



Kansas Department of Agriculture – Division of Water Resources

COOPERATING TECHNICAL PARTNERS FLOOD STUDY MAPPING ACTIVITY STATEMENT

Mapping Activity Statement No. 19

In accordance with the Cooperating Technical Partners (CTP) Partnership Agreement dated September 1, 1999 between Kansas Department of Agriculture – Division of Water Resources (KDA-DWR) and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement (MAS) No. 19 is as follows:

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SECTION 1—OBJECTIVE AND SCOPE

The objective of the Risk MAP Project documented in this MAS is to develop and / or support a Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) report, for Sedgwick County, KS. All processes and deliverables shall be completed in accordance to the Federal Emergency Management Agency's (FEMA's) Guidelines and Specifications (G&S) for Flood Hazard Mapping Partners and effective Procedure Memoranda (PMs). These documents can be found on FEMA's website at http://www.fema.gov/plan/prevent/fhm/gs_main.shtm and http://www.fema.gov/plan/prevent/fhm/gs_memos.shtm. PMs are used to implement updates the G&S, to provide additional clarification of procedures that are not documented in published guidance documents, and to establish procedures and policies. Should a PM require a scope change, CTPs should work through the change process by submitting Special Problem Reports (SPRs) to the appropriate Regional office.

The DFIRM and FIS report will be produced for the Sedgwick County, KS, in the North American Vertical Datum of 1988 (NAVD88).

The Mapping Partners involved in this project will develop new and/or updated flood hazard data, as summarized in Table 1.1, Flooding Source(s) to be Studied.

Table 1.1 – Total Stream Mile Counts by Type of Study

	A zone/ Basic Study New/Leverage	Limited Detailed	AE, AH Zone/ Enhanced Study New/Leverage	Revisions due to Updated topographic data
Miles of Effective Flood Insurance Study	1004		247.4	
Updated Effective Studies	639/0		163.9/91.6	1.6
New Studies Identified	New Leverage 55/0	279.4	76.3/66.5	
Totals	794	279.4	240.2/158.1	

*Details on type of study are documented in Table 1.2.

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
Sedgwick East								
Maple Creek	From county boundary to just downstream of 108th St.	1.5			1.5	1.5		
Spring Branch (Leverage)	From county boundary to .5 miles upstream of Harry St.	5	5	5				
Pawnee Creek (Leverage)	From county boundary to just downstream of Sunnybrook Dr.	1.4	1.4	1.4				
Pawnee Creek Trib. 1 (Leverage)	From confluence with Pawnee Creek to just downstream of Sunnybrook Dr.	0.2	0.2	0.2				
Spring Branch Trib. 1 (Leverage)	From confluence with Spring Branch to just downstream of Rebecca Ln.	3	3	3				
Spring Branch Trib. 1.1 (Leverage)	From confluence with Spring Creek Trib. 1 to just downstream of 31st St.	1.4	1.4	1.4				
Spring Branch Trib. 4 (Leverage)	From confluence with Spring Branch to just downstream of Central	3.2	3.2	3.2				
Spring Branch Trib. 5 (Leverage)	From confluence with Spring Creek to .4 miles upstream of Harry St.	0.6	0.6	0.6				
Spring Branch Trib. 6 (Leverage)	From confluence with Spring Branch to just downstream of Gilbert St.	0.7	0.7	0.7				
Fourmile Branch (Leverage)	From county boundary to just downstream of 29th St.	6.8	6.8	6.8				
Republican Creek (Leverage)	From confluence with Fourmile Creek to just upstream of Burlington Northern & Santa Fe Railroad	3.9	3.9	3.9				

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
Terradyne Fork (Leverage)	From confluence with Republican Creek to county boundary	0.4	0.4	0.4				
West Fork Fourmile Creek (Leverage)	From confluence with Fourmile Creek to .7 miles upstream of 22nd St.	4.1	4.1	4.1				
(Leverage)	From confluence with West Fork Fourmile Creek to just upstream of 21nd St.	0.4	0.4	0.4				
West Fork Fourmile Creek Trib. 2 (Leverage)	From confluence with West Fork Fourmile Creek to just upstream of west bound ramp of K 96	0.4	0.4	0.4				
Unnamed Trib 2 to Fourmile Creek (Leverage)	From confluence with Fourmile Creek to .2 miles upstream of 21st	0.8	0.8	0.8				
Unnamed Trib to Fourmile Creek (Leverage)	From confluence with Fourmile Creek to just downstream of Camden Chase St.	0.4	0.4	0.4				
Dry Creek East	From county boundary to .9 miles upstream of Greenwich Rd.	5.7			5.7	5.7		
Dry Creek East Trib. 1	From county boundary to just downstream of 53rd St.	3.2			3.2	3.2		
Dry Creek East Trib. 1.1	From confluence with Dry Creek East Trib. 1 to .1 miles downstream of 45th St.	0.5			0.5	0.5		
Dry Creek East Trib. 1.2	From confluence with Dry Creek East Trib. 1 to .3 miles downstream of 45th St.	0.4			0.4	0.4		
Dry Creek East Trib. 2	From confluence with Dry Creek East to just downstream of 29th St.	0.4			0.4	0.4		

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
Dry Creek East Trib. 3	From confluence with Dry Creek East to .4 miles upstream of 29th St.	1			1	1		
Dry Creek East Trib. 4	From confluence with Dry Creek East to .3 miles upstream of 37th St.	1.1			1.1	1.1		
Dry Creek East Trib. 4.1	From confluence with Dry Creek East Trib. 4 to .5 miles upstream of 143rd St.	0.6			0.6	0.6		
Dry Creek East Trib. 5	From confluence with Dry Creek East to just downstream of 29th St.	0.5			0.5	0.5		
Dry Creek East Trib. 6	From confluence with Dry Creek East to .6 miles upstream of confluence	0.6			0.6	0.6		
Dry Creek East Trib. 7	From confluence with Dry Creek East to .2 miles upstream of 45th St.	1.1			1.1	1.1		
Dry Creek East Trib. 8	From confluence with Dry Creek East to .5 miles upstream of confluence	0.5			0.5	0.5		
Dry Creek East Trib. 9	From confluence with Dry Creek East to .2 miles upstream of Greenwich Rd.	3.6			3.6	3.6		
Dry Creek East Trib. 9.1	From confluence with Dry Creek East Trib, 9 to .7 miles upstream of 45th St.	1.3			1.3	1.3		
Dry Creek East Trib. 9.2	From confluence with Dry Creek East Trib, 9 to .4 miles upstream of confluence	0.4			0.4	0.4		
Dry Creek East Trib. 10	From confluence with Dry Creek East to .3 miles upstream of 37th St.	0.7			0.7	0.7		
Dry Creek East Trib. 11	From confluence with Dry Creek East to .7 miles upstream of Greenwich rd.	0.9			0.9	0.9		

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
Dry Creek East Trib. 12	From confluence with Dry Creek East to just downstream of 45th St.	1.6			1.6	1.6		
Dry Creek East Trib. 12.1	From confluence with Dry Creek East Trib. 12 to .4 miles upstream of Lindberg St.	0.6			0.6	0.6		
Subtotal		58.9	32.7	32.7	26.2	26.2	0	93
Chisholm - Spring Watersheds								
Dog Creek	From county line to .5 miles upstream of 87th St.	8.3			8.3	8.3		
Dog Creek Trib 2	From confluence with Dog Creek to .3 miles upstream of 95th St.	4.4			4.4	4.4		
Dog Creek Trib 3	From confluence with Dog Creek to .4 miles upstream of 127th St.	2			2	2		
Styx Creek	From county line to intersection of Willow Dell	0.9	0.9	0.9				
Styx Creek	From intersection of Willow Dell to 1.2 miles upstream of 103rd St.	3			3	3		
Styx Creek Mulvane Trib.	From confluence with Styx Creek to .2 miles upstream of Burlington Northern and Santa Fe Railroad	1.2	1.2	1.2				
Arkansas River Mulvane Trib. 1	From confluence with Arkansas River to .5 miles upstream of 103rd St.	2.2			2.2	2.2		
Arkansas River Mulvane Trib. 2	From confluence with Arkansas River to just upstream of Rock Road	2.2			2.2	2.2		

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
Spring Creek East	From confluence with Arkansas River to just upstream of 63rd St.	12.2	12.2	12.2				
Spring Creek East	From just upstream of 63rd St. to .5 miles upstream of 167th St.	4			4	4		
Trail Creek	From confluence of Spring Creek East to just upstream of James St.	1.7	1.7	1.7				
Dry Creek of Spring Creek East	From confluence with Spring Creek East to just upstream of 55th St.	5	5	5				
Dry Creek of Spring Creek East	From just upstream of 55th St. to just downstream of Rock Rd.	1.4			1.4	1.4		
Dry Creek of Spring Creek East Trib. 1	From confluence with Dry Creek of Spring Creek East to just upstream of Meadowlark Rd.	0.9	0.9	0.9				
Dry Creek of Spring Creek East Trib. 2	From confluence with Dry Creek of Spring Creek East to just upstream of 63rd St.	1.5	1.5	1.5				
Spring Creek East Trib. 1	From confluence with Spring Creek East to just upstream of Madison Ave.	0.5	0.5	0.5				
Spring Creek East Trib. 3	From confluence with Spring Creek East to just upstream of 79th St.	0.7	0.7	0.7				
Spring Creek East Trib. 5	From confluence with Spring Creek East to .2 miles downstream of 31st St.	8.8			8.8	8.8		
Spring Creek East Trib. 5.1	From confluence with Spring Creek East Trib. 5 to .5 miles upstream of 63rd St.	2.4			2.4	2.4		

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
Spring Creek East Trib. 5.2	From confluence with Spring Creek East Trib. 5 to 1 mile upstream of 55th St.	2.7			2.7	2.7		
Spring Creek East Trib. 5.3	From confluence with Spring Creek East Trib. 5 to .5 miles upstream.	0.5			0.5	0.5		
Spring Creek East Trib. 5.4	From confluence with Spring Creek East Trib. 5 to just downstream of Webb Rd.	0.7			0.7	0.7		
Spring Creek East Trib. 5.5	From confluence with Spring Creek East Trib. 5 to just upstream of 35th St.	1.2			1.2	1.2		
Arkansas River McConnel Trib. 2	From confluence with Arkansas River to upstream of 47th St.	2.5			2.5	2.5		
Wichita Drainage Canal	From confluence with Arkansas River to confluences with West Drain and Center Drain	6.3	6.3	6.3				
Gypsum Creek	From confluence with Wichita Drainage Canal to upstream of Burlington Northern & Santa Fe Railroad	8.3	8.3	8.3				
Dry Creek of Gypsum Creek	From confluence with Gypsum Creek to just upstream of 9th St.	5.2	5.2	5.2				
West Branch Dry Creek of Gypsum Creek	From confluence with Dry Creek of Gypsum Creek to just upstream of 14th St.	2.3	2.3	2.3				
Fabrique Branch of Gypsum Creek	From confluence with Gypsum Creek to just upstream of Eastwood Ave.	1.3	1.3	1.3				
Armour Branch of Gypsum Creek	From confluence with Gypsum Creek to just upstream of Central Ave.	2	2	2				

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Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
Rock Road South Tributary of Gypsum Creek	From confluence with Gypsum Creek to .7 miles upstream of Harry St.	1.1	1.1	1.1				
East Branch of Gypsum Creek	From confluence with Gypsum Creek to .4 miles upstream of 13th St.	2.8	2.8	2.8				
Middle Branch of Gypsum Creek	From confluence with Gypsum Creek to just upstream of 29th St.	4.4	4.4	4.4				
Middle Branch of Gypsum Creek Trib. 1	From confluence with Middle Branch of Gypsum Creek to just downstream of Webb Rd.	1	1	1				
Third Street Drain	From confluence with Arkansas River to just downstream of 13th St.	2.4	2.4	2.4				
Frisco Ditch	From confluence with Arkansas River to just downstream of 13th St.	1.6					1.6	
East Fork Chisholm Creek	From confluence with Wichita Drainage Canal to just upstream of 53rd St.	9.7	9.7	9.7				
Center Drain East Trib.	From confluence with East Fork Chisholm Creek to just downstream of 45th St.	3.2	3.2	3.2				
East Fork Chisholm Creek Trib. 3	From confluence with East Fork Chisholm Creek to just downstream of 45th St.	2.6	2.6	2.6				
East Fork Chisholm Creek Trib. 5	From confluence with East Fork Chisholm Creek to .6 miles upstream of Shadowridge St.	1.2	1.2	1.2				

