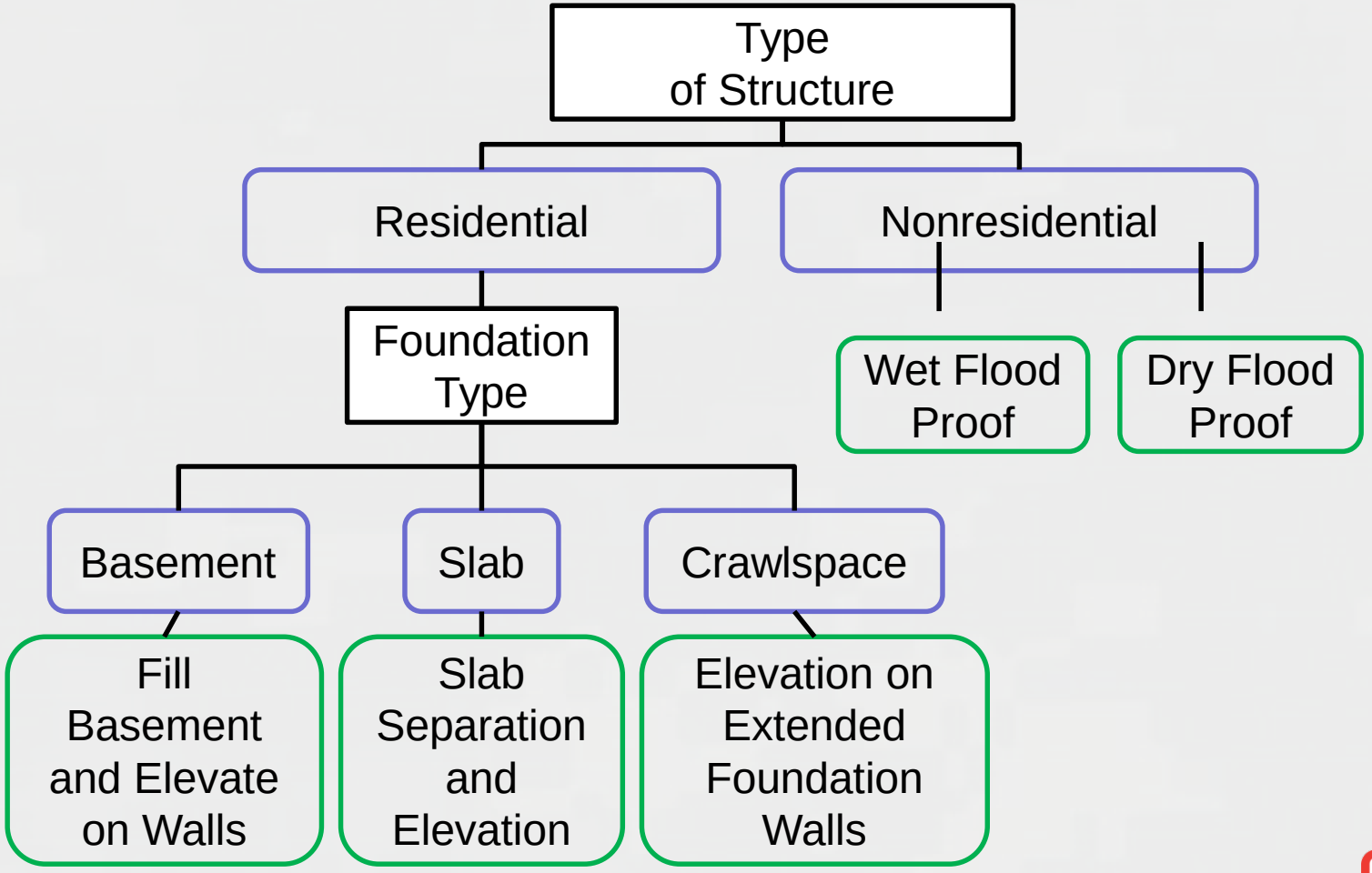
(post-buyout program)

