

USACE Levee Safety Program

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Portland District

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US Army Corps of Engineers
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Topics

- ARRA
- Quiz
- Path to a Safety Program
- Mission
- Organization
- Current Tools
- Inventory and Inspections
- Portfolio Condition



(ARRA)

American Recovery and Reinvestment Act

USACE Levee Periodic Inspection Initiative

- Obligate 90 Million dollars for Levee Periodic Inspections by 30 Sept 2010.
- Contract for Inspections to create jobs.
- Provide consistent products by:
 - ▶ Use national and regional contracts
 - ▶ Use standard Task Order Template
 - ▶ Train contractor and USACE staff
 - ▶ Use Levee Inspection Tool Laptops (GFE to contractors)
- Provides basis to conduct risk screenings of levees within portfolio using data obtained.



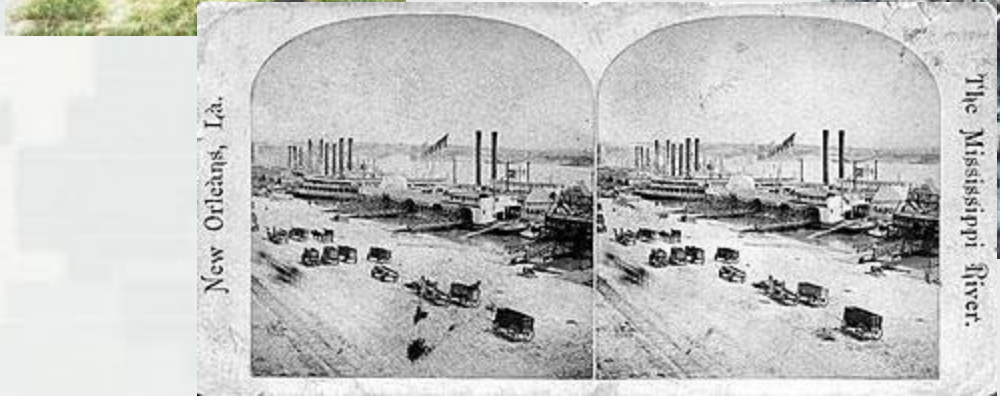
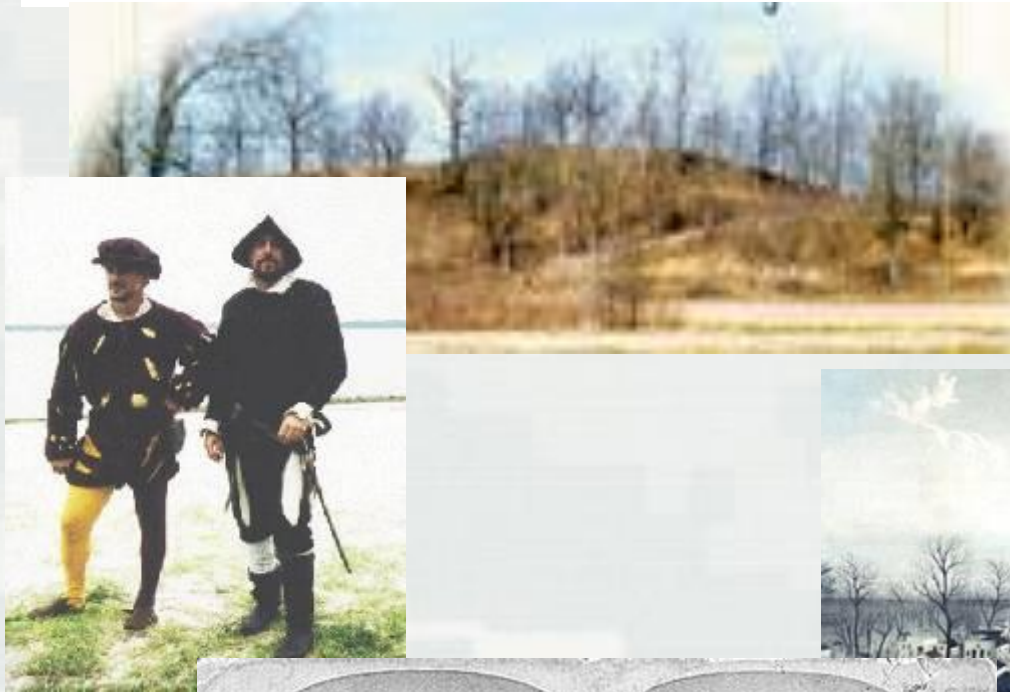
Quiz

The best definition of a levee is:

- A. A way to raise money for schools.
- B. A brand of jeans.
- C. A man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding.*



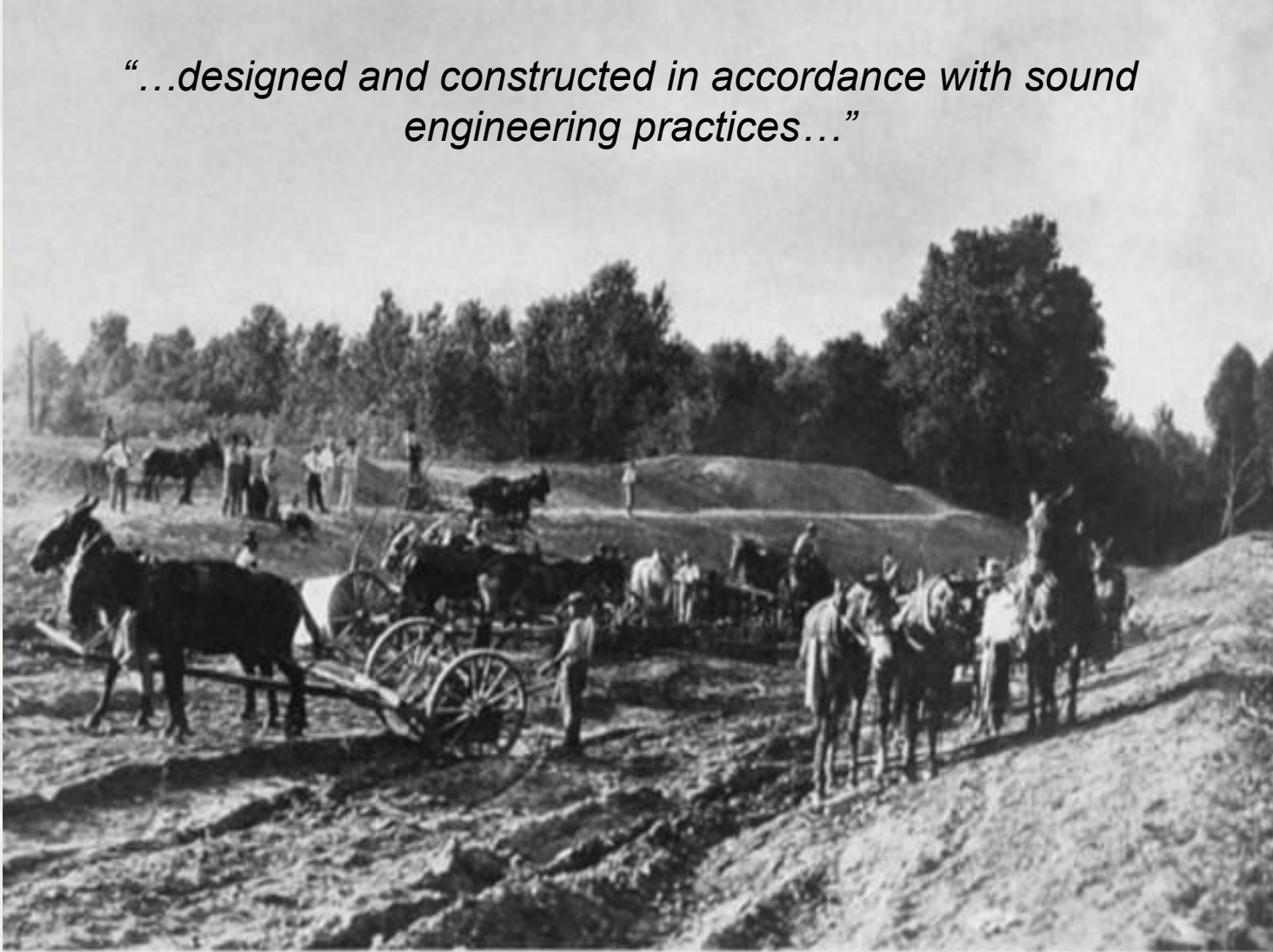
Floods and Levees Were Part of Early North American History