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Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
East Fork Chisholm Creek Trib. 5.1	From confluence of East Fork Chisholm Creek Trib. 5 to just downstream of Woodlawn Blvd.	1	1	1				
Crooked Creek	From confluence with East Fork Chisholm Creek Trib. 5 to .2 miles upstream of confluence	0.2	0.2	0.2				
East Fork Chisholm Creek Trib. 4	From confluence with East fork Chisholm Creek to just downstream of 37th St.	0.9	0.9	0.9				
East Fork Chisholm Creek Trib. 6	From confluence with East Fork Chisholm Creek to just downstream of Union Pacific Railroad	0.9	0.9	0.9				
East Fork Chisholm Creek Trib. 7	From confluence with East Fork Chisholm Creek to .1 miles upstream of 47th St.	1.6	1.6	1.6				
Center Drain	From confluence with Wichita Drainage Canal to .3 miles upstream of Burlington Northern & Santa Fe Railroad	1.7	1.7	1.7				
Middle Fork Chisholm Creek	From upstream of 45th St. to just upstream of 2nd crossing of Union Pacific Railroad	3.3	3.3	3.3				
Middle Fork Chisholm Creek	From just upstream of 2nd crossing of Union Pacific Railroad to .2 miles downstream of 77th St.	2.9			2.9	2.9		
Tributary M1 Middle Fork Chisholm Creek	From just upstream of 45th St. to .1 miles upstream of 53rd St.	1.6	1.6	1.6				

Table 1.2

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			Hydrology	Hydraulics	Hydrology	Hydraulics		
Middle Fork Chisholm Creek Kechi Trib.	From confluence with Middle Fork Chisholm Creek to 79th St.	2.8			2.8	2.8		
Tributary C Middle Fork Chisholm Creek	From confluence with Middle Fork Chisholm Creek to .7 miles upstream of 69th St.	1.3			1.3	1.3		
Tributary C.1 Middle Fork Chisholm Creek	From confluence with Tributary C Middle Fork Chisholm Creek to .3 miles upstream of confluence	0.3			0.3	0.3		
Tributary D Middle Fork Chisholm Creek	From confluence with Middle Fork Chisholm Creek to just upstream of 79th St.	0.9			0.9	0.9		
Chisholm Creek	From confluence of Tributary C1 of Chisholm Creek to just upstream of 77th St.	2.6	2.6	2.6				
Chisholm Creek	From just upstream of 77th St. to .6 miles upstream of 101st St.	4.8			4.8	4.8		
Tributary C1 of Chisholm Creek	From confluence with Chisholm Creek to just downstream of 85th St.	2.4			2.4	2.4		
West Fork Chisholm Creek	From confluence with Chisholm Creek to just downstream of 77th St.	1.2	1.2	1.2				
West Fork Chisholm Creek	From just downstream of 77th St. to just .4 miles upstream of 177th St.	7.4			7.4	7.4		
West Fork Chisholm Creek Trib 1	From confluence with West Fork Chisholm Creek to .4 miles upstream of confluence	0.4			0.4	0.4		
West Fork Chisholm Creek Trib 2	From confluence with West Fork Chisholm Creek to .2 miles upstream of 101st St.	1.2			1.2	1.2		

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
West Fork Chisholm Creek Trib 3	From confluence with West Fork Chisholm Creek to .6 miles upstream of confluence	0.6			0.6	0.6		
West Fork Chisholm Creek Trib 4	From confluence with West Fork Chisholm Creek to just upstream of Hillside Ave.	0.6			0.6	0.6		
Tributary C2 of Chisholm Creek	From confluence with Chisholm Creek to .2 miles downstream of Grove St.	1	1	1				
Tributary C3 of Chisholm Creek	From confluence with Chisholm Creek to just downstream of Hillside Ave.	1.2			1.2	1.2		
Tributary C4 of Chisholm Creek	From confluence with Chisholm Creek to just downstream of 93rd St.	2.2			2.2	2.2		
Tributary C4.1 of Chisholm Creek	From confluence with Tributary C4.1 of Chisholm Creek to .6 miles upstream of confluence	0.6			0.6	0.6		
Tributary C5 of Chisholm Creek	From confluence with Chisholm Creek to just downstream of 77th St.	0.4			0.4	0.4		
Tributary C6 of Chisholm Creek	From confluence with Chisholm Creek to .7 miles upstream of 47th St.	1.4			1.4	1.4		
Tributary C7 of Chisholm Creek	From confluence with Chisholm Creek to just downstream of 63rd St.	0.6			0.6	0.6		
Tributary C8 of Chisholm Creek	From confluence with Chisholm Creek to .5 miles upstream of confluence	0.5			0.5	0.5		
Tributary C9 of Chisholm Creek	From confluence with Chisholm Creek to .3 miles upstream of 117th St.	3			3	3		

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
West Branch Chisholm Creek	From just upstream of 77th St. to .6 miles upstream of 101st St.	4.1	4.1	4.1				
West Branch Chisholm Creek Trib. 1	From confluence with West Branch Chisholm Creek to just downstream of 69th St.	0.9	0.9	0.9				
West Branch Chisholm Creek Trib. 2	From confluence with West Branch Chisholm Creek to .6 miles upstream of 101st St.	5.3	5.3	5.3				
West Branch Chisholm Creek Trib. 2.1	From confluence with West Branch Chisholm Creek Trib. 2 to .5 miles upstream of 93rd St.	0.6	0.6	0.6				
West Branch Chisholm Creek Trib. 3	From confluence with West Branch Chisholm Creek to .1 miles upstream of 109th St.	4.6	4.6	4.6				
West Branch Chisholm Creek Trib. 3.1	From confluence with West Branch Chisholm Creek Trib. 3 to .6 miles upstream of 10th St.	0.9	0.9	0.9				
Subtotal		194.2	113.3	113.3	79.3	79.3	1.6	16
Arkansas and Little Arkansas River and Tributaries								
Cowskin Creek South	From county boundary to Wichita Valley Center Floodway	9.0	9.0	9.0				
Cowskin Creek South Trib. 1	From confluence with Cowskin Creek South to just downstream of 47th St.	2.6	2.6	2.6				
Gunzelman Drain	From confluence with Wichita Valley Center Floodway to just downstream of 47th	2.6	2.6	2.6				

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
	St.							
Big Slough South	From confluence with Arkansas River to lake upstream of I 235	7.7	7.7	7.7				
Big Slough South Trib. 1	From confluence with Big Slough South to just downstream of 27th St.	1	1	1				
Big Slough South trib. 2	From confluence with Big Slough South to .4 miles upstream of West St.	2.4	2.4	2.4				
Hoover Street Drain - Dugan Tributary	From confluence with Wichita Valley Center Floodway to just downstream of 2nd St.	2.6	2.6	2.6				
Big Slough North	From confluence with Wichita Valley Center Floodway to just upstream of 53rd St.	9.8	9.8	9.8				
Big Slough North	From upstream of 53 rd to just upstream of 151 st St.	5.6			5.6	5.6		
Little Slough	From confluence with Big Slough North to just upstream of 53rd St.	2.3	2.3	2.3				
Little Slough	From just upstream of 53 rd to just upstream of 61 st St.	2.2			2.2	2.2		
Big Slough North Trib. 1	From confluence with Big Slough North to just downstream of 119th St.	1.2	1.2	1.2				
Meridian Ditch	From confluence with Little River to .2 miles upstream of 55th St.	1	1	1				

Table 1.2

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			Hydrology	Hydraulics	Hydrology	Hydraulics		
Bentley Drain	From confluence with Bentley Creek to just downstream of 109th St.	1.1			1.1	1.1		
Subtotal		51.1	50.0	50.0	1.1	1.1	0	115
Cowskin Creek Watershed								
Cowskin Creek	From the confluence with Wichita - Valley Center Floodway to the intersection with 231st St.	35	35	35				
Cowskin Creek	From the intersection with 231st St. to approximately one mile upstream of the intersection with 279th St.	11.5			11.5	11.5		
Cowskin Creek Andale Trib 1	From the confluence with Cowskin Creek to the intersection with Main St.	2.2	2.2	2.2				
Cowskin Creek Andale Trib 1.1	From the confluence with Cowskin Creek Trib 1 to approximately .5 miles upstream of the intersection with the Union Pacific Railroad.	2.3			2.3	2.3		
Cowskin Creek Colwich Trib 1	From the confluence with Cowskin Creek to approximately .4 miles upstream of 45th St.	2			2	2		
Cowskin Creek Colwich Trib 2	From the confluence with Cowskin Creek to approximately .8 miles upstream of 199th St.	3			3	3		
Cowskin Creek Colwich Trib 3	From the confluence with Cowskin Creek to approximately .6 miles upstream of 61st St.	1.3			1.3	1.3		

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
Dry Creek South (of Cowskin Creek)	From the confluence with Cowskin Creek to upstream of Maize Rd.	5.8	5.8	5.8				
Dry Creek South (of Cowskin Creek)	From Maize Rd. to the intersection of 183rd St.	13			13	13		
Dry Creek South (of Cowskin Creek) Trib. 1	From confluence of Dry Creek South (of Cowskin Creek) to .2 miles upstream of 55th St.	2.5			2.5	2.5		
Dry Creek South (of Cowskin Creek) Trib. 2	From confluence of Dry Creek South (of Cowskin Creek) to 2nd crossing of Macarthur Rd.	3			3	3		
Dry Creek South (of Cowskin Creek) Trib. 3	From confluence of Dry Creek South (of Cowskin Creek) to Macarthur Rd.	2.8			2.8	2.8		
Dry Creek South (of Cowskin Creek) Trib. 4	From confluence of Dry Creek South (of Cowskin Creek) to just upstream of 151st St.	2.7			2.7	2.7		
Dry Creek South (of Cowskin Creek) Trib. 5	From confluence of Dry Creek South (of Cowskin Creek) to Upstream of 23rd St.	7.2			7.2	7.2		
Westlink Tributary to Cowskin Creek	From the confluence with Cowskin Creek to the intersection with Cora Rd and Maize Rd.	5.7	5.7	5.7				
Cowskin Creek Trib. 1	From the confluence with Cowskin Creek to intersection with 135th St.	1.8	1.8	1.8				
Cowskin Creek Trib. 2	From the confluence with Cowskin Creek to .2 miles upstream of Bella Vis	1.2	1.2	1.2				
Dry Creek	From 167th St to just upstream of 231st St.	7.8			7.8	7.8		

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
Dry Creek Trib. 1	From the confluence with Dry Creek to .2 miles upstream of 2nd crossing of 183rd.	3.2			3.2	3.2		
Dry Creek Trib. 1.1	From the confluence with Dry Creek Trib. 1 to .2 miles upstream of 6th St.	3.6			3.6	3.6		
Dry Creek Goddard Trib.	From the confluence with Dry Creek Trib. 1.1 to just downstream of Kellogg Drive	2.3			2.3	2.3		
Dry Creek Trib. 2	From the confluence with Dry Creek upstream 1 mile	1			1	1		
Dry Creek Trib. 3	From the confluence with Dry Creek to just downstream of 4th St.	3.2			3.2	3.2		
Cowskin Creek Trib. 3	From the confluence with Cowskin Creek to .3 miles upstream of 129th St.	4			4	4		
Cowskin Creek Trib. 3.1	From the confluence with Cowskin Creek Trib 3 to just upstream of 167th St.	0.7			0.7	0.7		
Cowskin Creek Trib. 4	From the confluence with Cowskin Creek to intersection of 53rd St.	1.8			1.8	1.8		
Cowskin Creek Trib. 5	From the confluence with Cowskin Creek to .5 miles upstream of 37th St.	1.4			1.4	1.4		
Cowskin Creek Trib. 6	From the confluence with Cowskin Creek to .2 miles downstream of 21st St.	2.2			2.2	2.2		
Subtotal		134.2	75.2	75.2	59	59	0	61
Ninnescah River Watershed								
Ninnescah River	From county line to confluence North and South Fork Ninnescah Rivers	19.3			19.3	19.3		