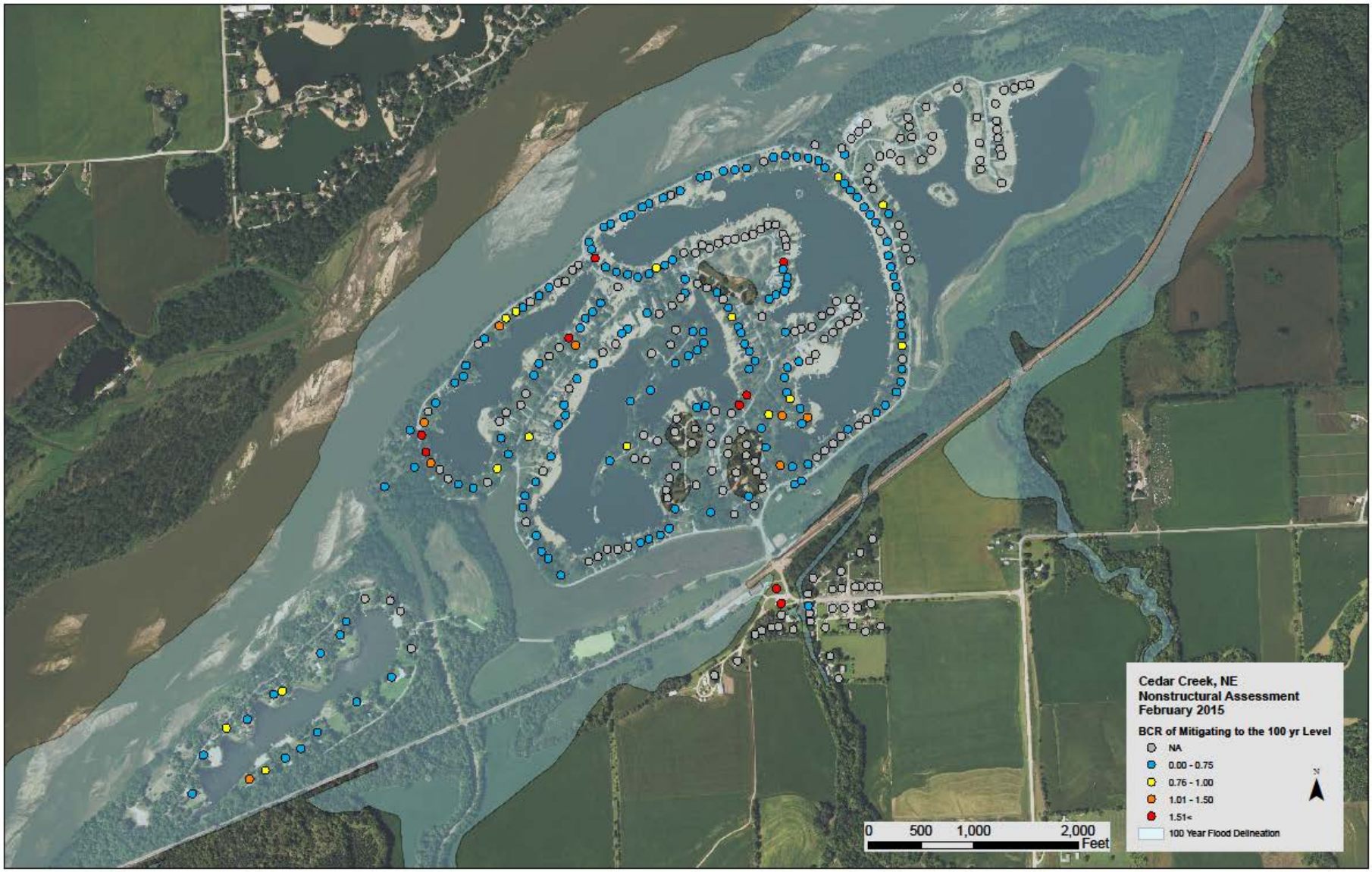
TIME CHECK

Transition to Nonstructural Study


Cedar Creek, NE
Nonstructural Assessment
February 2015
Feet Above Base Flood Elevation
1 +
1.0 - 0.0
0.0 - (- 1.0)
(- 1.1) - (- 2.0)
(- 2.1) - (- 3.0)
(- 3.1) - (- 5.0)
(- 5.1) >
100 Year Flood Delineation
N
0
500
1,000
2,000
Feet

Cass County - Analysis




Cedar Creek, NE
Nonstructural Assessment
February 2015
BCR of Mitigating to the 100 yr Level
NA
0.00 - 0.75
0.76 - 1.00
1.01 - 1.50
1.51<
100 Year Flood Delineation
N
0
500
1,000
2,000
Feet

