

Value Methodology Applied to Levee Repairs

Missouri River Basin
2011 Flood Repairs



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What is Value Methodology?

- A systematic process used by a multidisciplinary team to improve the value of a project through the analysis of its functions

$$\mathbf{V} = \mathbf{F} / \$$$

- **V = Value**
- **F = Function**
- **\$ = Cost**



When May Value Methodology Be Applied?

- Concept development
 - ▶ Analysis of multiple alternatives
- Design
 - ▶ Refine selected alternative
 - ▶ Quality improvements – design suggestions
- Acquisition / Construction
 - ▶ Acquisition method
 - ▶ Constructability / Sequencing
 - ▶ Minimize impacts on operating project



OMB / USACE Requirements

OMB Circular A-131

- Requires VE application on all federal projects/programs over \$1,000,000 total project cost

PL 99-662 (WRDA 1986)

- Requires VE during design of all water resource projects with cost over \$10,000,000

USACE ER 11-1-321, Change 1 Value Engineering

- “The VE program applies to all procurement acquisitions that are Federally funded, managed, and/or executed by the Corps of Engineers including ... Support for Others (SFO) ... and any other Federal funded programs with a total project cost of \$1 million or more regardless of the number of phases/contracts to accomplish the project.”

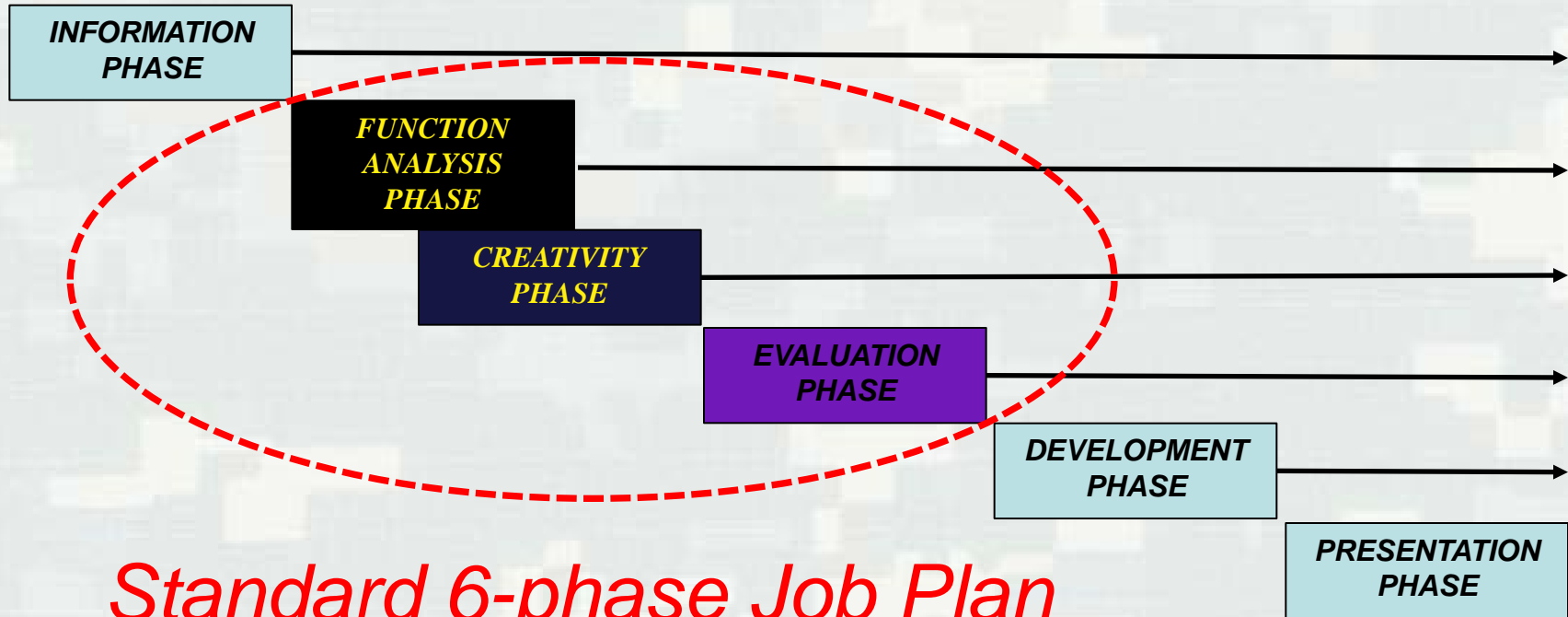


Objectives for VE in Planning

- Identify possible additional alternatives
- Enhance existing alternative options
- Screen/evaluate alternatives