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
North Fork Ninescah River	From confluence with Ninescah River to county line in Cheney Reservoir	17			17	17		
Clearwater Trib. 1	From confluence with Ninescah River to just upstream of Union Pacific Railroad	2.5	2.5	2.5				
South Fork Ninescah River	From confluence with Ninescah River to county line	7.8			7.8	7.8		
North Fork Ninescah River Cheney Trib. 1	From confluence with North Fork Ninescah River to .8 miles upstream of Leighty Drive	3			3	3		
North Fork Ninescah River Cheney Trib. 1.1	From confluence with North Fork Ninescah River Cheney Trib. 1 to .3 miles upstream of 6th Ave.	0.7			0.7	0.7		
North Fork Ninescah River Cheney Trib. 1.2	From confluence with North Fork Ninescah River Cheney Trib. 1 to just upstream of 391st St.	0.6			0.6	0.6		
Polecat Creek	From confluence with Polecat Creek Trib. 1 to Highway 54	3.5			3.5	3.5		
Polecat Creek Garden Plain Trib. 1	From Confluence with Polecat Creek to .5 miles upstream of intersection with 6th St.	4			4	4		
Polecat Creek Garden Plain Trib. 2	From Confluence with Polecat Creek to upstream of C St.	0.6			0.6	0.6		
Spring Creek West	From county line to just upstream of 151st St.	13.6			13.6	13.6		

Table 1.2

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Riverine		Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Hydrology	Hydraulics		
Spring Creek West Trib. 1	From Confluence with Spring Creek West to .7 miles upstream of 87th St.	3.8			3.8	3.8		
Dry Creek of Spring Creek West	From Confluence with Spring Creek West to .7 miles upstream of 71st St.	4.5			4.5	4.5		
Dry Creek of Spring Creek West Trib. 1	From Confluence with Dry Creek of Spring Creek West to just downstream of 71st St.	1.6			1.6	1.6		
Subtotal		82.5	2.5	2.5	80	80	0	409
Totals		520.9	239.9	239.9	279.4	279.4	1.6	694

This Risk MAP Project will be completed by the following Mapping Partners:

- Kansas Department of Agriculture – Division of Water Resources (KDA-DWR);
- AMEC Earth and Environmental (as a contractor to KDA-DWR).

The Mapping Partner shall notify FEMA and all applicable parties of all meetings with community officials, and other relevant meetings, at least two weeks prior to the meeting (with as much notice as possible). FEMA and/or its contractor may or may not attend the community meetings.

The Mapping Partners shall maintain an archive of all data submitted. (All supporting data must be retained for three years from the date a funding recipient submits its final expenditure report to FEMA.)

KDA-DWR is responsible for the implementation of an independent Quality Assurance/Quality Control (QA/QC) plan for all assigned activities. The KDA-DWR will submit a Summary Report that describes and provides the results of all automated or manual QA/QC review steps. The report should include the process for all assigned activities.

Independent QC review activities may be performed by the CTP, PTS, or FEMA's contractor at the discretion of FEMA. If the CTP will be utilizing its contractors to do the QC review, this should be identified during scoping. The CTP will need to submit its QC plan to the Regional Project Officer for acceptance. Please note FEMA will also be performing periodic audits and overall study/project management to ensure study quality. Whether or not the CTP or PTS performs the QC review, the CTP will be responsible for addressing any and all comments resulting from independent QA reviews, including re-submittal of deliverables as needed to pass technical review. The KDA-DWR will submit Risk MAP products to FEMA's designated reviewer for QC prior to public issuance.

Metadata is required for all activities.

DFIRM-related tasks require a passing QC Report from FEMA's National DFIRM database auto-validation tool for Quality Review (QR) #1, #2, and #5 as described in PM 42. Training materials for this step are available on the Mapping Information Platform (MIP) at MIP User Care>Training Materials.

FEMA will provide download/upload capability for data submittals through the MIP located at <https://hazards.fema.gov>. As each activity is completed, the data must be submitted to the MIP.

The KDA-DWR assigned the activity will respond to any comments generated as a result of the mandatory quality control checks by the Production and Technical Services contractor (PTS) as described in PM 42. The PTS QC process is nationally funded and required on each study.

In cooperation with the FEMA Project Officer, a Project Management Team (PMT) will be established by the KDA-DWR consisting of representatives from the KDA-DWR and AMEC Earth and Environmental, FEMA's regional engineer, the Regional Support Center (RSC), and other appropriate parties. The PMT will be responsible for coordinating the activities identified in this MAS. The FEMA Region will be provided with documentation identifying the established PMT.

Earned Value Data Entry: The MIP Workflow is designed to track the Earned Value of mapping projects. This information is automatically calculated by the MIP, using the Actual cost and schedule of work performed, or "actuals" and comparing them to the expected cost and schedule of work performed, or "baseline".

Once the FEMA Regional office has funded a project FEMA Region VII will complete the “Obligate Project Funds” screen in the MIP. This step establishes the baseline for the project in the MIP, using the cost and schedule information for each task as outlined in this document and agreed to at the completion of the scoping process.

The MIP study workflow allows KDA-DWR to manage the status of these projects at a task level. The cost and schedule information, updated by the KDA-DWR for each contracted task, is compared to the baseline established for those tasks. This information is rolled up to a project level and monitored by the FEMA Region to assess progress and Earned Value.

Earned Value data entry involves updating cost, schedule and performance (physical percent complete) in the MIP by the KDA-DWR.

Once the baseline has been established in the MIP, the KDA-DWR shall input the performance and actual cost to date for each contracted task for each project. This must be completed at minimum **every thirty days** and at the completion of the task. When a task is completed, including all QA/QC activities in this MAS plus the Quality Control Reviews established in PM 42, the KDA-DWR shall enter 100% complete, enter the actual completion cost, and the actual completion date within the Manage Data Development, Manage Preliminary Map Production, or Manage Post Preliminary Processing, as applicable. The “Manage” tasks will be open and accepting updates for up to 90 days after the completion of the last producer task in each module. The MIP shall also be populated with appropriate leverage information regarding who paid for the data provided and the amount of data used by the Risk MAP Project. The KDA-DWR will maintain a Schedule Performance Index (SPI) and Cost Performance Index (CPI) of at least .92. SPRs must be submitted in a timely manner as required.

The Project Officer, as needed, may request additional information on status on an ad hoc basis.

QR6 Check LED			X
QR5 Validate Final DFIRM Database and			X
QR4 Validate BFE Notice and CEO Letters			X
Post-Preliminary Processing	X		
Distribute Preliminary Map Products	X		
QR3 10% Visual Check			X
QR2 Auto Validation of Preliminary Database			X
Perform Independent QA/QC of Preliminary Map Products		X	
Produce Preliminary Map Products	X		
Quality Review (QR1 Auto Validation of Draft DFIRM Database			X
Develop DFIRM Database	X		
Perform Independent QA/QC of Perform Floodplain Mapping		X	
Perform Floodplain Mapping	X		
Perform Independent QA/QC of Hydraulic		X	
Perform Hydraulic Analyses	X		
Perform Independent QA/QC of Hydrologic		X	
Perform Hydrologic Analyses	X		
Acquire Base map	X		
Perform Independent QA/QC of Topographic Data	X		
Develop Topographic Data	X		
Perform Field Survey	X		
Scoping	X		
Program Management	X		
Partner Type	CTP	PTS	Core TO
Partner Name	KDA-DWR	STARR	Core TO
County	SG	SG	All Counties
State	Kansas	Kansas	All States

Perform Project Scoping

Responsible Mapping Partner: KDA-DWR

Scope: The Project Scoping phase typically begins once some level of a community's mapping needs have been identified and FEMA and the community have decided to initiate a Risk MAP Project to identify, assess, plan for, and communicate the community's risks. The scoping process is divided into three main parts – Production Planning, Scoping, and the Post-Scoping Meeting Activities.

Production Planning

Once projects have been prioritized based on the Risk MAP prioritization algorithm, the KDA-DWR will conduct production planning activities to collect data to support project scoping and implementation. The data requested of the community by the KDA-DWR during Risk MAP production planning will include:

- Elevation data
- Local needs for new or re-studied areas to support updates to CNMS (the selected needs data identified during the CNMS process can be obtained through the FEMA Region/RSC and plotted on the scoping map for discussion during the scoping meeting)
- Status of current mapping assessment and planning within project area
- Contact information (including contacts for enhanced stakeholder group and major economic drivers in the watershed)
- Mitigation planning information (including collecting existing plans, plan data and expiration dates, and what technical assistance the communities may desire)
- Community data (e.g., boundaries, demographics)
- Engineering data (e.g., NID information, local studies, new/revised structures)
- Risk assessment data (e.g., local assessment data, non-flood hazards)
- Local communication capabilities, preferences, and demographics
- Insert additional data types

Production planning also presents the first opportunities to communicate with the community about the project. KAD-DWR will complete a Community Communications Assessment to assess the current communication capabilities within the community, then complete a Community Communications Planning Tool to determine how risk communications capability will be built over the project lifecycle. Specific communications, such as notices of impending study, and a Risk MAP Project Initiation Packet will be sent to the local community from KDA-DWR during this phase.

If Production Planning steps are performed by a separate Contractor, submit a report summarizing the data collection efforts and deliverables.

Scoping Meeting

The main objectives of the Scoping Meeting are to: 1) leave with a common, documented understanding of the scope of the project and planned outcomes; and 2) initiate risk assessment, mitigation planning, and risk communication discussions. KDA-DWR will coordinate, setup, and hold the Scoping Meeting to inform the community of the upcoming flood study and of their responsibilities related to it; this includes identifying a time, place, and participants.

Activities to be conducted during the Scoping Meeting are detailed below.

- Review the NFIP in general and the mapping process in particular
- Identify the mapping needs identified by each affected community
- Identify the existing flood hazards in the project area, which can include riverine, coastal (ocean and gulf), lacustrine, alluvial fan, and shallow flooding hazards to be assessed
- Determine the existence and accuracy of available topographic data
- Determine the base map to be used for the production of the Digital Flood Insurance Rate Map (DFIRM)
- Finalize and document (through the Project Participation Agreement) the scope of the project, including determining which flooding sources would be studied
- Provide compliance/adoption information to community officials
- Validate the information captured by the community assessment tool and identify appropriate local spokesperson(s) for the project moving forward
- Initiate development of a Project Risk Communications Plan

Risk MAP Scoping Meetings will include members of an “enhanced stakeholder group” (described below) that will provide a broad local knowledge base to help inform the project. Meeting with this larger group will also allow FEMA to share Risk MAP project data with a wider local audience than has been done before.

Risk MAP Scoping Meeting invitees/attendees are listed below.

- Regional Project Team Lead (usually a Regional Engineer)
- CTP members of the PMT
- Regional Support Center (RSC) members of the PMT
- CTP contractor members of the Project Team
- State NFIP Coordinator(s), if not participating as a CTP
- Other Federal agencies that are active or have a vested interest in the Risk MAP effort in the area (either under an Interagency Agreement with FEMA or as part of their own programs)
- Community Chief Executive Officers (CEOs) and floodplain administrators (FPAs) in the watershed/study area affected
- Indian Tribal entity CEOs and FPAs in the watershed/study area if Indian Tribal lands affected
- Community floodplain managers/building officials that are not identified as FPAs for program purposes
- Community officials that are not identified as FPAs for program purposes
- Community Geographic Information System (GIS) specialists
- Community planners (e.g., mitigation planners, land-use planners, housing/ community development officials, planning and zoning officials)
- State and local emergency management officials
- Economic development and commerce representatives (e.g., local economic development officials, chambers of commerce, large businesses)
- Other stakeholders with ongoing projects

- Representatives of environmental groups
- Representatives of State agencies other than the State NFIP Coordinator(s)

The KDA-DWR will support the FEMA Consultation Coordination Officer (CCO) for this flood study as identified in 44 CFR Part 66. The CCO for this study is identified as Richard Leonard. During the Scoping Meeting, the KDA-DWR must inform the communities of their responsibilities as described under the above-referenced regulation. Following initial contact with the communities, the CTP will prepare and setup the Community Case File and Flood Elevation Determination Docket for the maintenance of all communication and coordination throughout the project as outlined in 44 CFR Parts 66 and 67.

Post-Scoping Meeting Activities

- Select available and needed geospatial data to be used in the study and risk assessments as well as update FEMA's geospatial data tracking systems, National Digital Elevation Program (NDEP) and National Digital Orthophoto Program (NDOP) located at <http://hazards.fema.gov/metadata/NDEP> and <http://hazards.fema.gov/metadata/NDOP>.
- Evaluate selected needs and community requests to determine the community's unmet needs and develop the final Scope of Project document for delivery to FEMA and the community.
- Supply a copy of the approved Scoping Report back to the communities in order to ensure they are aware of which needs were selected to be updated during the flood study.