Structure Information				Risk Identification			Risk Assessment		
Structure	Property Value (From Assessor)	Total Square Feet	First Floor Elevation 2013 (NAVD 88)	100 yr Floodplain Location	Found Type	NFIP Base Flood Elevation (NAVD 88)	100 yr Depth	100 yr Damage	Annualized Risk (EAD)
I.a	I.c	I.d	I.g	II.a	NA	II.b	III.a	III.b	III.c
	$65,250	1,064	1003.8	Inside	Slab	1008.63	4.83	$52,470.80	$4,382.18
	$110,880	1,288	1006.2	Inside	Block	1007.77	1.57	$62,557.75	$4,854.26
	$137,080	1,932	1005.7	Inside	Crawlspace	1007.74	2.04	$45,902.41	$1,177.91
	$173,790	2,885	1005.8	Inside	Slab	1007.71	1.91	$56,135.02	$1,435.32
	$145,410	2,018	1006.8	Inside	Slab	1007.68	0.88	$33,096.72	$567.82
	$138,280	1,857	1007.9	Inside	Slab	1007.66	-0.24	$0.00	$345.64
	$82,860	1,890	1047.1	Inside	Block	1042.21	-4.89	-	-
	$74,190	2,740	1021.7	Outside	Slab	1020.59	-1.11	$0.00	$16.92
	$51,510	2,044	1033	Inside	Slab	1033.93	0.93	$10,170.70	$200.35
	$122,970	1,726	1004.3	Inside	Slab	1008.53	4.23	$63,544.91	$3,235.07
	$155,380	2,012	1008.3	Inside	Slab	1007.63	-0.67	$0.00	$338.56
	$187,160	2,136	1007.4	Inside	Slab	1007.62	0.22	$46,352.98	$875.40
	$98,670	1,391	1007	Inside	Slab	1007.59	0.59	$30,070.17	$529.79
	$145,360	1,440	1005.8	Inside	Slab	1007.58	1.78	$68,346.43	$1,725.12
	$197,430	1,703	1013.8	Inside	Slab	1007.45	-6.35	-	-
	$81,500	1,308	1005.4	Inside	Slab	1007.56	2.16	$42,283.81	$1,083.71
	$179,150	1,948	1013.6	Inside	Block	1007.43	-6.17	-	-
	$73,960	1,848	1030.7	Inside	Poured	1030.20	-0.50	$19,877.21	$553.48
	$35,220	1,152	1029.2	Inside	Slab	1029.69	0.49	$4,183.72	$87.86
	$156,670	2,064	1027.8	Inside	Slab	1027.32	-0.48	$0.00	$262.38
	$57,920	933	1004.6	Inside	Slab	1007.52	2.92	$35,373.97	$1,594.59
	$157,530	1,658	1012	Inside	Block	1007.41	-4.59	-	-
	$185,250	1,661	1009.7	Inside	Block	1007.52	-2.18	$42,527.35	$1,128.82
	$159,320	1,683	1010.7	Inside	Block	1007.40	-3.30	-	-
	$84,900	1,552	1004.5	Inside	Slab	1007.51	3.01	$35,575.79	$1,612.26
	$108,080	1,676	1004.2	Inside	Slab	1007.41	3.21	$69,555.57	$3,284.07
	$137,350	1,732	1004.5	Inside	Slab	1007.51	3.01	$57,575.86	$2,609.82
	$188,510	1,642	1004	Inside	Slab	1007.41	3.41	$125,365.78	$6,072.04

Figure E
Making Risk Informed Decisions Worksheet
Cass County Outreach Meeting February 24, 2015

I. Structure Information
   a. Structure ID
   b. Structure Address
   c. Value
   d. Square Footage
   e. Structure Type
   f. What year was the structure built
   g. First floor elevation (NAVD88)
   h. What are the first three things that you would evacuate from the structure if a flood was going to occur?
   i. How/where would you evacuate in the event of a flood?