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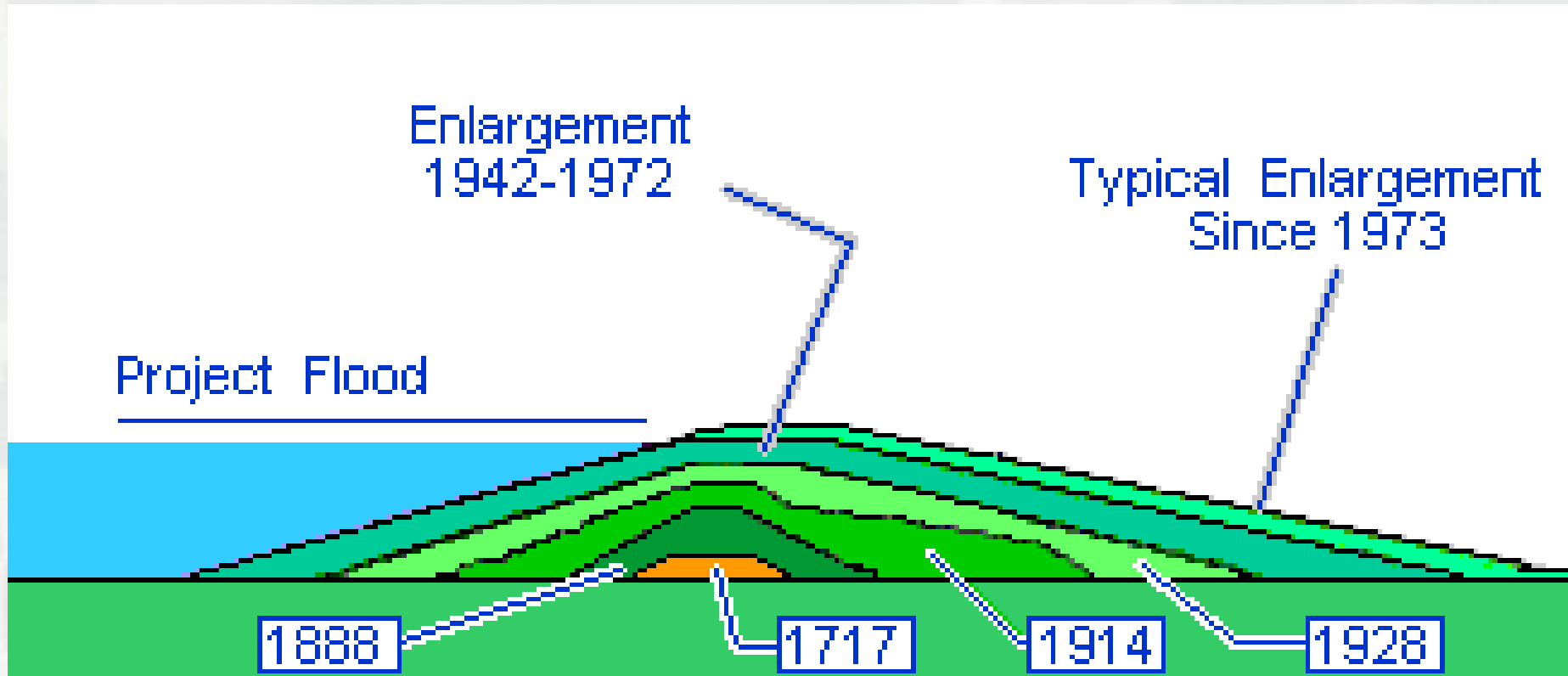
Levees Were a Key Method of Defense

“...designed and constructed in accordance with sound engineering practices...”



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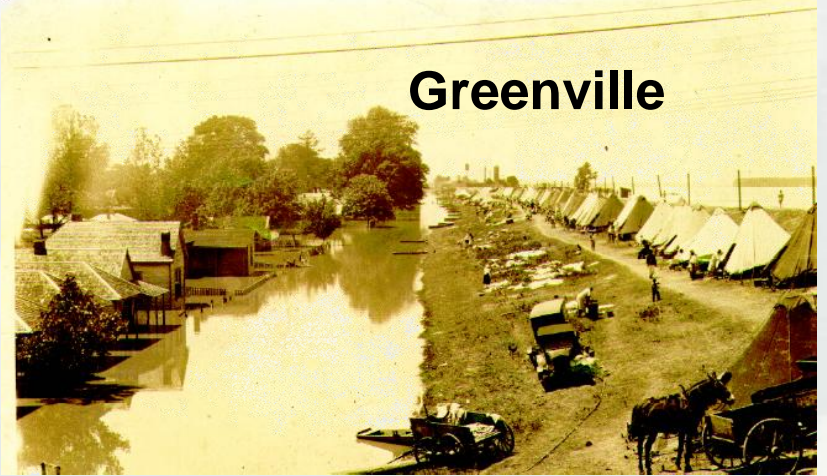
and levees grew



and sometimes failed



Johnstown



Greenville



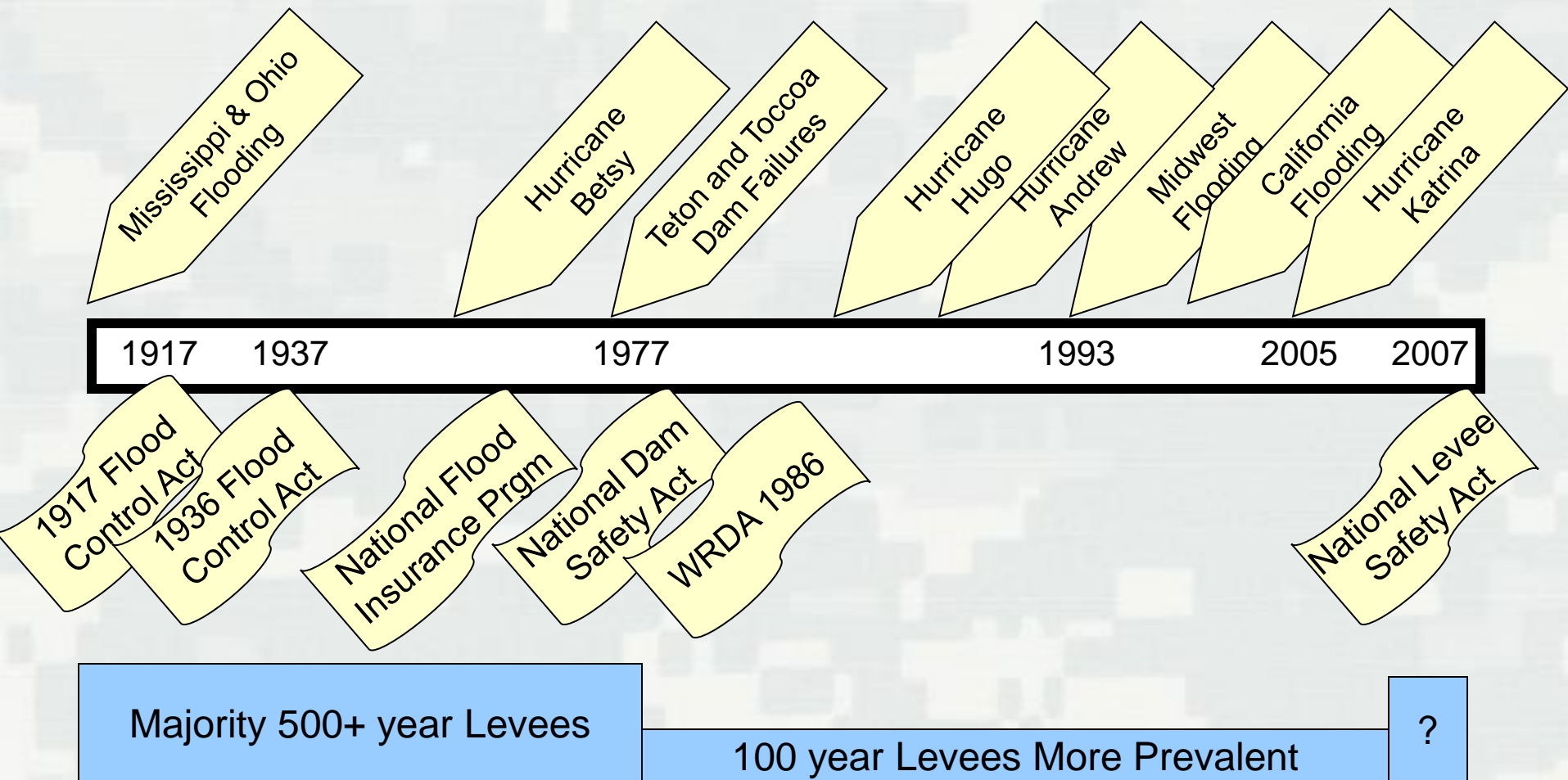
Vanport



Mississippi



Historic Perspective



Path to a Levee Safety Program

"Business as Usual"