Based on the discussion of flood data update and base map update requests, KDA-DWR and the FEMA Project Officer will finalize the areas to be included in the final scope of project (based on recommendations provided by the PMT). Areas to be studied by basic or enhanced study methods shall be identified. The following issues will be discussed and refined: Review and Refinement of Flood Hazard Identification Methodologies, Review of Proposed Paneling Scheme, Review and Refinement of Base and Topographic Map Source, and Finalization of Map Production and Database Options.

Identify all stream/coastal reaches where levees are shown as providing protection against the 1-percent-annual-chance flood. KAD-DWR must work with the FEMA Regional Office to request the information specified in Title 44 Code of Federal Regulations (CFR) 65.10, mapping of areas protected by levee systems, from the community or other party seeking continued recognition of the levee and provide this information to the FEMA Regional Office and/or PMT.

Many of the activities at each phase can take place concurrently and are not contingent on the completion of previous tasks. The FEMA Project Officer, working in close coordination with the PMT, has the flexibility of tailoring the Scoping process to best fit the needs of the project. KDA-DWR will evaluate the effective flood data, available base data and selected needs to determine the scope of project to be approved by FEMA.

Standards: All Scoping work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP.

- Final Scoping Report for project documented in MAS will be delivered in accordance with the schedule outlined in Section 6 - Schedule to the Regional Project Officer for approval. Project scope should include a list of watersheds and affected communities to be studied/mapped and a clear assessment of ability of the project to meet metrics.
- QA/QC Plan for the review of the mapping project outlined in this MAS. This will include the checklists developed for that review in accordance with the schedule included in Section 6 - Schedule.
- Updated list of CEO or local FPA contacts or a report from CIS showing this information has been updated.
- Update leverage data in MIP.
- Report documenting levee information transmitted to the FEMA Regional office and/or the PMT.
- Report showing that, if obtained from non-Federal sources, information on available terrain and ortho-imagery data has been entered into the NDEP and NDOP project tracking Web sites, respectively.
- Other deliverables including reports, correspondence, maps, agenda, meeting summaries, tabular data, and geospatial files to be submitted throughout the scoping process.
- For leverage data, evidence that the providing partner is aware of the delivery deadlines and scope for deliverable products, and that they are capable of meeting those requirements.

Perform Project Outreach

(NOTE: The performance of outreach takes place throughout the life of the flood study project. Work with your Region to develop a Project Outreach Plan (POP). Therefore, we recommend tracking the outreach budget, in the MIP Workflow, equally between Produce Preliminary Map Products and Post Preliminary Processing. An alternate tracking method is acceptable with approval from the FEMA Regional Office.)

FEMA's outreach program includes the following meetings (on average): Scoping Meeting, Flood Study Review Meeting, Final CCO Meeting/Public Open House, and a Sustainability Meeting.

Four outreach meetings

Risk communication to the state and local officials will begin during pre-scoping. As indicated earlier, traditional pre-scoping will be enhanced to obtain and review information regarding existing hazard mitigation plans and other data to support risk assessment and potential planning efforts. It will also be used to initiate risk discussions with the community, and obtain critical information regarding local communication protocols. This Risk MAP project will include at least 4, in-person opportunities to build risk awareness at the local level. The actual number of meetings will be determined based on the risk and

need at the local level and determined as part of developing the project-based communication plan. These opportunities consist of:

- **Scoping Meeting.** The traditional scoping meeting will be enhanced to include members of the enhanced stakeholder group, described in detail above in “Perform Project Scoping.”
- **Final CCO meeting(s)/open house.** This meeting will provide local officials an opportunity to verify the appropriate revisions have been made to previously demonstrated information, take ownership of the products, and deliver the results of the project to the local citizenry.

The overarching goal is to create a climate of understanding and ownership of the mapping process at the State and local levels. Well-planned and executed community engagement can reduce political stress, confrontation in the media, and public controversy, which can arise from lack of information, misunderstanding, or misinformation. These outreach activities also can assist FEMA and other members of the KDA-DWR in responding to congressional inquiries.

The KDA-DWR will work with the Regional Office during the initiation of this activity to develop the Project Communications Plan to support the implementation of the mapping project. The Regional Office will have access to many customizable outreach tools that have been developed for this process to support each touchpoint that the PMT has with the community. Volume 1 of the G&S provides specific outreach goals that can be considered

All communication with local governments will be done in accordance with 44 CFR Part 66.

Deliverables: Upon development of a Project Communications Plan, the KDA-DWR shall deliver the following to the FEMA Regional Project Officer in accordance with the schedule outlined in Section 6 – Schedule and include within the TSDN:

- A report detailing outreach and coordination activities
- Backup or supplemental information used in writing this report

Perform Field Survey

Responsible Mapping Partner: KDA-DWR

Scope: To supplement any field reconnaissance conducted during the Project Scoping phase of this project, KDA-DWR shall conduct a detailed field reconnaissance of the specific study area to determine conditions along the floodplain(s), types and numbers of hydraulic and/or flood-control structures, apparent maintenance or lack thereof of existing hydraulic structures, locations of cross sections to be surveyed, and other parameters needed for the hydrologic and hydraulic analyses.

KDA-DWR shall conduct field surveys, including obtaining channel and floodplain cross sections, identifying or establishing temporary or permanent bench marks, and obtaining the physical dimensions of hydraulic and flood-control structures. If appropriate KDA-DWR shall also identify items needed for coastal analyses including land cover, vegetation types, housing, dunes, beach nourishment, and coastal structures. KDA-DWR also shall coordinate with other Mapping Partners that are involved in the Topographic Data Development process regarding ongoing activities and deliverables.

Standards: All Field Survey work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the G&S compliant digital data. Additionally, support documentation and Certification of Work shall be submitted according to Appendix M. Where Technical Support Data Notebook (TSDN) format is used, such shall be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record.

- A report summarizing the findings of the field reconnaissance;
- Maps and drawings that provide the detailed survey results;
- Survey notebook containing cross section and structure data;
- Documentation of the horizontal and vertical datum;
- Digital versions of draft text for inclusion in the FIS report;
- Digital survey data consistent with the DCS (see draft DCS language and coordinate with the Region regarding its appropriate usage) as described in the G&S, and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in the approved QA/QC Plan.

Develop Topographic Data

Responsible Mapping Partner: KDA-DWR

Scope: Topographic/elevation data may be new or existing. New is defined as data that will be flown and processed for the areas specified in this MAS according to the referenced specifications. Existing topographic/elevation data (previously flown and/or processed) may be used to produce flood studies and related products. However, if new data is not to be collected, the FEMA Region should be consulted before leveraging the best available existing topographic to ensure acceptability for the intended level of flood hazard study.

KDA-DWR shall obtain additional topographic data for the floodplain areas to be studied including overbank areas. These data will be used <add or deleted as needed> for hydrologic analysis, hydraulic analysis, coastal analysis, floodplain boundary delineation and/or testing of floodplain boundary standard compliance. KDA-DWR shall gather availability, currency, and accuracy information for existing topographic data covering the communities in this MAS. KDA-DWR shall use topographic data for work in this MAS only if it is better quality than that of the original study or effective studies. In coordination with the partner who performed the scoping task in conjunction with this MAS, ensure that the FEMA Geospatial Data Coordination Policy and Implementation Guide is followed and the data obtained or to be produced are documented properly as per those policies and guidelines.

Requirements for leveraging existing Topographic Data:

KDA-DWR shall use topographic data for the areas described in the Table 1.5 Summary of Topographic Data table. The source of the topographic data must be listed as well. KDA-DWR shall coordinate with other team members conducting field surveys as part of this MAS. Accuracy for the topographic data shall be evaluated based on the current FEMA requirements for flood hazard study level of detail as documented in the G&S.

KDA-DWR also shall update the topographic maps and/or DEMs for the subject flooding sources using the data collected under this Topographic Data Development process and via field surveys. In addition, KDA-DWR shall address all concerns or questions regarding the topographic data development that are raised during the PM 42 defined Validation Process.

Table 1.5 Summary of Topographic Data

New/Existing	Study Area	Accuracy & Age	Source	Contact Info	Approximate Footprint	Use Restrictions
Existing	Countywide	2008 18.5 cm vertical and 36 cm horizontal	City of Wichita and Sedgwick County	Scott Lindebak 316-268-4545	Countywide	none

Standards: All Topographic Data Development work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP and submit support documentation and Certification of Work according to Appendix M (where Technical Support Data Notebook (TSDN) format is used, such shall be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal) so that all parties that needs it can access it as needed in accordance with the schedule outlined in Section 6 - Schedule. A metadata file complying with the NFIP Metadata Profiles, must accompany the uploaded G&S compliant digital data. Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record.

- Report summarizing methodology and results;
- Gridded digital elevation model data;
- TIN data;
- Checkpoint analyses to assess the accuracy of data, including Root Mean Square Error calculations to support vertical accuracy;
- Identification of data voids and methods used to supplement data voids;

- National Geodetic Survey data sheets for Network Control Points used to control remote-sensing and ground surveys;
- Other supporting files consistent with the DCS in the G&S (see draft DCS language and coordinate with the Region regarding its appropriate use);
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in the approved QA/QC Plan;

Perform Independent QA/QC: Topographic Data

Responsible Mapping Partner: KDA-DWR

Scope: KDA-DWR shall perform an impartial review of the mapping data generated by Sedgwick County under Develop Topographic Data to ensure that these data are consistent with FEMA standards and standard engineering practice, and are sufficient to prepare the DFIRM. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer.

Please note FEMA will also be performing periodic audits and overall study/project management to ensure study quality. The CTP will be responsible for addressing any and all comments resulting from independent QC, including re-submittal of deliverables as needed to pass technical review.

Standards: All Topographic Data Development work shall be reviewed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that are identified during the independent QA/QC review.

Acquire Base Map

Responsible Mapping Partner: KDA-DWR

Scope: Base Map Acquisition consists of obtaining the digital base map from the Sedgwick County GIS Department, for the project and as necessary, preparing the base map for use. KDA-DWR shall provide the digital base map.

Standards: All Base Map Acquisition work shall be performed in accordance with the standards specified in Section 5 - Standards. The DCS must be met for this deliverable to be acceptable.

Requirements:

- Obtain digital files (raster or vector) of the base map. In coordination with the partner who performed scoping, ensure that the FEMA Geospatial Data Coordination Policy and Implementation Guide are followed.
- Secure necessary permissions from the map source to allow FEMA’s use and distribution of hardcopy and digital map products using the digital base map, free of charge.
- Review and supplement the content of the acquired base map to comply with the requirements of the G&S.
- For the base map components that have a mandatory data structure, convert the base map data to the format required in the G&S.
- Certify that the digital data meets the minimum standards and specifications that FEMA requires for DFIRM production.

Table 1.6 Summary of Planned Base Map (if known): Update Scoping Report

Study Area	Description	Source
Countywide	2008 Orthophotography 1 foot pixel resolution	City of Wichita and Sedgwick County

Deliverables: In accordance with the G&S, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

- Digital base map files that comply with the G&S requirements
- Digital versions of draft text for inclusion in the FIS report;
- Documentation that FEMA can use the digital base map; and
- Documentation of the Datum, if appropriate.

Perform Independent QA/QC: Base Map

Responsible Mapping Partner: KDA-DWR

Scope: KDA-DWR shall perform an impartial review of the base map acquired by KDA-DWR to ensure it includes data consistent with FEMA standards and sufficient to include on the DFIRM. Any needed edits should be made to the product to comply with FEMA standards.

Please note FEMA will also be performing periodic audits and overall study/project management to ensure study quality. The CTP will be responsible for addressing any and all comments resulting from independent QC, including re-submittal of deliverables as needed to pass technical review.

Standards: All Independent QA/QC work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- A Summary Report that describes the findings of the independent QA/QC review;
- If the data is changed during review, then updated deliverables from previous tasks will be submitted at this time.

Develop Hydrologic Data

Responsible Mapping Partner: KDA-DWR

Scope: KDA-DWR shall perform hydrologic analyses for approximately 1472 square miles of drainage area for the flooding source(s) identified in Scoping Report. KDA-DWR shall calculate peak flood discharges for the 10, 25, 50, 100 and 500 year events using the HEC-RAS computer program. These flood discharges will be the basis for subsequent Hydraulic Analyses performed under this MAS. In addition, KDA-DWR shall address all concerns or questions regarding the hydrologic analyses that are raised during the independent QA/QC review performed by PTS during the QA/QC review.