II. Risk Identification
   a. Is structure located in Special Flood Hazard Area (SFHA) (Y/N)
   b. What is the structure's Base Flood Elevation (BFE) (ft NAVD88)

III. Risk Assessment
   a. What is the structures BFE depth (item II.b – item I.g)
   b. What is the structures 100-yr event Damage (from study or below link) (http://www.floodsmart.gov/floodsmart/pages/flooding_flood_risks/the_cost_of_flooding.jsp)
   c. What is the structures Expected Annual Damage (EAD) (from study)

IV. Risk Transfer (NFIP)
   a. Is structure Pre-Firm or Post-Firm (compare with item I.f)
      (Cedar Creek – 1978, Louisville – 1980)
   b. What are the estimated annual costs for insurance?
      The following link can be used to estimate insurance costs for some properties as well as identify a local insurance agent.
      (http://www.floodsmart.gov/floodsmart/pages/faqs/what-will-my-flood-insurance-premium-cost.jsp)

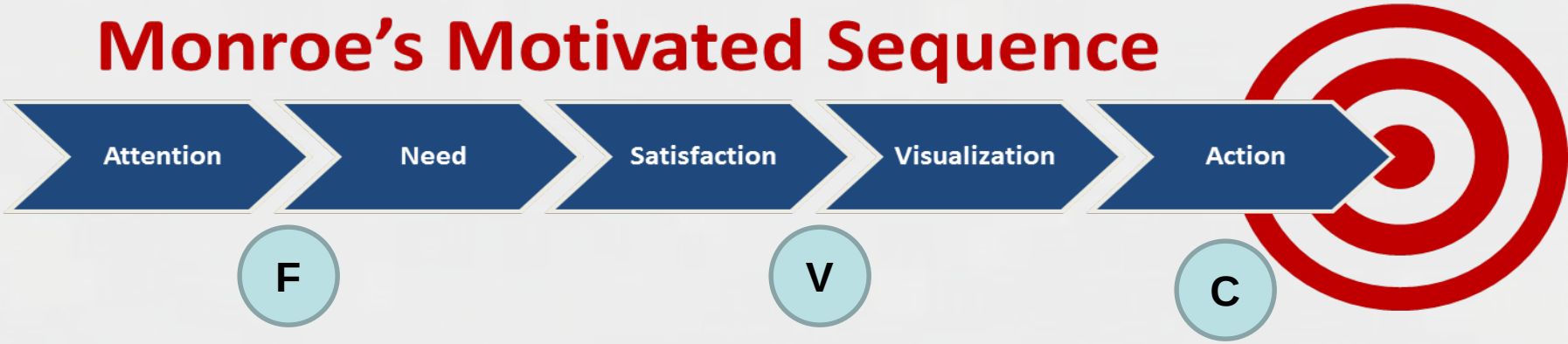
V. Risk Reduction through Flood Risk Adaptive Measures (FRAM)
   a. What are the likely useful strategies of FRAM?
   b. What is the estimated 1 time cost of implementing a FRAM measure?
   c. What is the estimated annual cost of implementing a FRAM measure?
   d. What would insurance after the implementation of a FRAM cost?

VI. What is the lowest annual cost option? (compare item III.c, IV.b, and V.c + V.d)

VII. What other consequences are important but not accounted for financially?

Messaging – Risk Communication

Monroe's Motivated Sequence



Messaging to Drive Change

F **•Familiarity - There is a issue**

V **•Values - It impacts things important to me**

C **•Control - I can do something about it**

Messaging – Risk Communication

Messaging to Drive Change

F •**Familiarity - There is a issue**

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C •**Control - I can do something about it**

Familiarity is not present in low frequency risk

History and Background

- **Historic ties to the Platte River**
  - **Louisville – in 1870 the Railroad came through Louisville. This was based on many factors including the gentle sloping Platte River Valley**

  - **Cedar Creek – Also along the Burlington & Missouri River Railroad (Inhelder Station). With deep sand and gravel deposits and a shallow water table the Platte River Valley is a prime target for mining. Residential development is a common use for lands formerly used as sand and gravel pits.**

  - **These development drivers are common throughout Nebraska**

History and Background

- **Benefits of living near water**

History and Background

- **Living with Flood Risk**
  - **Louisville Sept 27, 1923 Mill Creek flood -** This flood claimed the life of 12 people.

"The McCarver house was along the creek west of 701 Walnut. Mrs. Morgan lived at 712 Main. The first warning the occupants of the house had was when the waters began to surround the house and come in through the doors. When the water became knee deep William McCarver and Alfred Laird took their children to the neighbors, M. L. Williams, 17 Walnut. Williams saw the men enter the house and tried to follow them to help, but on account of the rapid rise of the water in a few seconds, he was unable to walk against the stream. About that time he heard cries and shrieks for just a few seconds and house began to move off its foundation."