Hurricane Katrina/Rita

MG Riley commits to Improve Levee Safety

FY06 Supplemental

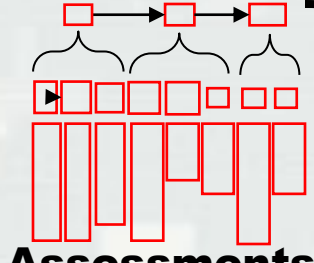
National Levee Safety Act

Pre-2005 ★ Post-Katrina

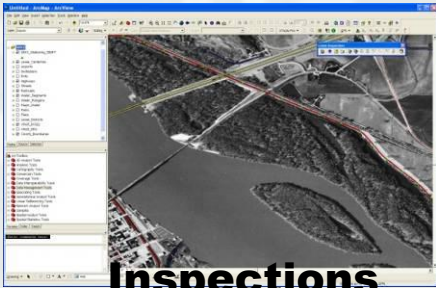
- Annual Inspections
- Different criteria for non-Fed. vs Fed.
- Inconsistent application
- More "100 yr" levees
- No risk communication



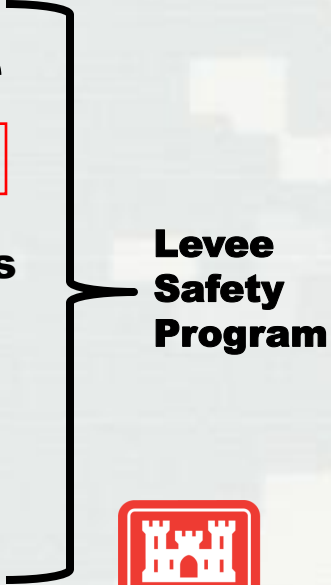
Inventory



Assessments



Inspections



Levee Safety Program Mission



West Columbus, Ohio

Program Objectives:

Assess the integrity and viability of levees and recommend **actions** to assure that levee systems do not present unacceptable risks to the public, property, and the environment.

- Hold Public Safety Paramount
- Reduced Economic Impacts
- Maximize Cost Effectiveness
- Develop Reliable and Accurate Information
- Build Public Trust and Acceptance



Levee Safety Initiatives

- Program Management Plan
- PIR Review SOP
- Monthly LSPM Conference Calls
- ILTF Member for BG Rapp
- FY 09 Priorities
- LSPM Workshop
- Budget
- Levee Inventory
- Inspection Tool
- Routine Inspections
- Maintenance Deficient Levees
- Periodic Inspections
- Periodic Assessments - TBD
- Levee Certifications
- I – Wall Design Guidance
- Levee Vegetation
- Vertical Datum
- Silver Jackets



2009 Flooding in Castle Rock, Wa.



Levee Safety Organization

Levee Safety Community of Practice

HQUSACE Levee Safety Management Team
Levee Safety Officer – James Dalton
Special Assistant – Eric Halpin
Program Manager – Tammy Conforti