Table 1.7 Summary of Hydrologic Analysis

Study Area	Method	Miles of Study (New AE, Limited Detailed, Approximate)
Sedgwick East	HEC-HMS	32.7, 0,0 One HEC-HMS model USACE
	Regression	0,26.2,93
Chisholm-Spring Watersheds	HEC-HMS	39.6,36.2,1 Models reviewed previously with levee PMR project
	HEC-HMS	75.3,45.6,6 4 HEC-HMS models
	Regression	0,4,4,8
Arkansas, Little Arkansas and Tributaries	HEC-HMS	53.1,0,39.2 5 HEC-HMS Models
	Regression	0,1.1,75.8

Cowskin Creek	HEC-HMS	75.2,59,45 1 HEC-HMS
Ninnescah River	HEC-HMS	2.5,0,2.5 1 HEC-HMS Model
	Gage/Regression	0,80,406

Standards: All Hydrologic Analyses work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP so that the PTS can access it for an independent QA/QC review in accordance with the schedule outlined in Section 6 - Schedule. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

- Digital copies of all hydrologic modeling (input and output) files for the 10, 25, 50, 100 and 500 year events;
- Digital Summary of Discharges Tables presenting discharge data for the flooding sources for which hydrologic analyses were performed;
- Digital versions of draft text for inclusion in the FIS report;
- Digital versions of all backup data used in the analysis including work maps;
- Format Hydrology Database or Data Delivery consistent with the DCS–in the G&S of all return periods (see draft DCS language and coordinate with the Region regarding its appropriate use);
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in the approved QA/QC Plan;

Perform Independent QA/QC: Hydrologic Data

Responsible Mapping Partner: PTS

Scope: PTS shall perform an impartial review of the technical, scientific, and other information submitted by KDA-DWR specific to the hydrologic analyses to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice, and are sufficient to prepare the DFIRM. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

Please note FEMA will also be performing periodic audits and overall study/project management to ensure study quality. The CTP will be responsible for addressing any and all comments resulting from independent QC, including re-submittal of deliverables as needed to pass technical review.

- Review the submittal for technical and regulatory adequacy, completeness of required information, and supporting data and documentation. The technical review is to focus on the following:
 - Use of acceptable models;
 - Use of appropriate methodology(ies);
 - Correctly applied methodology(ies)/model(s), including QC of input parameters;
 - Comparison with gage data and/or regression equations, if appropriate; and
 - Comparison with discharges for contiguous reaches or flooding sources throughout the watershed.
- Maintain records of all contacts, reviews, recommendations, and actions and make the data readily available to FEMA; and
- If data changed during review, then updated deliverables for previous tasks will be submitted at this time.

Standards: All Independent QA/QC work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- A Summary Report that describes the findings of the independent QA/QC review.
- Recommendations to resolve any problems that are identified during the independent QA/QC review.

Develop Hydraulic Data

Responsible Mapping Partner: KDA-DWR

Scope: KDA-DWR shall perform hydraulic analyses for approximately 1472 miles of the flooding sources listed earlier in Table 1.1. The modeling will include the 10, 25, 50, 100 and 500 year events based on peak discharges computed under Hydrologic Analyses. The hydraulic methods used for this analysis will include base level and enhanced level hydraulic modeling. The base level will use an automated hydraulic model, and use the best available elevation data and the 10, 25, 50, 100 and 500 year . It will not include field surveys, floodways, or mapped BFEs. The enhanced level may include field surveys, floodways, and the 10, 25, 50, 100 and 500 year . Hec-Ras will be used for modeling.

For streams studied by basic or enhanced methods, KDA-DWR shall perform hydraulic analyses for all flooding sources that have a drainage area greater than or equal to 1 mi². For all flood sources that have drainage areas less than 1 mi² and have effective mapping, KDA-DWR shall also perform hydraulic analyses extending to the upstream limits of the effective study.

KDA-DWR shall use the cross-section and field data collected during Field Survey and the topographic data collected during the Topographic Data Collection, when appropriate, to perform the hydraulic analyses. The hydraulic analyses will be used to establish flood elevations and regulatory floodways for the subject flooding sources.

KDA-DWR shall use the FEMA CHECK-2 or CHECK-RAS checking program to verify the reasonableness of the hydraulic analyses. To facilitate the independent QA/QC review, KDA-DWR shall provide explanations for unresolved messages from the CHECK-2 or CHECK-RAS program, as appropriate. In addition, KDA-DWR shall address all concerns or questions regarding the hydraulic analyses that are raised by the PTS during the independent QA/QC review.

Any flooding sources associated with a levee that are mapped as providing protection on effective FIRMs, but will not meet certification requirements for the new FIRMs, will require revised hydraulic analysis. This revised analysis should be done in accordance with the G&S, PMs 34, 43 and others that may be appropriate.

Table 1.8 Summary of Hydraulic Data

Study Area	Method	Total Miles of New Base level or Enhanced Level Hydraulics (Detailed, Limited Detailed, Approximate)
Sedgwick East	HEC-RAS	32.6,0,0 USACE Study
	HEC-RAS	0,26.2,0
Chisholm-Spring Watersheds	HEC-RAS	114.9,81.8,16
	HEC-RAS	16.5,0,0 Models reviewed previously with levee PMR project
Arkansas, Little Arkansas and Tributaries	HEC-RAS	53.5,1.1,115
	HEC-RAS	109.1 Models reviewed previously with levee PMR project
Cowskin Creek	HEC-RAS	75.2,59,45
	HEC-RAS	21.2,0,0 Models reviewed previously by PMR project
Ninnescah River	HEC-RAS	2.5,80,409

Standards: All Hydraulic Data work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, as of the date of this MAS, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP so that the PTS can access it for an independent QA/QC review in accordance with the schedule outlined in Section 6 - Schedule. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded compliant digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

- Digital profiles of the 10, 25, 50, 100 and 500 year events- representing existing conditions using the FEMA RASPLOTT program or similar software for Zone AE streams and published in the FIS. Digital profiles will be completed for limited detailed study streams or Zone A streams but not published in the FIS.;
- Digital Floodway Data Tables for each flooding source that is compatible with the DFIRM database for all Zone AE and Limited Detailed Study streams. Floodway data tables containing the location of the encroachment for each cross section will be provided for Limited Detailed Study Streams, since floodways will not be published on the maps or in the DFIRM database.;
- Digital hydraulic modeling (input and output) files;
- Digital tables with range of Manning’s “n” values;
- Explanations for unresolved messages from the CHECK-2 or CHECK-RAS program, as appropriate;
- **Scope for Limited Detailed Studies (LDS):** The modeling will include the 1-percent-annual-chance events based on peak discharges computed under Hydrologic Analyses and analyses for 10, 25, 50, and 500 year events. The hydraulic methods used for this analysis will include step backwater calculations performed using the latest approved version of the US Army Corps of Engineers Hydraulic Engineering Center River Analysis System (HEC-RAS) computer model.

The LDS stream reaches are located in existing Zone A studies or unmapped areas where the topography data meets the criteria for a detailed study. For LDS’s the CTP shall utilize existing structure data and other data sources to describe the hydraulic opening(s). The openings will be field measured and integrated into the topography model per best fit and field-checked by the CTP. The inverts of hydraulic structures will be used for guidance in developing channels in the topography. The 1% chance floodplain will be developed, mapped and published for the LDS reaches and subsequently mapped as a Zone AE. The LDS data will be included in the Technical Support Data Notebook (TSDN) and may be issued to stakeholders via a Best Available Data letter.

The CTP shall use the cross-section and field data collected during Field Survey and the topographic data collected during the Topographic Data Collection, when appropriate, to perform the hydraulic analyses.

- Digital versions of all backup data used in the analyses;
- Digital versions of draft text for inclusion in the FIS report;

- Format Hydraulic Database or Data Delivery consistent with the Data Capture Standards—in the G&S (see draft DCS language and coordinate with the Region regarding its appropriate use); and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in the approved QA/QC Plan.

Perform Independent QA/QC: Hydraulic Data

Responsible Mapping Partner: PTS

Scope: PTS shall perform an impartial review of the technical, scientific, and other information submitted by KDA-DWR under Hydraulic Analysis to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice, and are sufficient to revise the FIRM. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

Please note FEMA will also be performing periodic audits and overall study/project management to ensure study quality. The CTP will be responsible for addressing any and all comments resulting from independent QC, including re-submittal of deliverables as needed to pass technical review.

- Review the submittal for technical and regulatory adequacy, completeness of required information, and supporting data and documentation. The technical review is to focus on the following:
 - Use of acceptable model(s);
 - Starting water-surface elevations;
 - Cross-section geometry;
 - Manning’s “n” values and expansion/contraction coefficients;
 - Bridge and culvert modeling;
 - Flood discharges;
 - Regulatory floodway computation methods; and
 - Tie-in to upstream and downstream non-revised Flood Profiles.
- Use the CHECK-2 or CHECK-RAS program, as appropriate, to flag potential problems and focus review efforts.
- Maintain records of all contacts, reviews, recommendations, and actions and make the data readily available to FEMA.
- Maintain an archive of all data submitted for hydraulic modeling review. (All supporting data must be retained for three years from the date a funding recipient submits its final expenditure report to FEMA, and once the study is effective all associated data should be submitted to the FEMA library); and

- If data changed during review, then updated deliverables for previous tasks will be submitted at this time.

Standards: All Independent QA/QC work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- A Summary Report that describes the findings of the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- If the data changed during the Hydrologic and/or Hydraulic Analyses QA/QC process, then the updated and verified deliverables from these activities will be resubmitted at this time.

Perform Floodplain Mapping

Responsible Mapping Partner: KDA-DWR

Scope for Base Level Study: KDA-DWR shall delineate the 1 percent-annual-chance floodplain boundaries and any other applicable elements for the flooding sources for which hydrologic, enhanced hydraulic, and/or coastal analyses were performed. KDA-DWR shall incorporate all new or revised hydrologic, hydraulic, and/or coastal modeling and shall use the topographic data acquired under Develop Topographic Data to delineate the floodplain and regulatory floodway boundaries on a digital work map.

Scope for Enhanced Riverine Analysis: KDA-DWR shall delineate the 1- and 0.2-percent-annual-chance floodplain boundaries and the regulatory floodway boundaries (if required) and any other applicable elements for the flooding sources for which hydrologic, enhanced hydraulic, and/or coastal analyses were performed. KDA-DWR shall incorporate all new or revised hydrologic, hydraulic, and/or coastal modeling and shall use the topographic data acquired under Develop Topographic Data to delineate the floodplain and regulatory floodway boundaries on a digital work map.

Scope for Refinement or Creation of Zone A: KDA-DWR shall delineate the 1-percent-annual-chance floodplain boundaries for the flooding sources in the Scoping Report. KDA-DWR shall use existing topographic data or the topographic data acquired under Develop Topographic Data to delineate the floodplain boundaries on a digital work map. All Zone A boundaries must be supported with a model.

KDA-DWR shall incorporate the results of all effective Letters of Map Change (LOMCs) for all affected communities on the DFIRM and provide to the appropriate PTS the required submittals for incorporation into the National Flood Hazard Layer (NFHL). Also, KDA-DWR shall address all concerns or questions regarding Floodplain Mapping that are raised by PTS during the independent QA/QC review.

Standards: All Floodplain Mapping work shall be performed in accordance with the standards specified in Section 5 - Standards. Mapping quality standards must be consistent with PM 38, dated October 17, 2007. KDA-DWR will perform self-certification audits for the Floodplain Boundary Standards, as described in PM 38 and all subsequent revisions, for all flood hazard areas.

The KDA-DWR assigned the floodplain mapping task will complete all activities pertaining to levees in accordance with the G&S, and all levee PMs.

Deliverables: In accordance with the G&S, and upon completion of floodplain mapping for all flooding sources in this project, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP so that the PTS can access it for the independent QA/QC review in accordance with the schedule outlined in Section 6 – Schedule.