History and Background

- **Living with Flood Risk**
  - Louisville Sept 27, 1923 Mill Creek flood

Almost every business house on Main Street was flooded to a depth of from one to four feet and when the waters subsided it left a coating of mud of from four inches to a foot in depth.

History and Background

- **Living with Flood Risk**
  - Louisville Sept 27, 1923 Mill Creek flood

Mrs. C. G. Clifford whose home was swept away, leaving not a trace of it (her house was where the tennis courts are now).

History and Background

- **Living with Flood Risk**
  - Louisville Sept 27, 1923 Mill Creek flood

History and Background

- **Living with Flood Risk**
  - **Louisville**
    - **1923:** Main Street, local businesses, homes, and bridges incurred damage.
    - **1960**: The Platte River overflowed to the Louisville area. The cause of this flood was rapid snowmelt runoff aggravated by ice jams. The peak discharge recorded for this flood at South Bend, which is approximately five miles upstream of Louisville, was 124,000 cubic feet per second.
    - **1978**: This flood was the result from rapid snowmelt runoff and ice jams. No damages were reported.
    - **1993**:
      - Two Gage crests
        - 11.90 (7/25) 11.47 (3/10) – Ice Impacts (http://ks.water.usgs.gov/pubs/reports/wsp.2499.sumne0393.html) (http://nlc1.nlc.state.ne.us/epubs/N1000/B065-1996.pdf)
      - Depot Street and homes were damaged.
      - 3rd Street Bridge was damaged and repaired with CDBG funds (http://www.ruralhome.org/storage/documents/voicesspring2006.pdf)

History and Background

- **Living with Flood Risk**
  - Eagle, NE 1993

History and Background

- **Living with Flood Risk**
  - **Louisville 1993**
    - Vehicle with 4 pedestrians attempted to cross high water on 6th Street, passengers were forced to grab onto tree branches for safety.
    - On 3rd Street a man tried to cross the water in a pickup, vehicle stalled and was washed away, man was rescued by a friend.
    - Mud and water was 4 inches deep on main street stores
    - Considerable damage at Library, Church, Ace Hardware

The Louisville Messenger

(Section of Plattsmouth Journal)

THURSDAY, JULY 29, 1993

Cross portable cots lined up in the gym and in the library. The second night, the Red Cross provided shelter for 13 individuals. Conestoga Elementary School sheltered over 100 evacuees in that area.

Power and phone outages

Many residents in town, as well as rural areas, were without power and/or phone service due to the devastating storm, including dairy operations that were stranded without means of milking, some 24 hours at a time.

Livestock, as well as crops, have taken a beating from the storms lately. More rain is expected in the five-day forecast.

Near drowning

Flood-related accidents took place on two bridges in Louisville during the early morning hours of the storm. A car with four people in it attempted to cross the high waters on the bridge on 6th Street. A rush of the creek swept the car off the bridge, causing the passengers to grab onto tree branches for safety. The Louisville Rescue Squad rescue them using ropes. One young lady was taken to Methodist Hospital for treatment of exposure and others were taken to the Red Cross Shelter.

On the 3rd Street bridge, a man tried to cross the water, not realizing the depth. The pickup stalled in the middle of the bridge. The force of the water moved the pickup from the original stopping position, before he could be pulled off the bridge by a friend. The bridge has been closed for repairs since the flood.

Persinger completes electronics school

Airman Apprentice and Mrs. Brian Persinger arrived home in Ashland on leave July 16. Brian completed Aviation Electronics Technician School in Millington, Tenn. He will report to his new base, Whidbey Island in Washington, by August 6. Brian is the son of Charles M. Persinger of Ashland and the grandson of Mr. and Mrs. Omar Persinger of Louisville.

Community calendar

Fri., Aug. 2: Carry-in dinner at the Over 60 Center, 12 noon.

Read the Classifieds!

History and Background

- **Living with Flood Risk**
  - **Cedar Creek**

March **1960** experienced a flood that originated from the Platte River. The cause, according to the FIS, was snowmelt runoff aggravated by ice conditions. The flood was classified as a 40 year flood..

July 23, 1993 Debris under the railroad bridge caused the Cedar Creek to flood. An inundated field flooded the Village Park. The road leading to the lake area was flooded. Sandbags were used along the Platte River's bank. There was seepage along the western end of Platteview Road and some lake areas flooded. These residents were evacuated.