National Teams

Inventory & Database

Team Lead
Tim Pangburn

Assessments

Team Lead
Andy Harkness

Inspections

Team Lead
Dale Munger

Policy & Procedures Team

Team Lead
Michael Bart

Inspection Tool

Team Lead
Kevin Carlock

Certification

Team Lead
Mike Deering

Vegetation

Team Lead
Kevin Holden

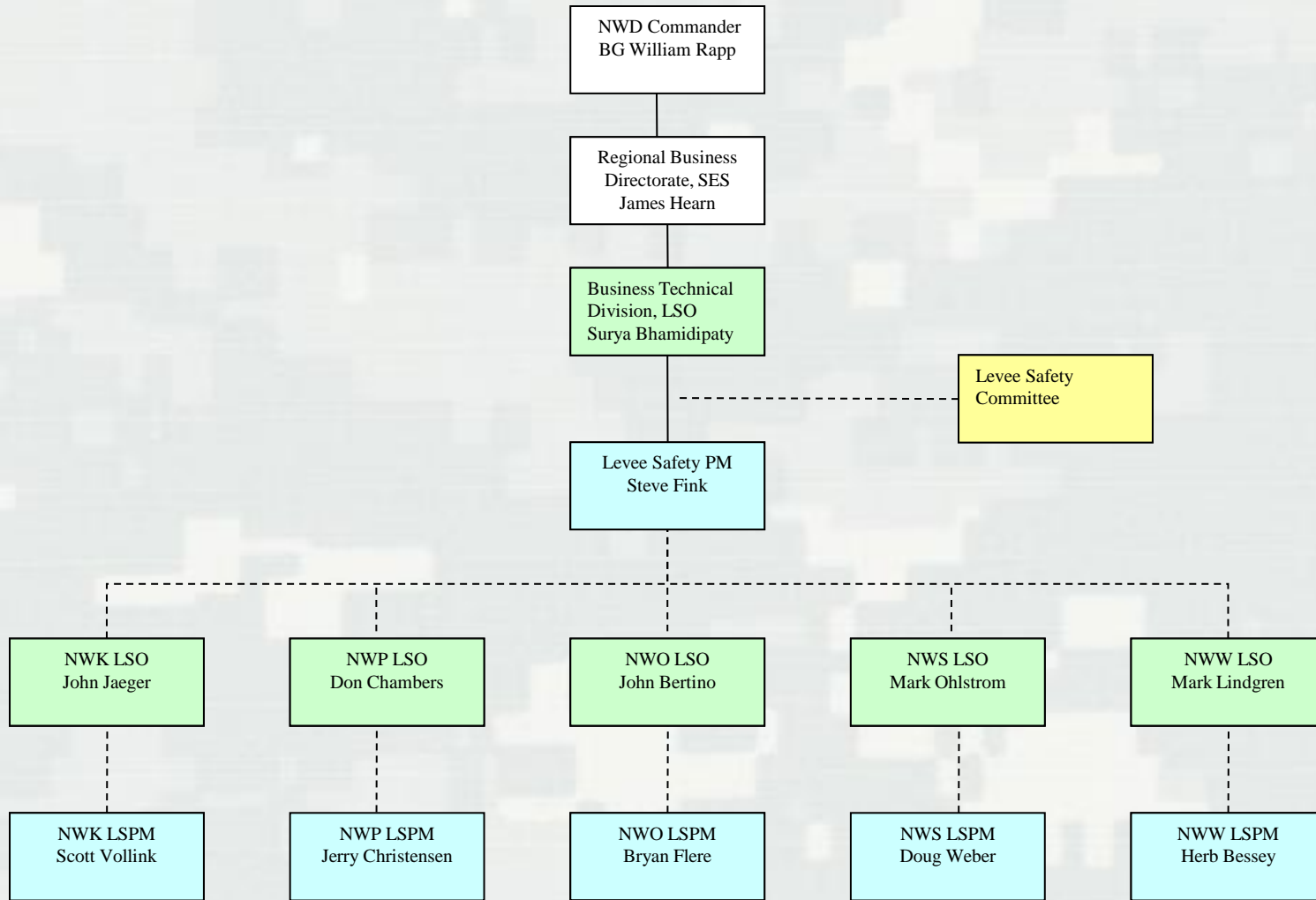
Regional Teams

Division Levee Safety Teams

District Levee Safety Teams



Northwestern Division Levee Safety Organization



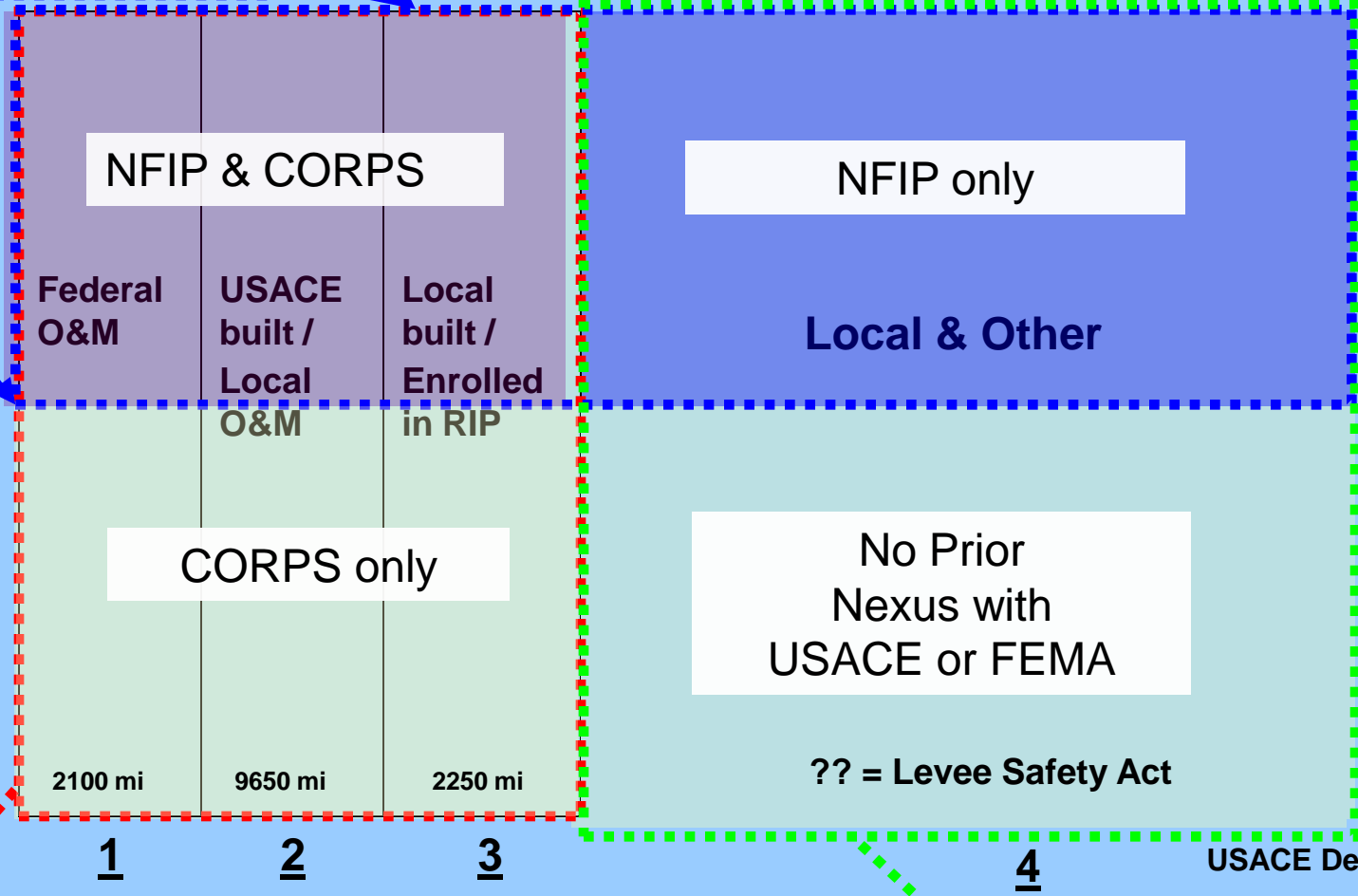
Universe of Levees

FEMA NFIP

Objective: Communicate the most current information for flood insurance purposes.

100-year

Level of Protection



2100 mi

9650 mi

2250 mi

1

2

3

4

USACE Dec07

Not to scale

Levee Categories

USACE Inventory and Assessment

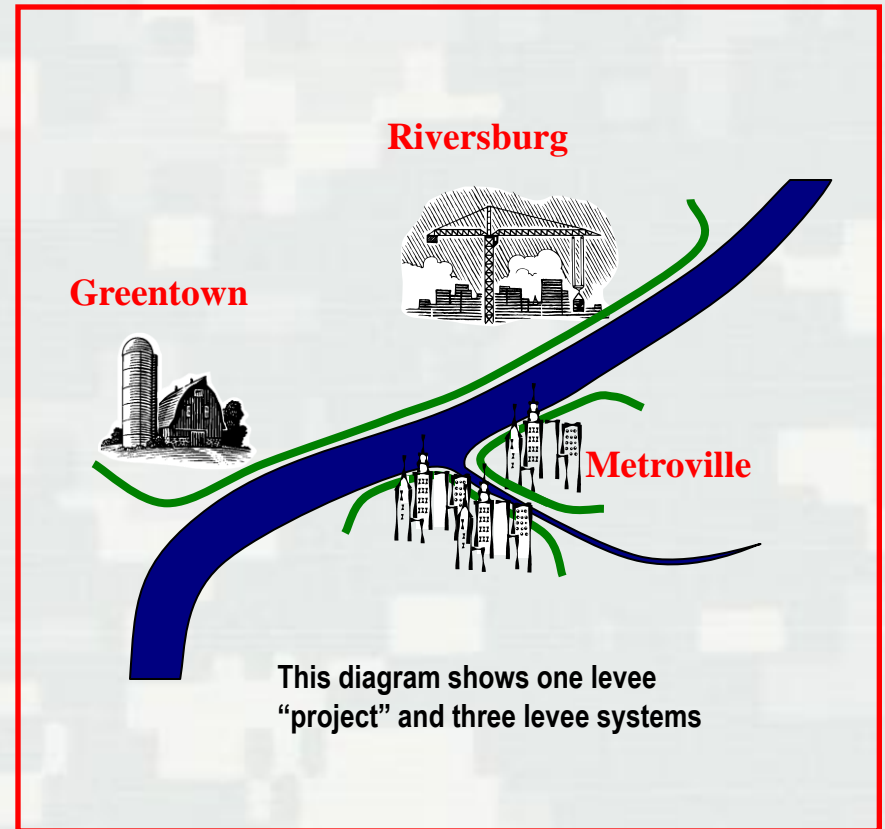
Objective: **Assess** all levees in USACE programs, regardless of level of protection.

WRDA Authorities

Objective: **Inventory** all levees in nation, lead strategic plan for a National Levee Safety Program

Levee System

All components and features which collectively provides protection (reduces the probability of flooding) to a defined area up to a specific event.