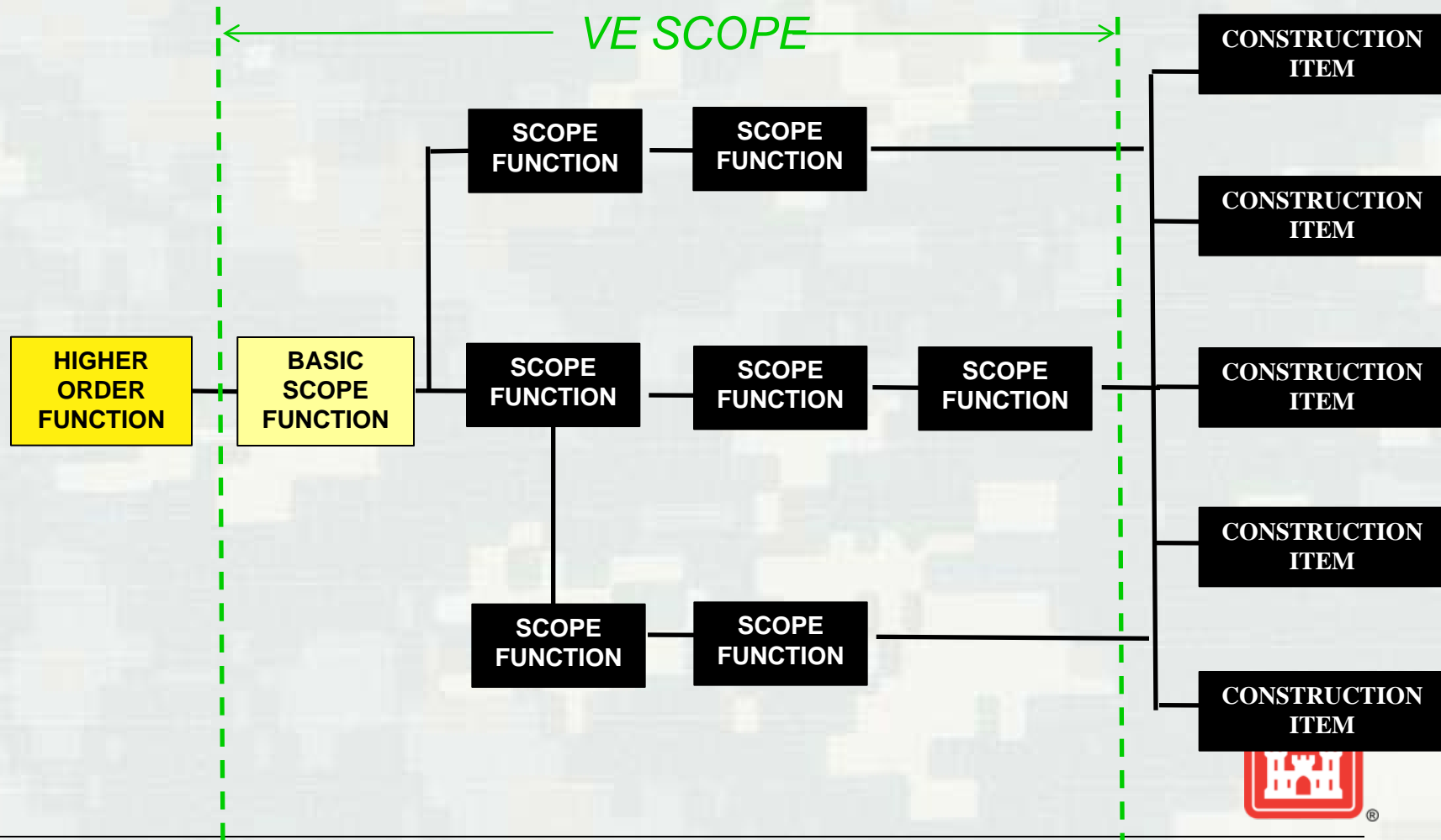
Importance of VE Job Plan



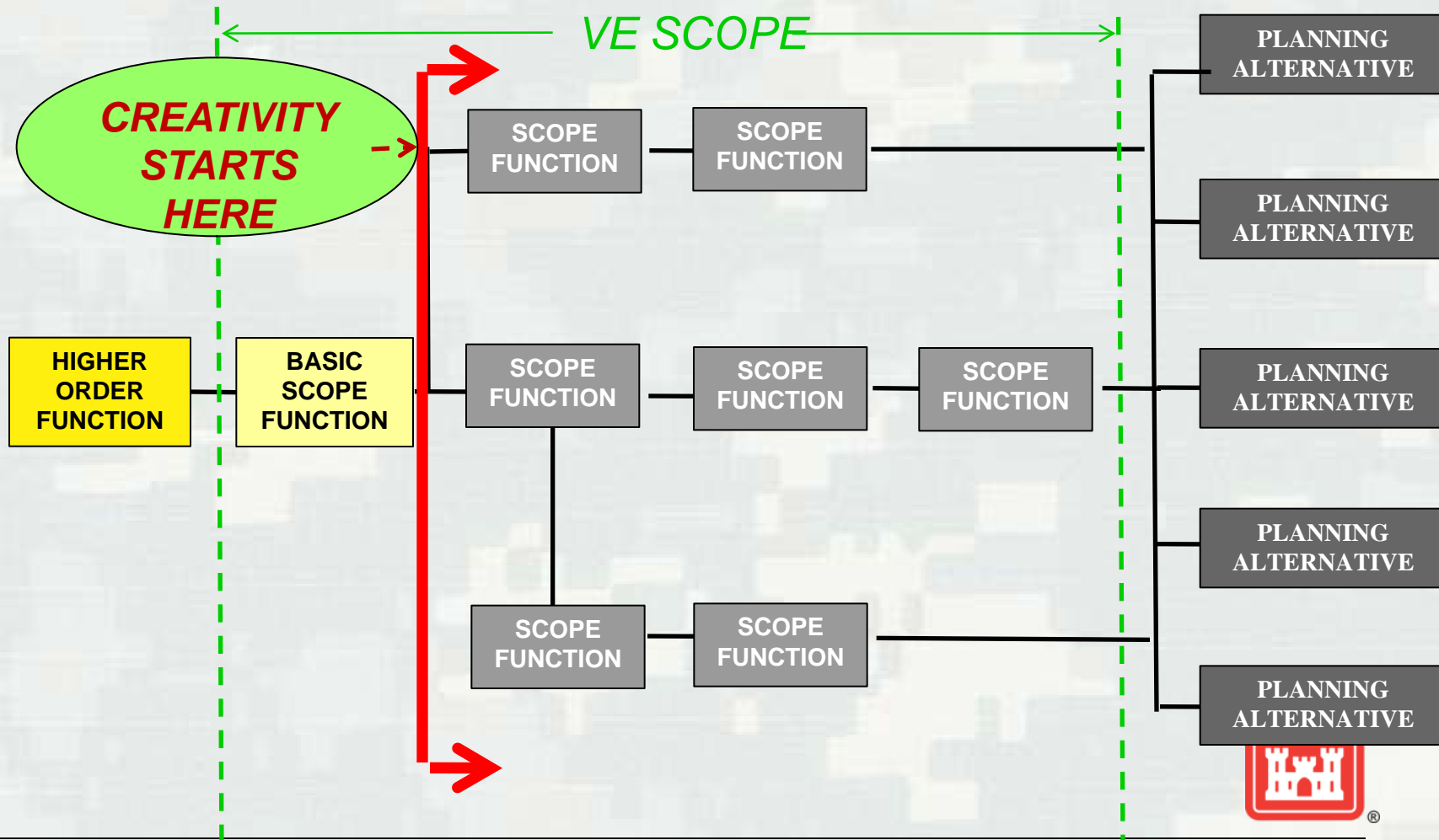
*Standard 6-phase Job Plan
with emphasis on project
Planning Phase*