- A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the compliant digital data.
- Additionally, support documentation and Certification of Work shall be submitted according to Appendix M. Where Technical Support Data Notebook (TSDN) format is used, such shall be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal. The mapping for the remaining flooding sources including any non-revised digital panels and all merged revised and non-revised floodplain mapping data is to be submitted for the Independent QA/QC review at the completion of this activity.
- **Scope for Limited Detailed Study:** The CTP shall delineate the 1-percent annual chance floodplain boundaries and any other applicable elements for the flooding sources for which limited detailed hydrologic and hydraulic analyses were performed as a Zone AE. The CTP shall incorporate all new or revised hydrologic and hydraulic modeling and shall use the topographic data acquired under Topographic Data Development to delineate the floodplain boundaries on a digital work map. One-percent annual chance BFEs will be provided in the DFIRM database but not shown on the DFIRM panels.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- Draft DFIRM database prepared in accordance with the requirements in G&S;
- Digital versions of input and output for any computer programs that were used consistent with the DCS—in the G&S (see draft language and coordinate with the Region regarding its appropriate usage);
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in the approved QA/QC Plan;
- Any backup or supplemental information including supporting calculations and assumptions used in the mapping required for the independent QA/QC review of Hydrologic, Coastal and /or Hydraulic Analyses and Floodplain Mapping consistent with the DCS—in the G&S (see draft language and coordinate with the Region regarding its appropriate usage);
- An explanation for the use of existing topography for the studied reaches, if appropriate;
- Written summary of the analysis methodologies;
- Digital versions of draft FIS report, Floodway Data Tables and updated profiles including all profiles and tables converted appropriate datum, as well as any other necessary items for the finalization of the preliminary FIS;

Perform Independent QA/QC: Floodplain Mapping

Responsible Mapping Partner: PTS

Scope: PTS shall perform impartial review of the floodplain mapping submitted by KDA-DWR under Floodplain Mapping to ensure that the results of the analyses performed are accurately represented, the

Redelimitation of existing data on new, updated topography is appropriate, and to ensure that the new DFIRM panels accurately represent the information shown on the effective FIRMs and FBFMs for the unrevised areas that are mapped. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

Please note FEMA will also be performing periodic audits and overall study/project management to ensure study quality. The CTP will be responsible for addressing any and all comments resulting from independent QC, including re-submittal of deliverables as needed to pass technical review.

- Review the cross sections for proper location and orientation on the work map and agreement with the Floodway Data Table.
- Review the BFEs (Zones AE) shown on the work map for proper location and agreement with the results of the coastal modeling.
- Review the regulatory floodway widths for agreement with the widths shown in the Floodway Data Table and the results of the hydraulic modeling.
- Review the floodplain widths at cross sections as shown on the work maps to ensure the data matches the Floodway Data Table.
- Review the floodplain boundaries as shown on the work maps to ensure the data matches the Flood Profiles.
- For non-revised floodplain areas, the 1- and 0.2-percent-annual-chance floodplain boundaries agree with the floodplain boundaries shown on the FIRM, the contour lines, other topographic information, and planimetric information shown on the DFIRM base.
- Road and floodplain relationships are maintained for all unrevised areas.
- Review the flood insurance risk zones as shown on the work maps to ensure the data are labeled properly.
- Review the DFIRM mapping files to ensure the data were prepared in accordance with the requirements in G&S.
- Review the metadata files to ensure the data includes all required information shown in the NFIP Metadata Profiles Specifications.

Standards: All Independent QA/QC work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, KDA-DWR shall make the following products available to FEMA by uploading the digital data to MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- A Summary Report that describes the findings of the QA/QC review, noting any deficiencies in or agreeing with the mapping results;
- Recommendations to resolve any problems that are identified during the independent QA/QC review;

- An annotated work map with all questions and/or concerns indicated, if necessary; and
- If data changed during review, then updated deliverables for previous tasks will be submitted at this time.

Develop DFIRM Database

Responsible Mapping Partner: KDA-DWR

Scope: KDA-DWR shall prepare the database in accordance with G&S, for upload to the MIP. KDA-DWR will be preparing the database for this project in the Standard format. The database shall be produced in accordance with the G&S. KDA-DWR shall coordinate with appropriate Mapping Partners, as necessary, to resolve any problems that are identified during development of the DFIRM Database.

Standards: All DFIRM Database work shall be performed in accordance with the standards specified in Section 5 - Standards. Perform appropriate QR activities.

Deliverables: In accordance with G&S, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP. Additionally, the Technical Support Data Notebook format described in G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

- DFIRM database files prepared in accordance with the requirements in G&S and in the required format(s). The exception to this is that currently the City of Mulvane is mapped with the City split into it's respective county, rather than the entire City mapped within the county containing the largest portion of the City. Due to inconsistencies in terrain and mapping methodologies as the City of Mulvane will not be merged as part of this project but rather the northern portion of the City remain in Sedgwick County and the southern portion of the City remain in Sumner County.
- A metadata file complying with the FEMA NFIP Metadata Profile Specifications.

Produce Preliminary Map Products

Responsible Mapping Partner: KDA-DWR

Scope: KDA-DWR shall apply the final FEMA DFIRM graphic and database specifications to the DFIRM files produced under Floodplain Mapping. This work shall include adding all required annotation, line pattern, area shading, and map collar information (e.g., map borders, title blocks, legends, notes to user). KDA-DWR shall coordinate with those Mapping Partners responsible for Floodplain Mapping and/or Redelineation, as necessary, to resolve any problems that are identified during development of the DFIRM Database and graphics. There will be a total of 227 panels with 213 printed panels and 14 panels that will not be printed they break down as follows: 3 - 24K plus 6 non-print for a total of 9; 52 - 12K plus 8 non-print for a total of 60; 158 - 6K..

Preliminary Summary of Map Actions (SOMA) Preparation: The KDA-DWR shall prepare Preliminary SOMAs for all affected communities, if appropriate. The SOMA shall list pertinent information regarding LOMCs that will be affected by the issuance of the DFIRM (i.e., superseded, incorporated, revalidated).

Standards: All DFIRM Database work shall be performed in accordance with the standards specified in Section 5 - Standards. All work must pass the automated and visual “National QA/QC” reviews prior to the distribution of the preliminary copies of the DFIRM and FIS report and the Preliminary SOMA. Perform appropriate QR activities.

Deliverables: In accordance with the G&S, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the compliant digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- Preliminary DFIRM database or revised Preliminary DFIRM database prepared in accordance with the requirements in G&S;
- The City of Mulvane lies on the southern border of SG County. The City is split between two counties and a portion of the City lies in Sumner County. The existing DFIRM databases currently map each portion of the City in their respective county, rather than mapping the City as a whole in the County which contains the largest percentage of area. Due to the differences in topography and the level of detail of the effective DFIRM in the City of Mulvane in Sumner County, the City will not be combined and mapped in a single county as part of this remapping process. Instead the portion of Mulvane in SG County will remain in SG County and the portion of the City in Sumner County will remain in Sumner County.
- Provide assessment products as defined during scoping process;
- FIS Report and the Preliminary SOMA prepared using the SOMA Tool on the MIP;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale;
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in approved QA/QC Plan;
- Passing Quality Review report;
- QUALITY REVIEW 2: Auto Validation of Preliminary DFIRM Database;
- QUALITY REVIEW 3: Visual Review of Preliminary Map Panels and FIS; and
- QUALITY REVIEW 4: Validate BFE Notice and CEO Letters; Publish Proposed Base Flood Elevations (BFEs) in Federal Register.
- Update CNMS with the final documentation showing newly validated and/or areas with remaining needs, as appropriate.

Perform Independent QA/QC: Produce Preliminary Map Products

Responsible Mapping Partner: PTS

Scope: Upon completion of the floodplain mapping and redelineation activities, PTS shall perform an impartial review of the DFIRM spatial database to determine if it meets current FEMA database

specifications. In addition, PTS shall review the DFIRM to ensure it meets current FEMA graphic specifications. KDA-DWR shall coordinate with other Mapping Partners, as necessary, to resolve any problems identified during this QA/QC review. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer.

Please note FEMA will also be performing periodic audits and overall study/project management to ensure study quality. The CTP will be responsible for addressing any and all comments resulting from independent QC, including re-submittal of deliverables as needed to pass technical review.

This work shall ensure that the requirements below are met.

- All required DFIRM features are accurately and legibly labeled and following the examples shown in the FEMA DFIRM specifications. This includes all flood insurance risk zones, BFEs, gutters, cross sections, transects, studied streams and shorelines, mapped political entities, and all roads within and adjacent to the 1-percent-annual-chance floodplains.
- All DFIRM features are correctly symbolized with the appropriate symbol, line pattern, or area shading and follow the requirements in G&S.
- All map collar information is complete, correct, and follows the requirements specified in G&S.
- Preliminary DFIRM database is in a GIS file and database format as specified in FEMA's G&S, and conform to those specifications for content and attribution.
- DFIRM database files are in one of the database formats specified in FEMA's G&S, and conform to those specifications for content and attribution.
- Assess risk assessment products for compliance with Guidance documents.

Standards: All DFIRM Database Development work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 – Schedule.

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies in or agreeing with the mapping results and the results of all automated or manual QA/QC steps taken during the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review;
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary; and
- If the data changed during the QA/QC process, then the updated deliverables from Floodplain Mapping and Redelineation will be resubmitted at this time.

Distribute Preliminary Map Products

Responsible Mapping Partners: KDA-DWR

Scope: Preliminary Map Products consists of the final preparation, review, and distribution of the Preliminary copies of the DFIRM and FIS report and the Preliminary SOMA and Risk Assessment products for community officials and the general public review and comment. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. The activities to be performed are summarized below.

Preliminary Transmittal Letter Preparation: The KDA-DWR shall prepare letters and transmit the Preliminary copies of the DFIRM and FIS report and related enclosures to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA. This letter may be prepared for FEMA only or for signature by FEMA and KDA-DWR.

Distribution of Preliminary DFIRM and FIS Report: The KDA-DWR shall distribute the Preliminary copies of the DFIRM and FIS report to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

News Release Preparation: The KDA-DWR shall use the BFEs on the Web tool in accordance with PM 44 to create BFE notices for studies that result in new or modified BFEs. The KDA-DWR shall prepare the BFE determination letters as well as the news release notifications of BFE changes for all affected communities. The KDA-DWR shall perform QA/QC reviews of the notices for accuracy and compliance with FEMA format requirements. The KDA-DWR shall file the notifications for later submittal to FEMA for review.

Deliverables: In accordance with the G&S, KDA-DWR shall make the appropriate deliverables available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

Preliminary transmittal letters shall be prepared and transmitted. These letters and any additional letters requested by FEMA shall be prepared in accordance with the current version of the FEMA *Document Control Procedures Manual* and in conjunction with Guidance provided by the Region and/or its contractor.

- A preliminary copy of the DFIRM and FIS report, including all updated data tables and Flood Profiles shall be mailed to the Chief Executive Officer (CEO) and floodplain administrator of each affected community, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.
- Preliminary SOMAs, prepared in accordance with FEMA requirements, shall be provided as appropriate.
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the final preparation of the preliminary DFIRM shall be provided as outlined in the approved QA/QC Plan.
- KDA-DWR will submit a summary of outreach activities and any changes made in the outreach approach based on the actual implementation.

Post-Preliminary Map Production

Responsible Mapping Partners: KDA-DWR and FEMA.

Scope: Post-Preliminary Map Production includes coordination with FEMA and the Community to schedule a Community Meeting(s) for review of the Preliminary DFIRM, if required. This activity consists of finalizing the DFIRM and FIS report after the Preliminary copies of the DFIRM and FIS report have been issued to community officials and the public for review and comment. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. The activities to be performed are summarized below.

Community Coordination Meeting: If a community coordination meeting is required it is recommended that it be held within 60 days of the issuance of the Preliminary DFIRM and, KDA-DWR shall arrange for and verify that the following activities are completed:

- Establish invitee list,
- Schedule meeting date and place,
- Complete and Distribute Meeting Notice/Letter,
- Record Meeting Minutes, and
- Identify any/all communities with BFE changes for required appeal period.

Initiation of Statutory 90-Day Appeal Period: When required, upon completion of a 30-day community comment period and/or final coordination meeting with the affected communities, FEMA and/or KDA-DWR shall arrange for and verify that the following activities are completed in accordance with the current version of the FEMA G&S, appropriate PMs and Document Control Procedures Manual:

- The KDA-DWR shall prepare the appropriate notices (Proposed Rules) that are to be published in the *Federal Register*. The KDA-DWR shall then deliver those notices to FEMA for publication.
- Proposed BFE determination letters are sent to the community CEOs and floodplain administrators.
- Ensure that news release notifications of BFE changes are published in prominent newspapers with local circulation in accordance with 44 CFR.