June 1994 Minor damage and again the lake residents were evacuated.

History and Background

- **Living with Flood Risk**
  - **Cedar Creek 1993**
    - Cedar Creek Volunteer Fire Dept assisted to evacuate the flooding town of Cedar Creek
    - Sandbagging along Lake #1 and #4
    - “Cedar Creek Ferry” Cass County Sheriff has been shuttling residents to Cedar Creek from Louisville during the day hours to retreive necessary personal belongings

The Louisville Messenger

(Section of Plattsmouth Journal)

THURSDAY, JULY 29, 1993

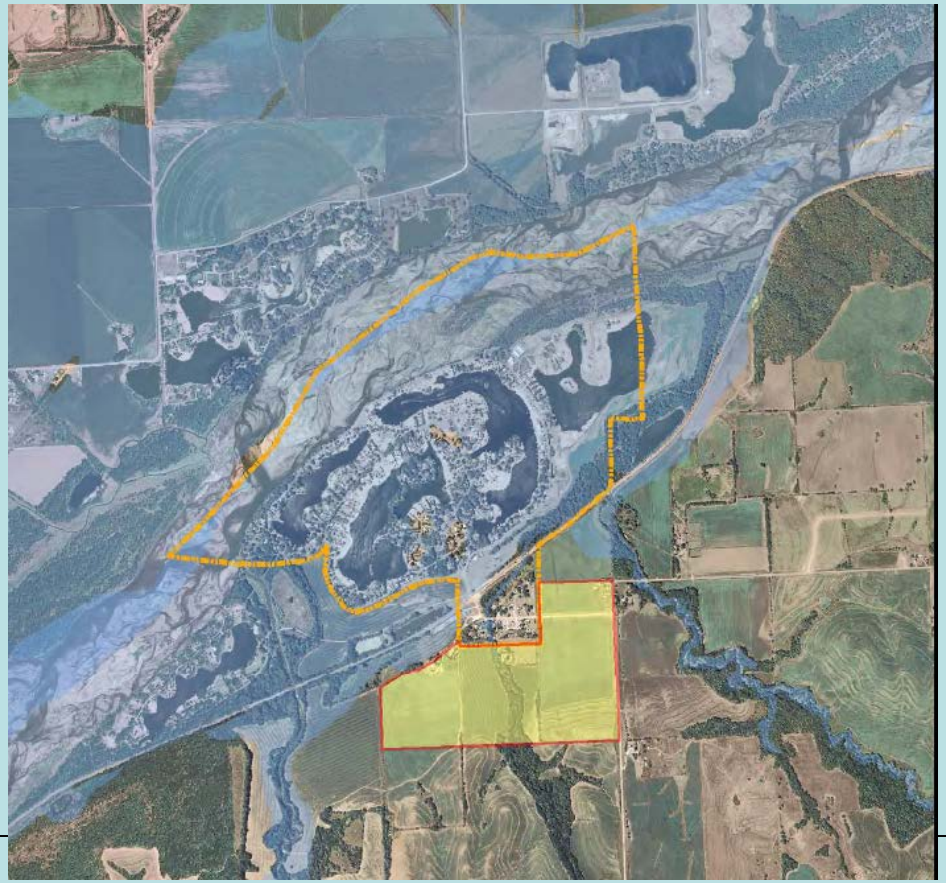
PAGE 13

Mother Nature strikes county with fury

The evacuation of Cedar Creek

History and Background

- **Living with Flood Risk**
  - **Cedar Creek** - Almost the entirety of the community is located in the Special Flood Hazard Area



Outcomes

- Information for Floodplain administration
- Evaluation/Implementation of Nonstructural by some homeowners
- HMGP/FMA grant evaluation
- CRS application

Recap

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  - Cass County Nonstructural Study