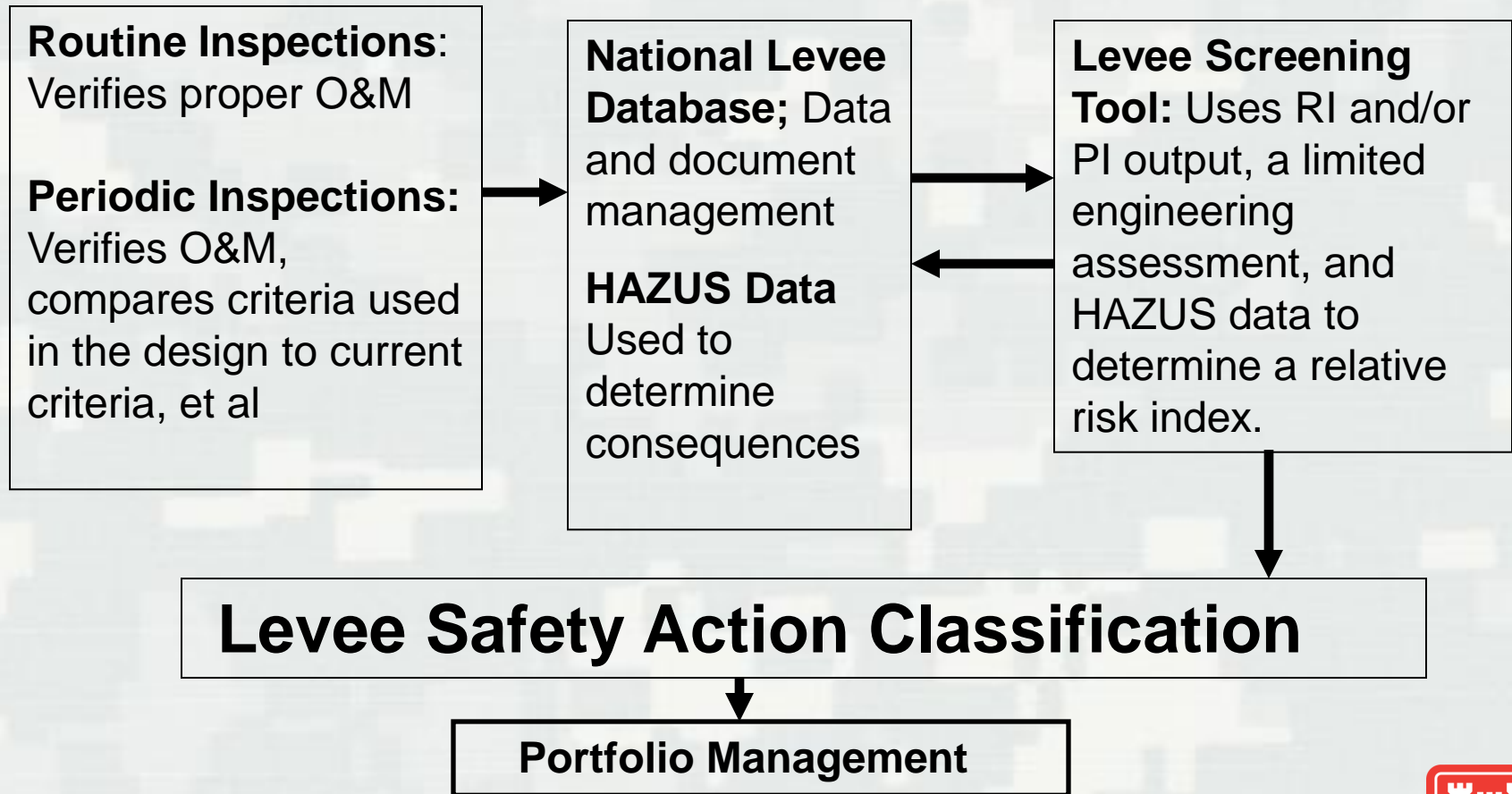


USACE Levee Safety Program

- Four Major Functional Areas
 - ▶ Inspection
 - ▶ Inventory & Database
 - ▶ Assessment Methodology
 - ▶ Policy and Procedure



Inspection and Assessment Relationships



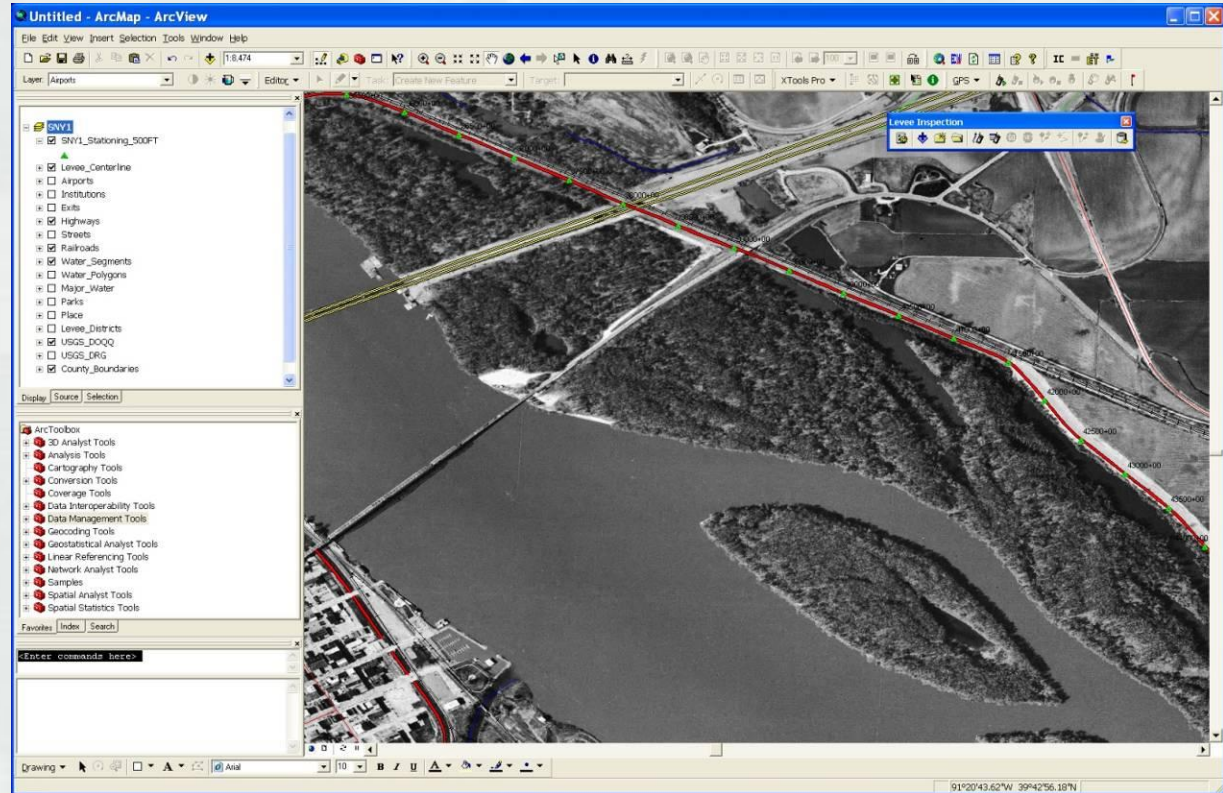
Levee Inspection System

- Developed by Rock Island District
- Provide greater efficiency and standardization to the process of data collection and reporting
- Standardized Inspection template
 - ▶ Individual descriptions either Acceptable (A), Minimally Acceptable (M) or Unacceptable (U) for each rated item.
- Designed for implementation throughout the US Army Corps of Engineers

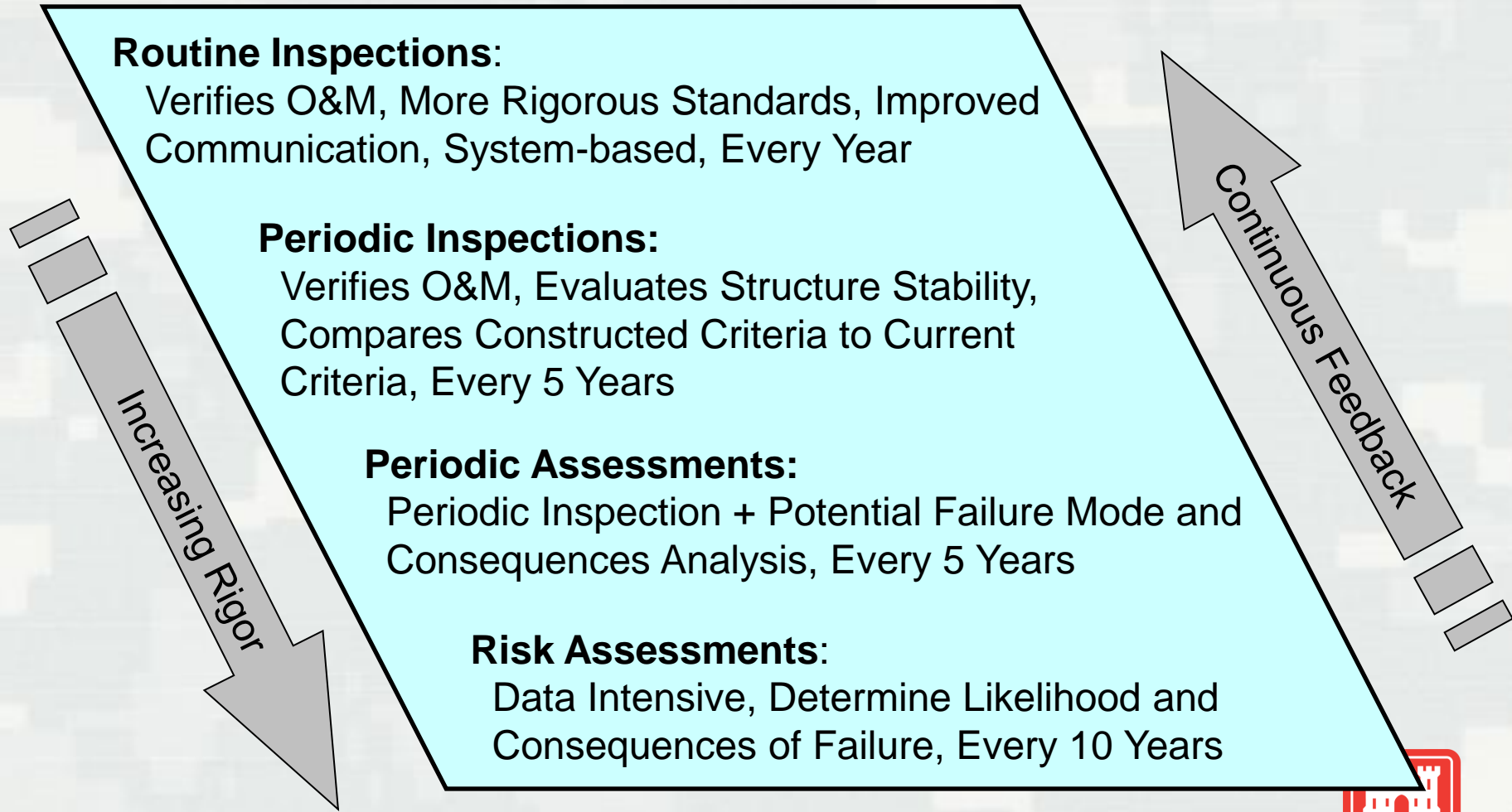


Levee Inspection System Specifics

- ArcGIS Software
- Crystal Reports
(Included with ArcGIS)
- Tablet PC
- GPS Receiver