Resolution of Appeals and Protests: KDA-DWR shall review and resolve appeals and protests received during the 90-day appeal period. For each appeal and protest, the following activities shall be conducted as appropriate:

- Initial processing and acknowledgment of submittal;
- Technical review of submittal;
- Preparation of letter(s) requesting additional supporting data;
- Performance of revised analyses;

- Preparation of a draft resolution letter for appeals and protests for signature with FEMA and revised DFIRM and FIS report materials for FEMA review; and
- Update CNMS as appropriate when resolving appeals/protests

KDA-DWR shall mail all associated correspondence upon authorization by FEMA. While protests may be signed by a partner only, appeals must have at least a FEMA co-signature.

Preparation of Special Correspondence: KDA-DWR shall support FEMA in responding to comments not received within the 90-day appeal period (referred to as “special correspondence”) including drafting responses for FEMA review when appropriate and finalizing responses for co-signature. KDA-DWR also shall mail the final correspondence (and enclosures, if appropriate) and distribute appropriate copies of the correspondence and enclosures upon receipt of authorization from FEMA.

Revision of FIRM and FIS Report: If necessary, KDA-DWR shall work together with FEMA to revise the DFIRM and FIS report and shall distribute revised Preliminary copies of the DFIRM and FIS report to the CEO and floodplain administrator of each affected community, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

Final SOMA Preparation KDA-DWR shall prepare Final SOMAs for the affected communities with assistance from FEMA, as appropriate.

Processing of Letter of Final Determination: The KDA-DWR shall work with FEMA to establish the effective date for the DFIRM and FIS report, and shall prepare Letters of Final Determination (LFDs) for each affected community for FEMA review in coordination with the Region and its contractor, and in accordance with the FEMA *Document Control Procedures Manual*. FEMA or its designated contractor shall mail the final signed LFDs and enclosures and distribute appropriate copies of the signed LFDs. All work must pass the automated and visual “National QA/QC” reviews and review of LFD prior to the distribution of the LFD.

The KDA-DWR shall prepare the appropriate notices (Final Rules) that are to be published in the *Federal Register*. The KDA-DWR shall then deliver those notices to FEMA for publication.

Processing of Final DFIRM and FIS Report for Printing: KDA-DWR shall prepare final reproduction materials for the DFIRM and FIS report and provide these materials to PTS, and MSC in accordance with appropriate Procedure Memorandums for printing by the Map Service Center. KDA-DWR shall also prepare the appropriate paperwork to accompany the DFIRM and FIS report (including Print Processing Worksheet, Printing Requisition Forms, and Community Map Actions Form) and transmittal letters to the community CEOs.

Revalidation Letter Processing: KDA-DWR shall prepare and distribute letters for FEMA signature to the community CEOs and floodplain administrators to notify the affected communities about LOMCs for which determinations will remain in effect after the DFIRM and FIS report become effective.

Archiving Data: KDA-DWR shall ensure that technical and administrative support data are packaged in the FEMA required format and stored properly in the library archives until transmitted to the FEMA Engineering Study Data Package Facility. In addition, the KDA-DWR will maintain copies of all data for a period of no less than three years.

Standards: All Post Preliminary DFIRM work shall be performed in accordance with the standards specified in Section 5 - Standards. Perform appropriate QR activities.

Deliverables: In accordance with the G&S, KDA-DWR shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the compliant digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- Documentation that the news releases were published in accordance with FEMA requirements;
- Documentation that the appropriate *Federal Register* notices (Proposed and Final Rules) were published in accordance with FEMA requirements;
- Draft and final Special Correspondence (and all associated enclosures, backup data, and other related information) for FEMA review and signature, as appropriate;
- Draft and final Appeal and Protest acknowledgment, additional data, and resolution letters (and all associated enclosures, backup data, and other related information) for FEMA review and signature, as appropriate;
- Draft and final LFDs (and all associated enclosures, backup data, and other related information) for FEMA review and signature;
- DFIRM digital files and final FIS report materials including all updated data tables and Flood Profiles;
- Paperwork for the final DFIRM and FIS report materials;
- Transmittal letters for the printed DFIRM and FIS report;
- LOMC Revalidation Letters, if appropriate;
- Completed, organized, and archived technical and administrative support data; and
- Completed, organized, and archived case files and flood elevation dockets;
- CNMS updates.

SECTION 2—TECHNICAL AND ADMINISTRATIVE SUPPORT DATA SUBMITTAL

The Project Team members for this Risk MAP Project that have responsibilities for activities included in this MAS shall comply with the data submittal requirements summarized below and in appropriate Procedure Memorandums.

All supporting documentation for the activities in this MAS shall be submitted according to Appendix M, include a flood elevation determination docket (FEDD) folder. Where Technical Support Data Notebook (TSDN) format is used, such shall be submitted in accordance with Section 2 – Technical and Administrative Support Data Submittal. Table 2.1 Mapping Activities and Applicable TSDN Sections indicates the sections of the TSDN that apply to each mapping activity. Submittals must be made to the appropriate PTS for a review of required materials. As needed, the CTP will work with the PTS to ensure that all required documents are included in the TSDN and will respond to requests from the PTS for additional information.

If any issues arise that could affect the completion of an activity within the proposed scope or budget, the responsible Mapping Partner shall complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submitted to FEMA. The SPR is to describe the issue and propose possible resolutions. (For additional information on SPRs, refer to the G&S.)

Table 2.1- Mapping Activities and Applicable TSDN Sections

Mapping Activities	TSDN Section												
	General Documentation	Special Problem Reports	Telephone Conversation Reports	Meeting Minutes/ Reports	General Correspondence	Hydrologic Analyses	Engineering Analyses	Hydraulic Analyses	Key to Cross-Section Labeling	Key to Transect Labeling	Draft FIS Report	Mapping Information	Miscellaneous Reference Information
Scoping		X	X	X	X							X	X
Outreach													
Perform Field Survey		X	X	X	X	X		X	X	X			X
Develop Topographic Data		X	X	X	X							X	X
Perform Independent QA/QC: Topographic Data		X	X	X	X							X	X
Acquire Base Map		X	X	X	X	X		X	X	X	X	X	X
Develop Hydrology/ Coastal		X	X	X	X	X		X	X	X	X		X
Perform Independent QA/QC: Hydrologic Data		X	X	X	X	X		X	X	X	X		X
Develop Hydraulic Data		X	X	X	X	X		X	X	X	X		X
Perform Independent QA/QC: Hydraulic Data		X	X	X	X	X		X	X	X	X		X
Perform Flood-plain Mapping (and Re-delineation)		X	X	X	X	X		X	X	X		X	X
Perform Independent		X	X	X	X	X		X	X	X		X	X

QA/QC: Flood Plain Mapping													
Develop DFIRM Database		X	X	X	X							X	X
Produce/Distribute Preliminary Map Products		X	X	X	X							X	X
Post-Preliminary Map Production		X	X	X	X							X	X

SECTION 3—PERIOD OF PERFORMANCE (for CTPs)

The mapping activities outlined in this MAS will be completed as specified in the Agreement Articles of the Cooperative Agreement. The Mapping Activities may be terminated at the option of FEMA or KDA-DWR in accordance with the provisions of the Partnership Agreement dated September 1, 1999. If these mapping activities are terminated, all products produced to date must be returned and updated into the MIP and the remaining funds from uncompleted activities, provided by FEMA for this MAS, will be returned to FEMA.

SECTION 4—FUNDING/LEVERAGE (For CTP, OFA and/or Community)

FEMA is providing funding, in the amount of -----, to KDA-DWR for the completion of this Risk MAP Project. KDA-DWR shall provide any additional resources required to complete the assigned activities for this Risk MAP Project. During the scoping process, additional needs may be identified. Activities associated with any additional needs would be performed based on availability of additional funds. The leverage listed below includes in-kind services and blue book values for acquired information (i.e. base map data, hydrologic and hydraulic analyses, etc.). These values should also be reported in the MIP by the appropriate task owner. The current Blue Book (2.0) is dated January 2009 and can be downloaded from FEMA’s Information Resource Library at http://www.fema.gov/plan/prevent/fhm/ctp_info.shtm#4. KDA-DWR shall complete Table 4.1 Contribution and Leverage.

Table 4.1 Contribution and Leverage

Flooding Source	Reach Limits	Reach Length	Leverage			
			Survey	Hydrology	Hydrology	Floodplains
Sedgwick East						
Spring Branch (Leverage)	From county boundary to .5 miles upstream of Harry St.	5	5	5	5	5
Pawnee Creek (Leverage)	From county boundary to just downstream of Sunnybrook Dr.	1.4	1.4	1.4	1.4	1.4
Pawnee Creek Trib. 1 (Leverage)	From confluence with Pawnee Creek to just downstream of Sunnybrook Dr.	0.2	0.2	0.2	0.2	0.2
Spring Branch Trib. 1 (Leverage)	From confluence with Spring Branch to just downstream of Rebecca Ln.	3	3	3	3	3
Spring Branch Trib. 1 .1 (Leverage)	From confluence with Spring Creek Trib. 1 to just downstream of 31st St.	1.4	1.4	1.4	1.4	1.4
Spring Branch Trib. 4 (Leverage)	From confluence with Spring Branch to just downstream of Central	3.2	3.2	3.2	3.2	3.2
Spring Branch Trib. 5 (Leverage)	From confluence with Spring Creek to .4 miles upstream of Harry St.	0.6	0.6	0.6	0.6	0.6
Spring Branch Trib. 6 (Leverage)	From confluence with Spring Branch to just downstream of Gilbert St.	0.7	0.7	0.7	0.7	0.7

Fourmile Branch (Leverage)	From county boundary to just downstream of 29th St.	6.8	6.8	6.8	6.8	6.8
Republican Creek (Leverage)	From confluence with Fourmile Creek to just upstream of Burlington Northern & Santa Fe Railroad	3.9	3.9	3.9	3.9	3.9
Terradyne Fork (Leverage)	From confluence with Republican Creek to county boundary	0.4	0.4	0.4	0.4	0.4
West Fork Fourmile Creek (Leverage)	From confluence with Fourmile Creek to .7 miles upstream of 22nd St.	4.1	4.1	4.1	4.1	4.1
West Fork Fourmile Creek Trib. 1 (Leverage)	From confluence with West Fork Fourmile Creek to just upstream of 21nd St.	0.4	0.4	0.4	0.4	0.4
West Fork Fourmile Creek Trib. 2 (Leverage)	From confluence with West Fork Fourmile Creek to just upstream of west bound ramp of K 96	0.4	0.4	0.4	0.4	0.4
Unnamed Trib 2 to Fourmile Creek (Leverage)	From confluence with Fourmile Creek to .2 miles upstream of 21st	0.8	0.8	0.8	0.8	0.8
Unnamed Trib to Fourmile Creek (Leverage)	From confluence with Fourmile Creek to just downstream of Camden Chase St.	0.4	0.4	0.4	0.4	0.4
Subtotal		32.7	32.7	32.7	32.7	32.7
Blue Book values						
Incremental Leverage per MIP Task						
Chisholm - Spring Watersheds						

Chisholm Creek	From confluence with Little Arkansas River to .2 miles upstream of I 235	4.1	4.1	4.1	4.1	4.1
West Branch Chisholm Creek	From confluence of Chisholm Creek to just upstream of 77th St.	4	4	4	4	4
Middle Fork Chisholm Creek	From confluence with Wichita Valley Center Drainage Canal Middle to just upstream of I 235	3	3	3	3	3
Trib. Middle Fork Chisholm Creek	From confluence with Middle Fork Chisholm Creek to upstream of 45th street	0.6	0.6	0.6	0.6	0.6
Oversight Creek	From 45th Street to .5 miles upstream	0.5	0.5	0.5	0.5	0.5
West Drain North	From Middle Fork Chisholm Creek to upstream of 45th St.	1.4	1.4	1.4	1.4	1.4
West Drain	From confluence with Wichita Drainage Canal to Middle Fork Chisholm Creek	3	3	3	3	3
Pleasant Valley Trib	From confluence Wichita Valley Center Drainage Canal Middle to just upstream of 40th St.	0.6	0.6	0.6	0.6	0.6
Wichita Drainage Canal	From confluence with Arkansas River to confluences with West Drain and Center Drain	6.3	6.3			
Subtotal		23.5	23.5	17.2	17.2	17.2
Blue Book values						
Incremental Leverage per MIP Task						

Arkansas and Little Arkansas River and Tributaries						
Arkansas River	From Diversion Structure to County Boundary	23.9	23.9	23.9	23.9	23.9
Arkansas River	From Confluence with Wichita Valley Center Drainage Canal to Diversion Structure	21	21	21	21	21
Arkansas River	From County Boundary to Confluence with Wichita Valley Center Drainage Center Canal	5.7	5.7	5.7	5.7	5.7
Little Arkansas River	From Diversion Structure to County Boundary	8.2	8.2	8.2	8.2	8.2
Little Arkansas River	From confluence with Chisholm Creek to Diversion Structure	10.6	10.6	10.6	10.6	10.6
Little Arkansas River	From confluence with Arkansas River to Diversion Structure	7.5	7.5	7.5	7.5	7.5
Jester Creek	From just downstream of 109th St. to confluence with Little Arkansas River	4	4	4	4	4
Big Slough North Upper	From Confluence with Arkansas River to just upstream of 199th St.	4.3	4.3	4.3	4.3	4.3
Wichita Valley Center Drainage Canal Upper	From confluence with Arkansas River to Diversion Structure	3	3	3	3	3
Wichita Valley Center Drainage Canal Middle		3.2	3.2	3.2	3.2	3.2

Wichita Valley Center Drainage Canal Lower	From confluence with Arkansas River to Diversion Structure	16.8	16.8	16.8	16.8	16.8
Subtotal		108.2	108.2	108.2	108.2	108.2
Blue Book values						
Incremental Leverage per MIP Task						
Totals		164.4	164.4	158.1	158.1	158.1

Topography	Extents	Actual Costs
Detailed Topography	Countywide - 1009 Square miles	

Final leverage dollars or units shall be entered as applicable within the Manage Data Development task in the MIP workflow.