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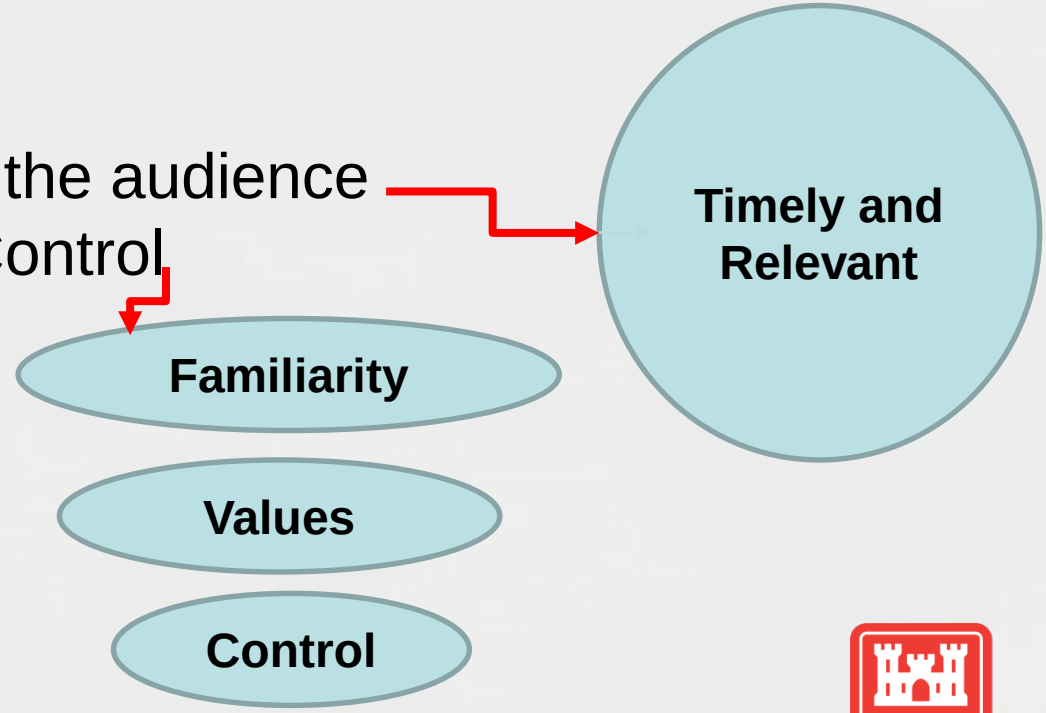

Risk Communication Tools

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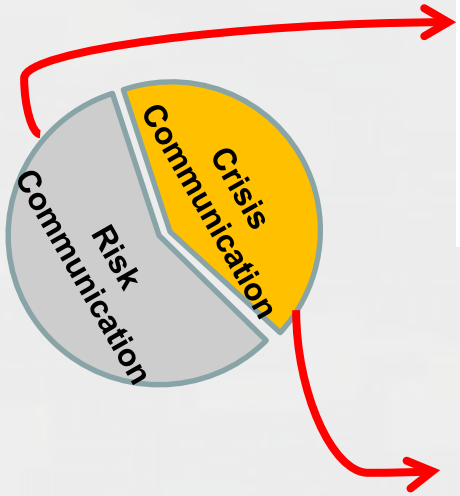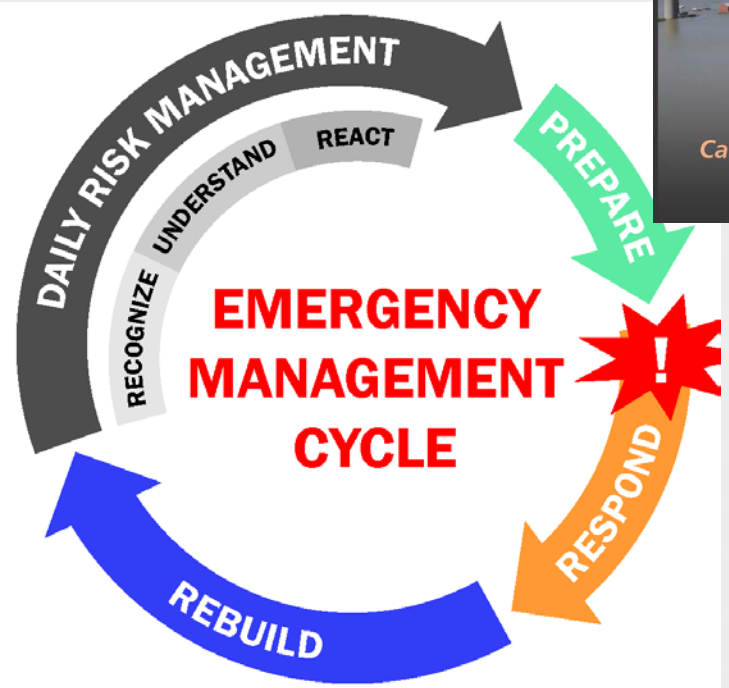
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