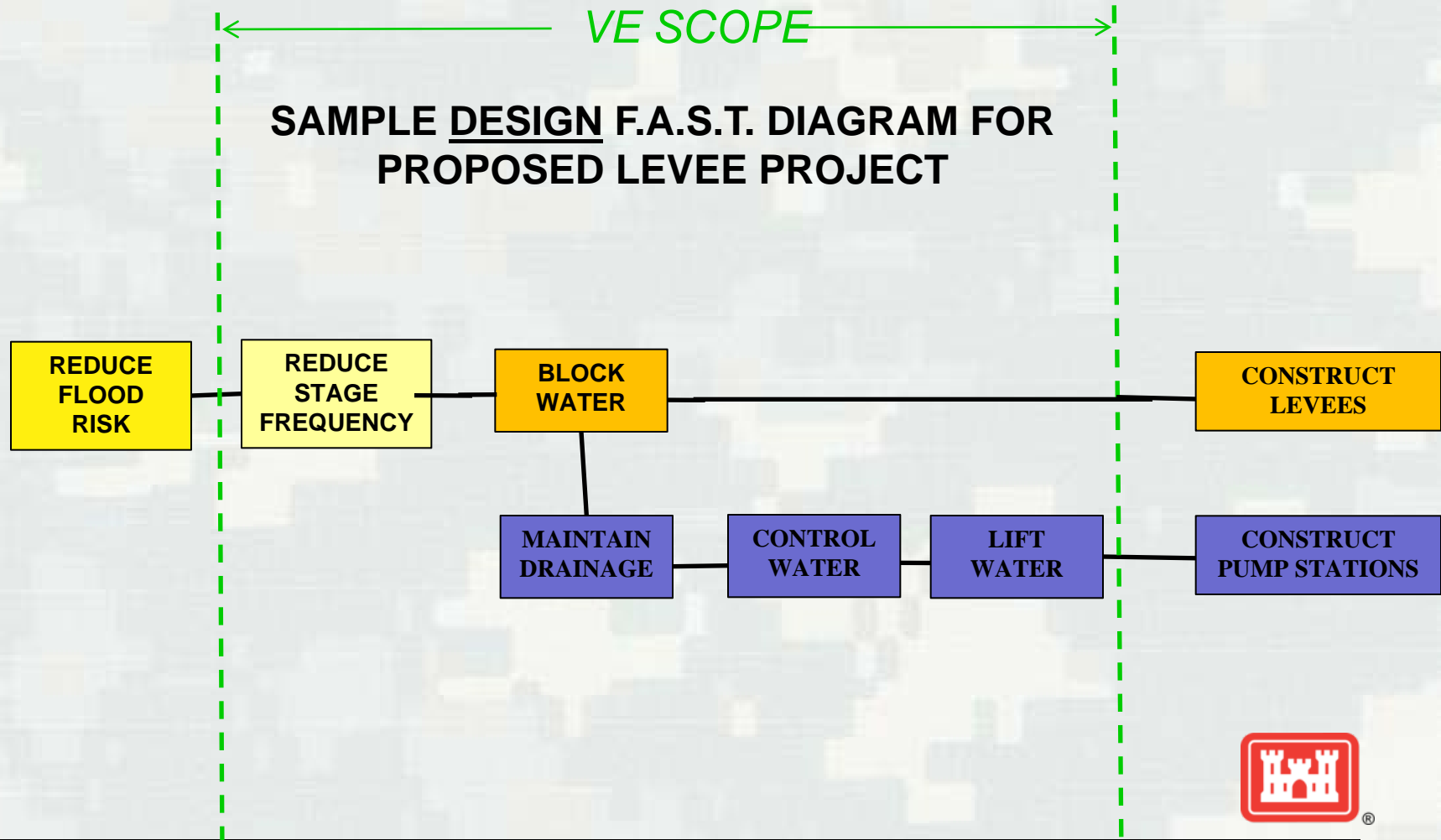
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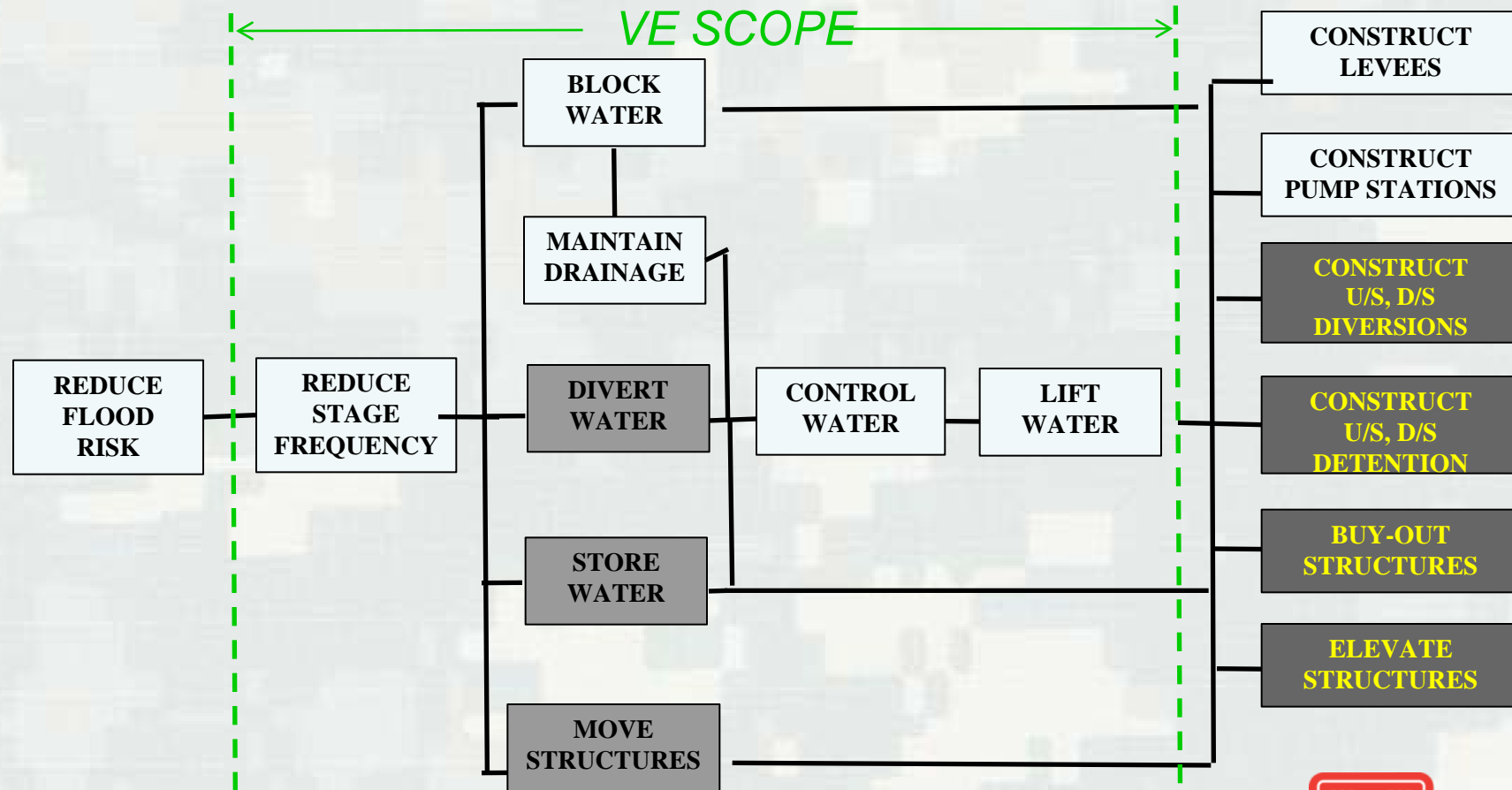