SECTION 5—STANDARDS

The standards relevant to this MAS are provided in Tables 5.1 Applicable Standards for Project Activities and 5.2 Project Activities and Applicable Portions of FEMA G&S. Information on the correct volume and appendix of the G&S to be referenced for each mapping activity are summarized in Table 5.2 for convenience. However, all mapping partners working on a Risk MAP Project are responsible for complying with all appropriate requirements in FEMA’s G&S including published draft guidelines and PMs available at the time the MAS was written.

These guidelines may be downloaded from the FEMA Flood Hazard Mapping website at http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm. The Geospatial Data Coordination Policy and the Geospatial Data Coordination Implementation Guide are located at <https://hazards.fema.gov> under “Tools & Links.”

Table 5.1- Applicable Standards for Project Activities

Applicable Standards	Activities																	
	Scoping	Outreach	Perform Field Survey	Develop Topographic Data	Perform Independent QA/QC: Topographic Data	Acquire Base Map	Coastal Analysis	Perform Independent QA/QC: Coastal Analysis	Develop Hydrologic Data	Perform Independent QA/QC: Hydrologic Data	Develop Hydraulic Data	Perform Independent QA/QC: Hydraulic Data	Perform Floodplain Mapping (inc. Redelineation)	Perform Independent QA/QC: Floodplain Mapping	Develop DFIRM Database	Produce/Distribute Preliminary Map Products	Post-Preliminary Map Production	Risk Assessment
<i>Guidelines and Specifications for Flood Hazard Mapping Partners and Procedure Memorandums</i>	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
FEMA’s Geospatial Data Coordination Policy	X			X		X												
FEMA’s Geospatial Data Coordination Implementation Guide	X			X		X												
Engineer Manual 1110-2-1003, <i>Hydrographic Surveys</i> (USACE), January 1, 2002	X		X															
“Numerical Models Accepted by FEMA for NFIP Usage,” Updated April 2003	X						X	X	X	X	X	X						
NFIP Metadata Profile Specifications	X			X	X								X	X	X	X	X	X
<i>Document Control Procedures Manual</i>	X	X															X	X
<i>44 Code of Federal Regulations Parts 65, 66 and 67</i>	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Data Sharing Agreement</i>																		

Make updates in text where applicable

Table 5.2- Project Activities and Applicable Portions of FEMA Guidelines and Specifications

Activity Description	Applicable Volume, Section/Subsection, and Appendix
Scoping	Volume 1
	Appendix I
	Scoping Report document
	44 Code of Federal Regulations Part 66 and 67
Outreach	Volume 1
	Appendix I
Perform Field Survey	Volume 1
	Appendices A, B, C, F, and M
Develop Topographic Data and Perform Independent QA/QC: Topographic Data	Volume 1, Appendices A and M
Acquire Base Map and Perform Independent QA/QC: Base Map	Volume 1
	Appendices A, K, L, and M
Develop Hydrologic Data and Perform Independent QA/QC: Hydrologic Data	Volume 1 Appendices A, C, E, F, G, H, and M
Develop Hydraulic Data and Perform Independent QA/QC: Hydraulic Data	Volume 1 Appendices A, B, C, E, F, G, H, and M
Perform Coastal Analysis Hazard Analyses and Perform Independent QA/QC: Coastal Analysis	Volume 1
	Appendices A, B, C, D, H, and M
	Coastal Guidelines Updates”
	PM 47
Perform Floodplain Mapping and Perform Independent QA/QC: Floodplain Mapping (including Redelineation/Digitization)	Volume 1
	Appendices C, D, E, F, G, H, K, L, and M
	PM 52

Activity Description	Applicable Volume, Section/Subsection, and Appendix
Produce Preliminary Map Products and Perform Independent QA/QC: Produce Preliminary Map Products	Volume 1 ----- Appendices K, L, and M ----- PM 50, 51
Distribute Preliminary Map Products and Perform Independent QA/QC: Distribute Preliminary Map Products	Volume 1 ----- Appendices J, K, L, and M
Post-Preliminary Map Production	Volume 1 ----- Appendices J, K, L, and M ----- PM 42, 44

SECTION 6— SCHEDULE

The tasks documented in this Mapping Activity Statement shall be completed in accordance with the project schedule. KDA-DWR will use the MIP to report progress, entering Cost to Date, Percent Complete to Date, and “As of” date in the “Update Information” section of the Task Information screen for each task. Within three weeks of funds award, KDA-DWR will provide FEMA and the RSC with the initial schedule for each county for entry into the MIP. The data reported in the MIP will include estimated and actual completion dates, budget and amount spent, and the percent complete of each task identified in the Mapping Activity Statement. Each study area identified will have separate schedule established.

KDA-DWR will update the MIP by the last day of each month, and when a task is completed.

SECTION 7—CERTIFICATIONS

Data Capture Standards

- **DCS Certification Form**

Perform Field Surveys and Develop Topographic Data

A Registered Professional Engineer or Licensed Land Surveyor shall provide an accuracy statement for field surveys and/or topographic data used and shall certify these data meet the accuracy statement provided. Data accuracy should be stated used the Federal Geographic Data Committee National Standards for Spatial Data Accuracy, but the American Society for Photogrammetry and Remote Sensing accuracy reporting standards are acceptable.

Acquire Base Map

- A community official or responsible party shall provide written certification that the digital data meet FEMA minimum standards and specifications.
- The responsible Mapping Partner shall provide documentation that the digital base map can be used by FEMA. Please note that uploading base map data to the MIP does not constitute agreement that the digital base map can be used by FEMA. Documentation that the digital base map can be used by FEMA is still required.
- Certifications must be made at the time the intermediate data is submitted. For example, if hydrologic data is submitted, certification will be required at the time it is submitted.

Develop Hydrologic Data, Develop Hydraulic Data, Perform Coastal Analysis, and Perform Floodplain Mapping

- A Registered Professional Engineer shall certify hydrologic and hydraulic and coastal analyses and data in accordance with 44 CFR 65.6(f).
- Any levee systems to be accredited will be certified by the levee owner or other appropriate entity in accordance with 44 CFR 65.10.

SECTION 8—TECHNICAL ASSISTANCE AND RESOURCES

Project Team members may obtain copies of FEMA-issued LOMCs, archived engineering backup data, and data collected as part of the mapping needs assessment and/or CNMS process from FEMA and/or your Regional Project Officer.

General technical and programmatic information can be downloaded from the FEMA website at http://www.fema.gov/plan/prevent/fhm/frm_soft.shtm Specific technical and programmatic support may be provided through FEMA and/or its contractor; such assistance should be requested through the FEMA Project Officer specified in Section 12 – Points of Contact.

Project Team members also may consult with the FEMA Regional Project Officer to request support in the areas of selection of data sources, digital data accuracy standards, assessment of vertical data accuracy, data collection methods or subcontractors, and GIS-based engineering and modeling training.

Assistance with the MIP may be requested at miphelp@riskmapcds.com

SECTION 9—CONTRACTORS (CTP)

KDA-DWR intends to use the services of AMEC Earth and Environmental as a contractor for this Risk MAP Project. KDA-DWR shall ensure that the procurement for all contractors used for this Risk MAP Project complies with the requirements of 44 CFR 13.36.

SECTION 10—REPORTING (CTP)

Financial Reporting: Because funding has been provided to KDA-DWR by FEMA, financial reporting requirements for KDA-DWR will be in accordance with Cooperative Agreement Articles. KDA-DWR shall also refer to 44 CFR 13.41.

KDA-DWR shall provide financial reports to the FEMA Regional Project Officer and Assistance Officer

in accordance with the terms of the signed Cooperative Agreement for this MAS.

Status Reporting: Status reports will be submitted on a quarterly basis in accordance with the financial reporting submittals. KDA-DWR shall refer to 44 CFR 13.41 to obtain minimum requirements for status reporting. The Project Officer, as needed, may request additional information on status.

Progress reporting shall utilize the MIP to the extent possible. Other progress reports are not anticipated. When SEMA provides deliverables through the MIP, KDA-DWR shall ensure the MIP reflects the status of the related task. KDA-DWR will submit two (2) copies of the MIP Flood Engineering Report and other appropriate reports to the FEMA Assistance Officer for quarterly progress reporting.

The Cost Performance Index (CPI) and the Schedule Performance Index (SPI) in the MIP is used to monitor partner performance and to determine future funding eligibility. Recipients must adhere to the CPI and SPI requirements by being no more than 10% under or over the baselined values. The CTP partner is required to report on the earned value of projects that are in the MIP on a quarterly basis and must give explanations for variances outside of the 10% tolerance defined above. SEMA must develop and implement a Corrective Action Plan (CAP) when SEMA is outside of the 10% tolerance. A CAP must define the reason for the variance and the intended resolution. The FEMA Regional and National Office must be coordinated with when CAPs are developed.

The Project Officer, as needed, may request additional information on status on an ad hoc basis.

Earned Value Data Entry:

The Cost Performance Index (CPI) and the Schedule Performance Index (SPI) in the MIP is used to monitor partner performance and to determine future funding eligibility. Recipients must adhere to the CPI and SPI requirements by being no more than 7% under or over the baselined values. The CTP partner is required to report on the earned value of projects that are in the MIP on a quarterly basis and must give explanations for variances outside of the 7% tolerance defined above. FEMA must develop and implement a Corrective Action Plan (CAP) when KDA-DWR is outside of the 7% tolerance. A CAP must define the reason for the variance and the intended resolution. The FEMA Regional and National Office must be coordinated with when CAPs are developed.

SECTION 11—PROJECT COORDINATION

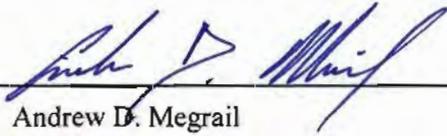
Throughout the project, all members of the Project Team will coordinate, as necessary, to ensure the products meet the technical and format specifications required and contain accurate, up-to-date information. Coordination activities may include:

- Meetings, teleconferences, and video conferences with FEMA and other Project Team members quarterly;
- Updates to the MIP and other FEMA status information systems in accordance with requirements in Volumes 1 and 2 of G&S; and
- E-mail, facsimile transmissions, and letters, as required.

SECTION 12—POINTS OF CONTACT (CTP)

The points of contact for this Risk MAP Project are Bob Franke, the FEMA Regional Project Officer; Andrew Megrail, the Project Manager for KDA-DWR; or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. When necessary, any additional FEMA assistance should be requested through the FEMA Regional Project Officer.

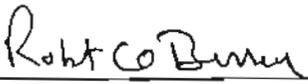
Each party has caused this MAS to be executed by its duly authorized representative.



Andrew D. Megrail
Project Manager
KDA-DWR

July 21, 2010

Date



Robert G Bissell
Director, Mitigation Division
Federal Emergency Management Agency, Region VII

7/26/10

Date