Inspection Program



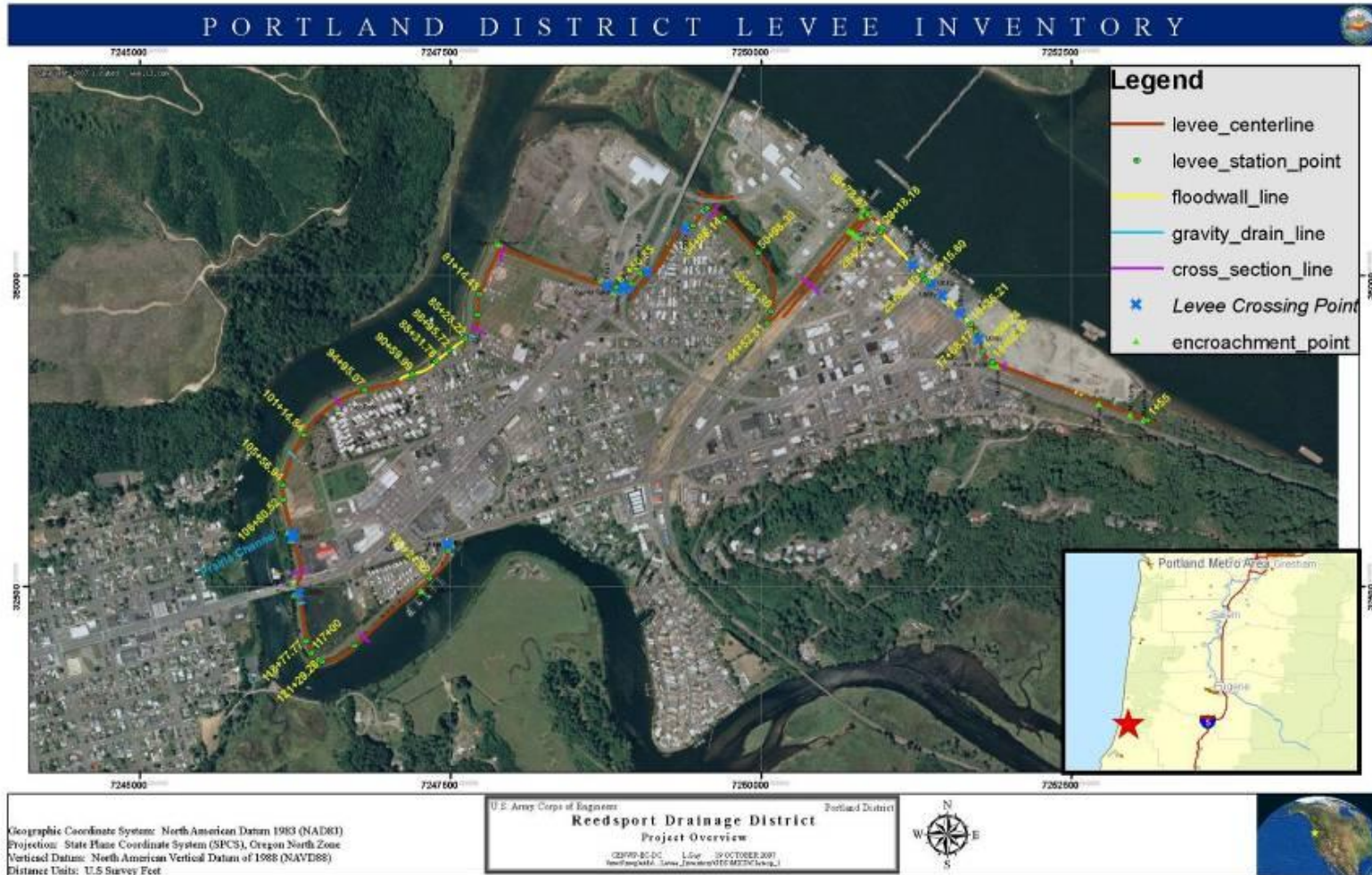
Levee Inventory

National Levee Database (NLD)

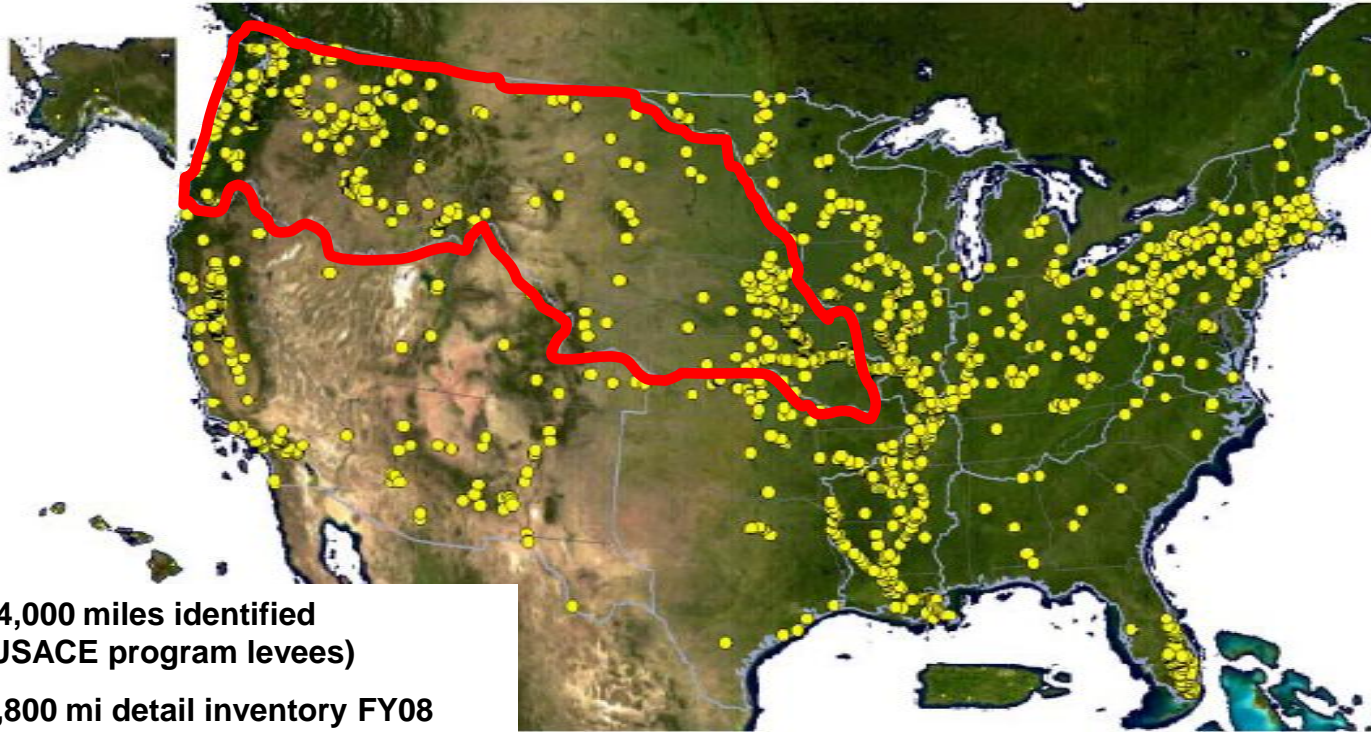
- SDSFIE-compliant geospatial National Levee Database
- Include all necessary attributes of levees/floodwalls relevant to design, construction, operations, maintenance, repair, inspections, and potential for failure.
- Common database structure at every District to assure use of levee data with other agencies
- Maintained at District level and be accessible as a regional/national database by Division and HQUSACE users.