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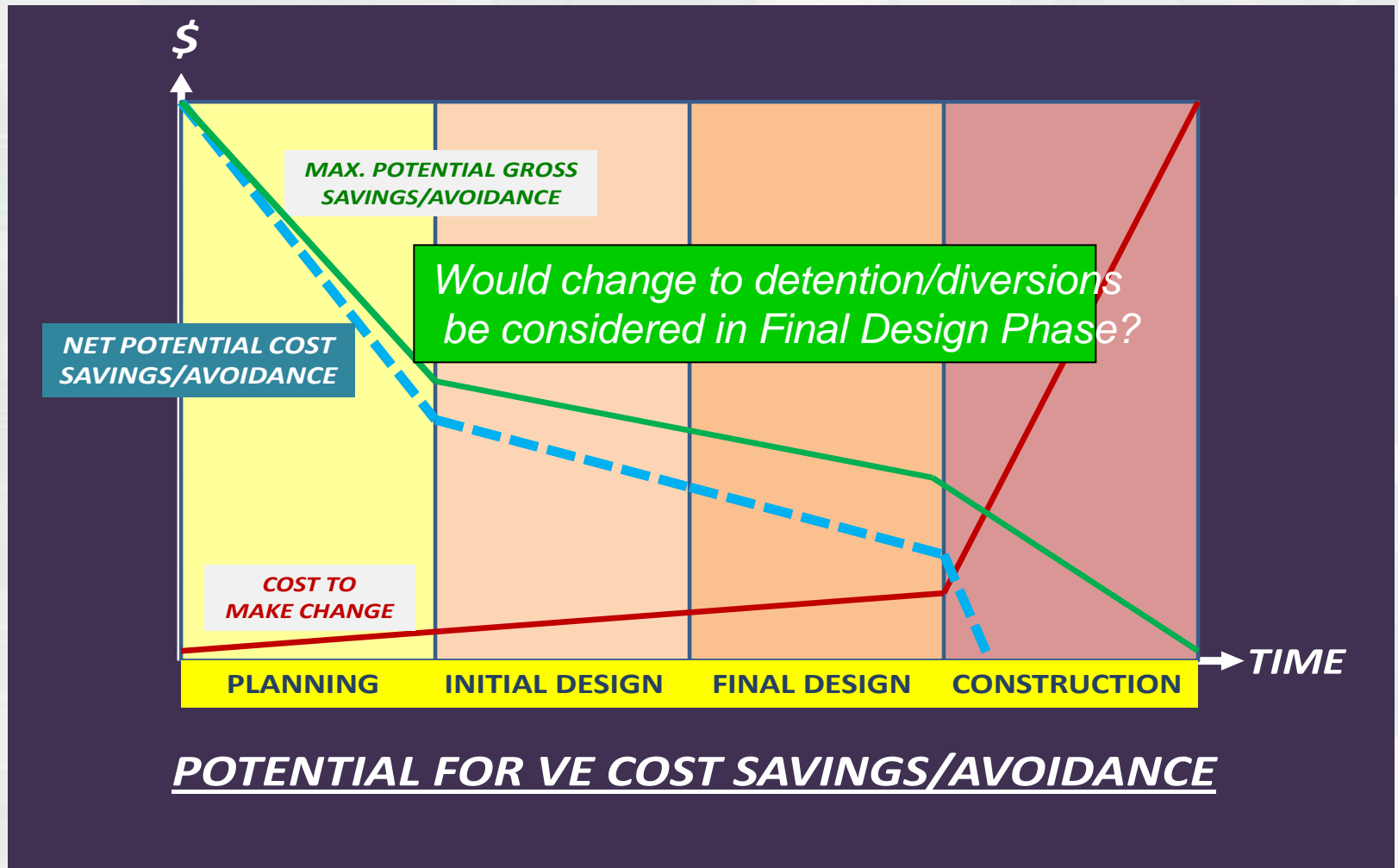


