Missouri Department of
Natural Resources

2013 Missouri Stream Mitigation Method

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Water Protection Forum Subcommittee Meeting

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MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

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Overview

- Motivation.
- Development Process.
- 2013 Revised Stream Method.
- Future Thoughts.
- Wetland Method.
- Questions?

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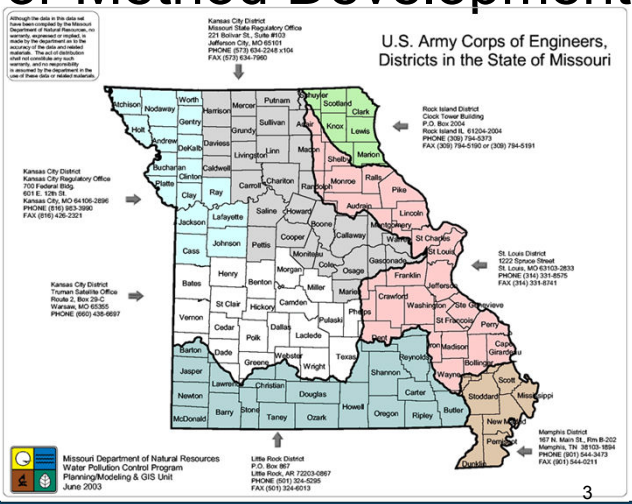
Motivation for Method Development

- 3 USACE Divisions
- 5 USACE District Regulatory Branches



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Road To Development of Method

- Lead District Initiative
- Missouri Board of Directors.
  - Ensure consistency
  - Kansas City District = lead
  - Charter formed ~2005
    - Unanimous Decisions
    - Issue Resolution Process
  - Missouri Stream Mitigation Method.

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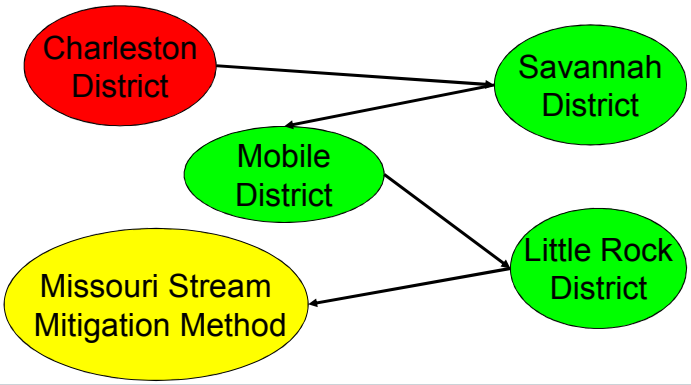
Road To Development of Method

- Show Me State



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Development Process

- Originally finalized Spring 2007.
- Tested method from 2007 to 2010.
- PDT created March 2010 & consisted of:
  - 5 USACE Districts,
  - U.S. Environmental Protection Agency,
  - USDA, Natural Resources Conservation Service,
  - U.S. Fish and Wildlife Service
  - Missouri Department of Natural Resources,
  - Missouri Department of Conservation, and
  - Missouri Department of Transportation.

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Development Process

- Project Delivery Team
  - Quarterly Meetings:
    - Face-to-face.
    - Conference calls.
  - Each member suggested changes based on expertise.
  - Went through each paragraph.
  - Revisions occurred throughout document.
  - Public Noticed.

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2013 Revised Stream Method

- A. Introduction
  - 1. Regulatory Authorities and Guidelines
    - Added section on 401 Certifications.

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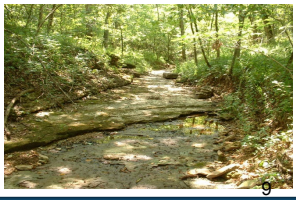
2013 Revised Stream Method

- B. Adverse Impact Factors
  - 1. Stream Types
  - 2. Priority Waters
  - 3. Existing Condition
  - 4. Impact Duration
  - 5. Impact Activity
  - 6. Linear Impact Calculation



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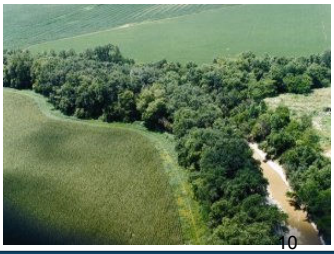
2013 Revised Stream Method