Inspection Map eGIS Output - NWP



USACE Program Levees



14,000 miles identified
(USACE program levees)

9,800 mi detail inventory FY08
(USACE Fed levees)

No information on private/other

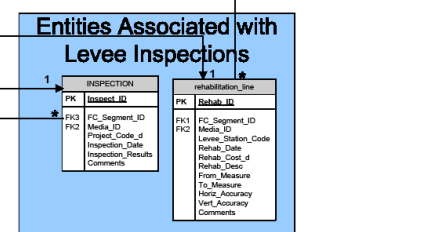
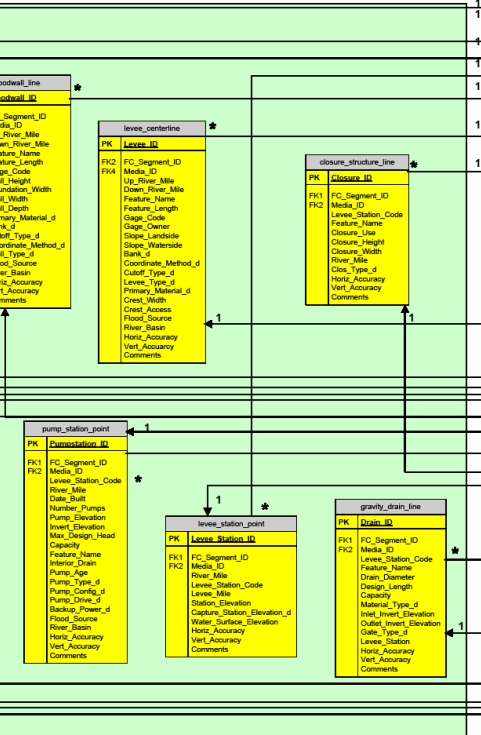
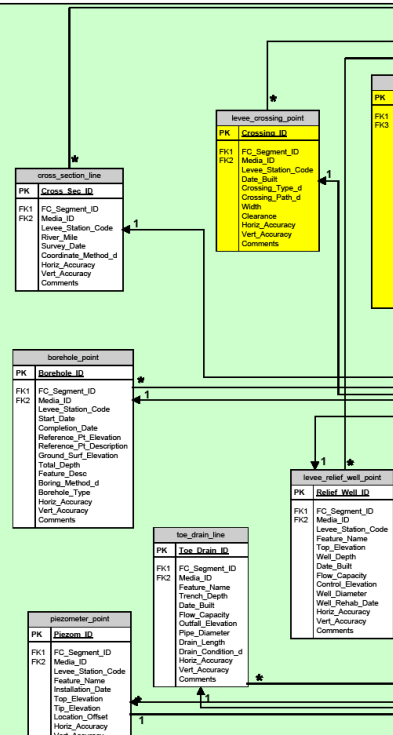
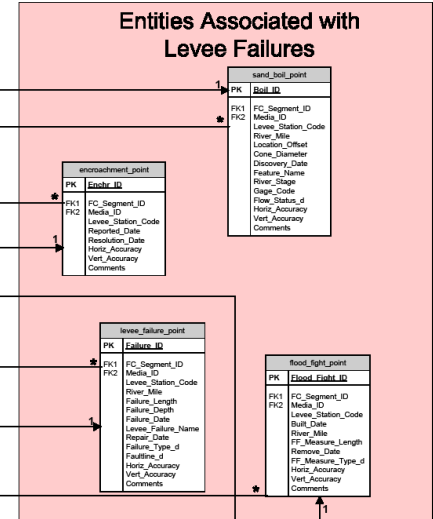
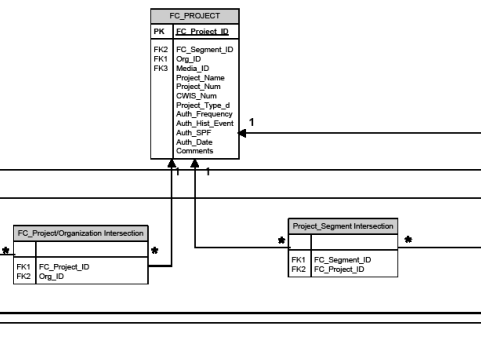
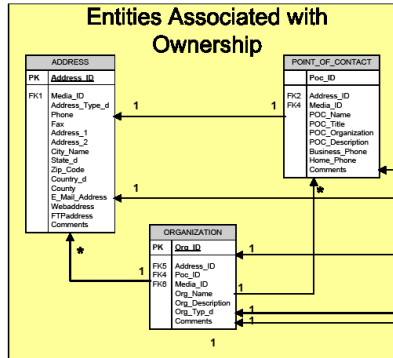


SDSFIE Levee Data Model Features



03/05/2007

^A - denotes fields that will be derived from other GIS sources



Entities Associated with Levees and Related Structures

Entities Associated with Levee Inspections

Levee Screening Tool

- Developed to assess the condition and consequences of levees in the Corps of Engineers portfolio.
- Combines information from -
 - ▶ National Levee Database
 - ▶ Revised routine levee inspections
 - ▶ Limited engineering assessment of project features.
- Begin in late FY2009 and complete FY2012

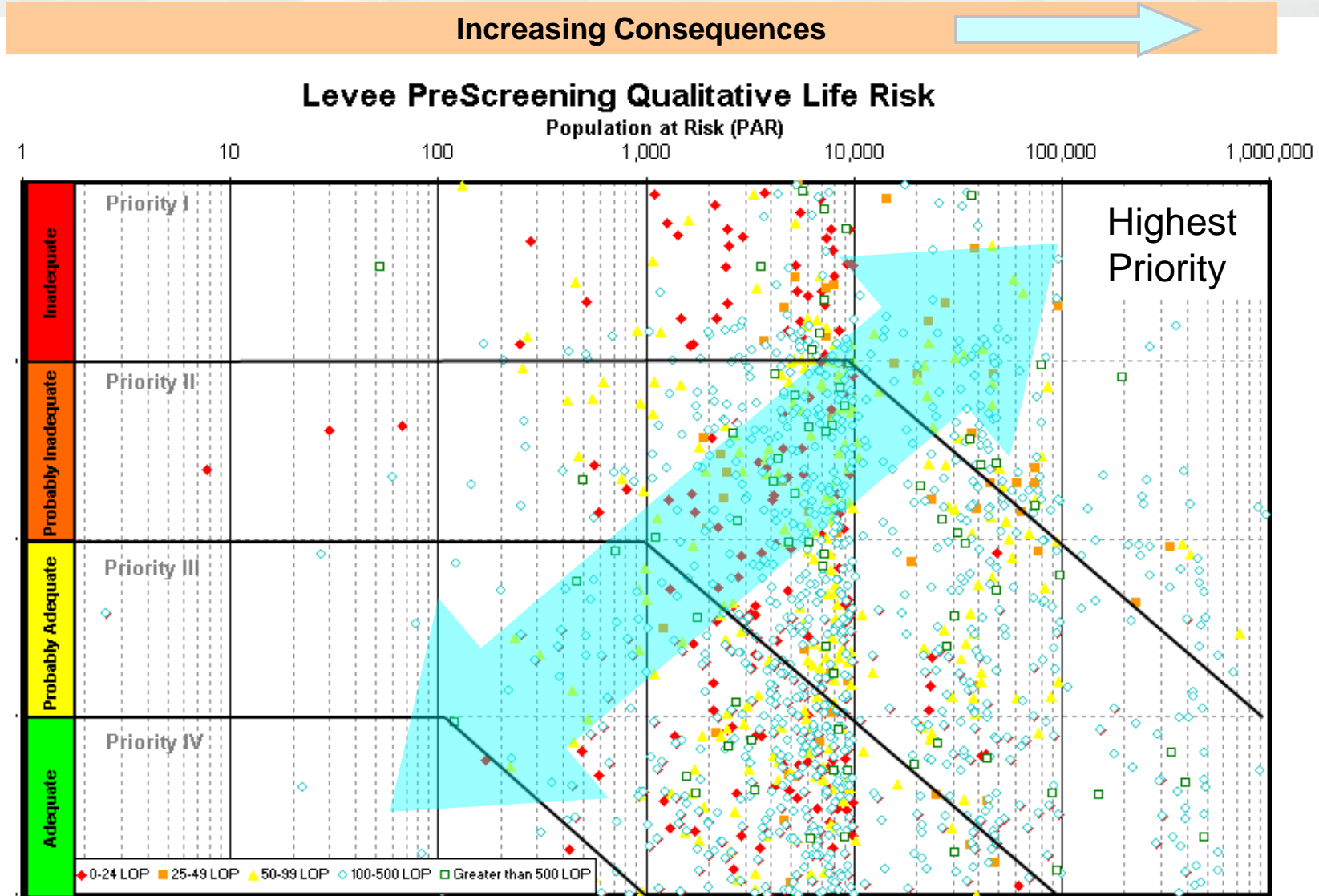


Levee Screening Tool Outcomes

- Identification of relative risk
- Assist in the assignment of the Levee Safety Action Classification
- Guide priority setting
- Identify performance concerns and potential consequences of levee failures
- Identify issues to assist to develop & prioritize interim risk reduction measures