**SAMPLE PLANNING F.A.S.T. DIAGRAM
WITH ADDED ALTERNATIVES**



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Importance of VE Job Plan



NWO VE Approach with Levee Repairs

- **NWO Levee Systems:**
 - ▶ *Upper Missouri River basin*
 - ▶ *8 states – 91 levee systems – 612 miles*
- **USACE spending priorities**
 - ▶ *\$581M: \$319M (levees) & \$262M (dams) – FY12*
 - ▶ *\$105M: FY11 flood fighting activities*
 - ▶ *\$45M: FY11 funds transfer to kickstart levee repair and dam inspection*
- **NWO Levee Rehab Projects**
 - ▶ *19 approved Project information Reports (PIRs)*
- **Conduct VE studies early in design phase**
 - ▶ *Larger projects - VE conducted by AE teams (6 studies; projects @ \$11.8M - \$117M)*
 - ▶ *Smaller projects – district VE Officer integrated with PDT (9 studies; projects @ \$1.2M - \$14.8M)*



General VE Recommendations Missouri River Levee Repairs

- Location of Repair Material
 - ▶ Adjacent depositional material
 - ▶ Sponsor identifies nearby borrow locations to reduce haul distance
- Alternative methods of managing exit gradient at landside toe
 - ▶ Vinyl sheet pile
 - Note: Vinyl sheet pile was not adaptable for these levees.



Site-Specific VE Recommendations Missouri River Levee Repairs

- Do not replace seepage berms (placed during the flood fight) – leave as is
- Eliminate stone layer on stability berms and plant grass
- Use graded rock instead of scoria rock for road repair



Design & Contracting Suggestions

- Incorporate smart phone MICA into surveillance, operations, and GIS levee management
- Contracting
 - ▶ Beyond breaches and major scours, consider design-bid-build (instead of MATOC) to support local construction industry and potentially lower cost
 - ▶ Firm fixed-price bids/pricing schedule with absolute priorities as basic items; additional priorities as options
 - ▶ Specialty contractor for turf
- Design
 - ▶ Prefabricated manholes for gatewells to speed construction



Missouri River Levee Repairs

Middle L-575-Pre Repair



Upper L-550-Pre Repair



Middle L-575 – Post Repair



Upper L-550 – Post Repair