- C. Mitigation Credit Factors.
  - 1. In Stream Work
  - 2. Riparian Buffer Work **major changes**
  - 3. Supplemental Buffer Credit
  - 4. Site Protection
  - 5. Credit Schedule
  - 6. Temporal Lag
  - 7. Location and Kind



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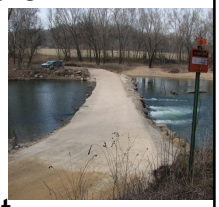
2013 Revised Stream Method



- D. Definitions.
- E. Appendices
  - A. Worksheets
  - B. Designated Fish Spawning Habitat
  - C. District Designations
  - D. Span Width for Crossing Replacements
  - E. Good Stream Replacement Structures
  - F. Channel Bed Aggradation and Degradation
  - G. References

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2013 Revised Worksheets

- Adverse Impact Factors

Stream Type Impacted	Ephemeral 0.3			Intermittent 0.4			Perennial 0.8		
Priority Waters	Tertiary 0.1			Secondary 0.4			Primary 0.8		
Existing Condition	Functionally Impaired 0.1			Moderately Functional 0.8			Fully Functional 1.6		
Impact Duration	Temporary 0.05			Recurrent 0.0			Permanent 0.3		
Impact Activity	Clearing 0.05	Utility Crossing/ Bridge Footing 0.15	Below Grade Culvert 0.3	Armor 0.5	Detention 0.75	Morpho logic Change 1.5	Impound-ment (dam) 2.0	Pipe 2.2	Fill 2.5
Linear Impact Calculation	0.0002 multiplied by linear feet of stream impact recorded in each column below								

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2013 Revised Worksheets

- In-stream

Stream Type	Ephemeral 0.15	Intermittent 0.2	Perennial Stream 0.4		
Priority Waters	Tertiary 0.05		Secondary 0.2	Primary 0.4	
Net Benefit	Stream Relocation to Accommodate Authorized Project 0.5		Moderate 1.2	Good 2.4	Excellent 3.5
Site Protection	Corps approved site protection without third party grantee 0.1		Corps approved site protection recorded with third party grantee, or transfer of title to a conservancy 0.4		
Credit Schedule	Schedule 1 0.3		Schedule 2 0.1	Schedule 3 0	

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2013 Revised Worksheets

- Riparian Buffer

Stream Type	Ephemeral 0.15	Intermittent 0.2	Perennial 0.4	
Priority Waters	Tertiary 0.05	Secondary 0.2	Primary 0.4	
Net Benefit (for each side of stream)	Riparian Creation, Enhancement, Restoration, and Preservation Factors (select values from Table 1) (also see Minimum Buffer Width (MBW) page 15)			
Supplemental Buffer Credit	Condition: Buffer established, enhanced, or preserved on both stream banks To calculate: (Net Benefit Stream Side A + Net Benefit Stream Side B) / 2			
Site Protection	Corps approved site protection without third party grantee 0.05		Corps approved site protection recorded with third party grantee, or transfer of title to a conservancy 0.2	
Credit Schedule	Schedule 1 0.15		Schedule 2 0.05	Schedule 3 0
Temporal Lag (Years)	Over 20 -0.3	10 to 20 -0.2	5 to 10 -0.1	0 to 5 0

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2013 Revised Worksheets

- Table 1. Riparian Buffer Net Benefit Values

Buffer width (on one side of the stream) Equal to or greater than	% Buffer that requires physical improvement		
	Buffer Restoration/Establishment planted and/or undesirable vegetation is removed and appropriate native vegetation to be established (51-100%)	Buffer Enhancement planted and/or undesirable vegetation is removed and appropriate native vegetation to be established (10-50%)	Buffer Preservation (<10%) Planting
300 feet	1.10	0.55	0.27
275 feet	1.05	0.52	0.26
250 feet	1.00	0.50	0.25
225 feet	0.95	0.47	0.25
200 feet	0.90	0.45	0.24
175 feet	0.85	0.42	0.23
150 feet	0.70	0.40	0.21
125 feet	0.75	0.38	0.20
100 feet	0.70	0.35	0.19
75 feet	0.60	0.30	0.1815
50 Feet (MBW)	0.50	0.25	0.13

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Future Thoughts

- Always see ways to improve method.
- Can't cover all scenarios.
- Each District approaches regulatory responsibilities differently.
- Joint Processing Agreement.

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Missouri Wetland Mitigation Method

- Coming soon to a wetland near you…

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Questions?

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