Risk Informed Decision Process



Note: Above information based on results of initial questionnaire survey for District Levee Projects

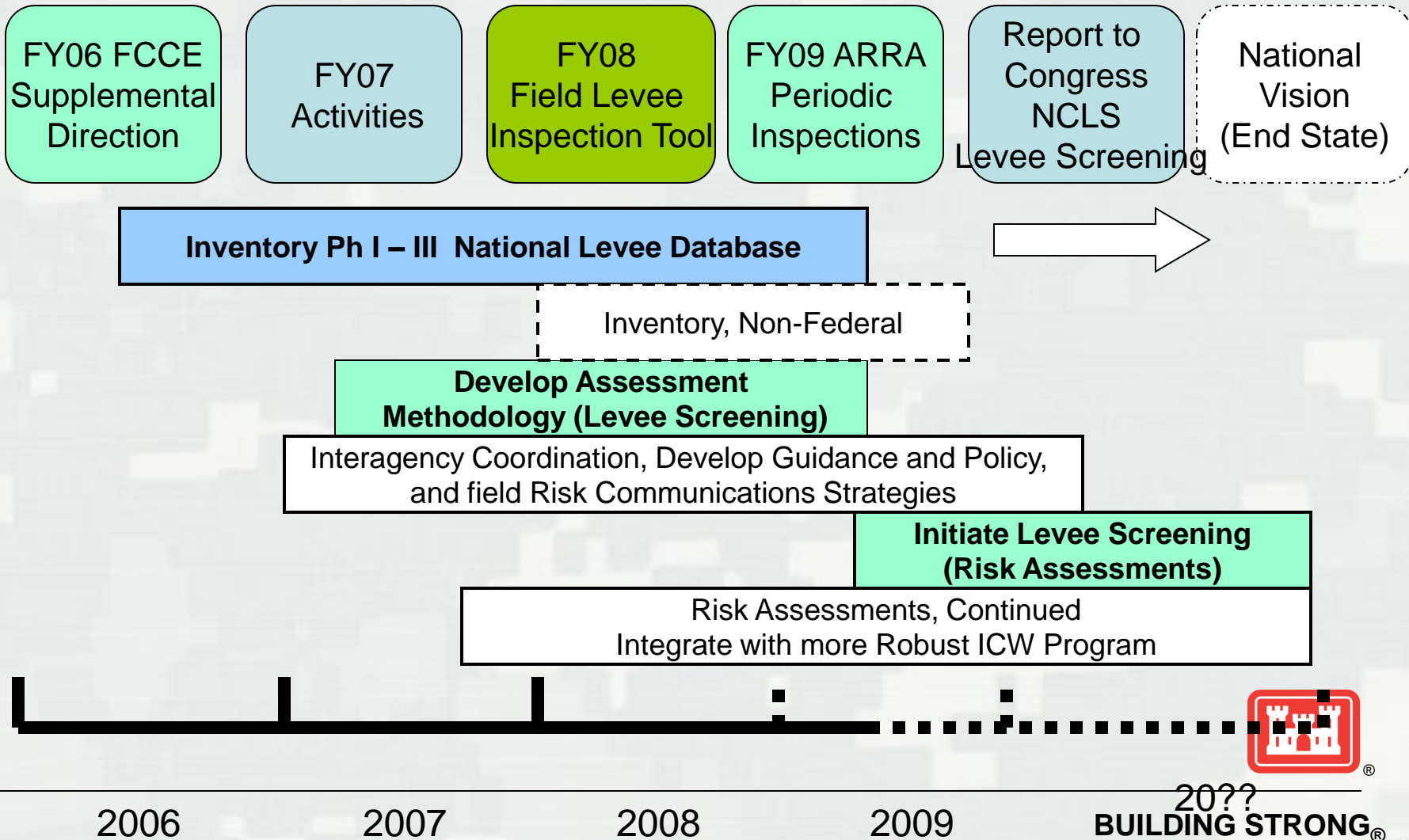
Flood Risk = f(chance of flood, consequences)



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Levee Safety Program

Current Activities & Path Forward



Levee Certifications

- USACE policy - funding for certification is a non-Federal responsibility.
- There is still no easy way for USACE to do certifications on a cost reimbursable basis.
- USACE can fund activities to provide existing, available information to assist sponsors certification efforts.
- RIP and ICW funds may be used for “data” support.
- It should be noted that an “Acceptable” rating by the Corps does not equate to levee certification.



Levee Vegetation

- Hot issue in the Northwest.
- Recent BiOp on FEMAs NFIP for Puget Sound may have far reaching consequences.
- New ETL 1110-2-571 that clarifies EM1110-2-301. Result: no change in inspection policy.
- RVs and RVAs – message is use it or lose it.



Example Non-Compliant Vegetation Growth



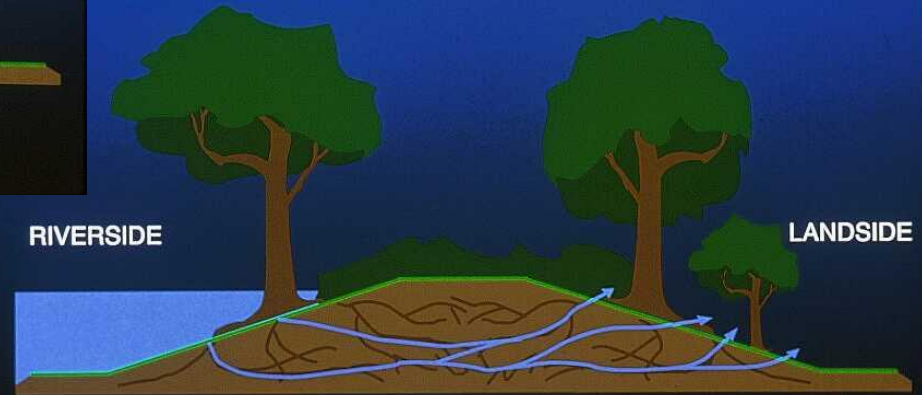
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Potential Consequences

TREE/WOODY GROWTH



TREE/WOODY GROWTH



Blocks Emergency Access
Uncontrolled Piping Through
And Along Root Cavities



Root Penetrations



Danube Dike 1988

6 12 '88

Root Penetrations



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Wind Falls



Vertical Datum

- NWD District's completed datum assessments in FY08.
- Submitted cost and schedule data for corrective actions was entered into CEPD.
- Metrics were established from that CEPD data.
- Model letter was provided to inform non-Federal sponsors to bring their projects into compliance.
- Corrective actions are typically O&M funded.



Silver Jackets Program

- Jennifer Dunn is the new HQ Program Manager
- COE, FEMA and other federal partners create an interagency team at the state level.
- Interagency approach to planning and implementing risk reducing measures.
- Improve public risk communications
- Collaboratively solve issues and implement initiatives.
- On radar: NWK, NWW (Idaho) and NWS.



Questions?



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Levees in the Inspection Program in NWD

	Number of levees systems in various programs				
	Fed O&M (O&M Gen)	Fed/Local (RIP/ICW)		Local (RIP/FCCE)	Total
		Active in RIP	Inactive in RIP	Active in RIP	
NWK	0	56	2	98	156
NWO	2	81	0	8	91
NWP	0	45	19	12	76
NWS	1	19	1	167	188
NWW	3	44	2	71	120
NWD	6	245	24	356	631



NWD Levee Summary

NWD LEVEES	NWK		NWO		NWP		NWS		NWW		NWD	
	#	Miles	#	Miles	#	Miles	#	Miles	#	Miles	#	Miles
Colorado			4	3							4	3
Idaho							17	19	85	109	102	128
Iowa			20	258							20	258
Kansas	41	255									41	255
Missouri	111	774	4	69							115	843
Montana			9	22			17	6			26	28
Nebraska	4	6	38	187							42	192
North Dakota			4	24							4	24
Oregon					62	228			8	17	70	245
South Dakota			10	41							10	41
Washington					14	97	154	205	24	50	192	351
Wyoming			2	7					3	37	5	44
Total	156	1035	91	612	76	324	188	230	120	213	631	2414

