KANSAS DEPT. OF AGRICULTURE
COOPERATING TECHNICAL PARTNERS
MAPPING ACTIVITY STATEMENT

Mapping Activity Statement No. 13 – Digital Flood Insurance Rate Map Production and Development of Updated Flood Data

In accordance with the Cooperating Technical Partners (CTP) Partnership Agreement dated September 1, 1999 between the Kansas Dept. of Agriculture – Division of Water Resources and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement (MAS) No. 13 is as follows.

SECTION 1—OBJECTIVE AND SCOPE

The objective of the Flood Map Project documented in this MAS is to develop a Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) report for Franklin County, Kansas. The DFIRM and FIS report will be produced in the FEMA Countywide Format. The DFIRM will include the communities of:

Ottawa, Lane, Richmond, Pomona, Princeton, Rantoul, Wellsville, and Williamsburg.

Existing GIS data and study needs for the community will be researched, obtained, organized and provided in accordance with Activity 1. Scoping will be necessary to determine the final scope of work for this project.

In addition the Mapping Partners involved in this project will develop new and/or updated flood hazard data, as summarized in the table below.

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Detailed Coastal					Limited Detail Study	Redelineation of SFHAs Using Effective Profiles	Refine/ Establish Zone A
			Hydrology	Hydraulics	Stillwater	Set up	Wave Height	Wave Runup	Erosion			
All streams that drain greater than 1 sq. mile.		N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	**X**
Walnut Creek	Utah Road to I-35	3.5 miles	X	X	N/A	N/A		N/A	N/A	N/A	N/A	N/A

Walnut Creek Tributary 6	Headwaters to Confluence with Walnut Creek	0.5 miles	X	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rock Creek	I-35 to Confluence with Marais des Cygnes River	3.5 miles	X	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nugent Creek	Headwaters to Confluence with Marais Des Cygnes River	2.5 miles	X	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A

This Flood Map Project will be completed by the following

- Kansas Dept. of Agriculture – Division of Water Resources;
- A contractor to be determined after funds are awarded; and
- The National Service Provider.

The CTP shall notify FEMA and the National Service Provider by e-mail of all meetings with community officials at least one week prior to the meeting (with as much notice as possible). FEMA and/or the National Service Provider may or may not attend the community meetings. FEMA and/or the National Service Provider may elect to participate by a conference call.

The tasks for this Flood Map Project, including required Quality Assurance/Quality Control (QA/QC) reviews, and the Mapping Partners that will complete them are summarized in the table below. The sections of this MAS that follow the table below describe the specific Tasks, responsible Mapping Partner(s), FEMA standards that must be met, and resultant map components.

The county-wide DFIRM is estimated to contain 30 panels @ 1"=2000', and 24 panels @ 1"=500'.

Tasks	CTP	NSP	FEMA
Task 1 - Scoping	X	X	X
Task 2 - Outreach	X		
Task 3 – Field Surveys and Reconnaissance	X		
Task 4 – Topographic Data Development	X		
Task 5 – Independent QA/QC Review of Topographic Data		X	
Task 6 –Hydrologic Analyses	X		
Task 7–Independent QA/QC Review of Hydrologic Analyses		X	
Task 8 – Hydraulic Analyses	X		
Task 9 – Independent QA/QC Review of Hydraulic Analyses		X	
Task 10 – Floodplain Mapping (Detailed Riverine Analyses)	X		
Task 10A – Floodplain Mapping (Redelineation Using Effective Flood Profiles and Updated Topographic Data)	N/A		
Task 10B – Floodplain Mapping (Refinement or Creation of Zone A)	X		
Task 11 – Independent QA/QC Review of Floodplain Mapping (Revised Areas)		X	
Task 12 – Base Map Acquisition	X		
Task 13 – DFIRM Production (Non-Revised Areas)	X		
Task 13A – Independent QA/QC Review of DFIRM Production (Non-Revised Areas)		X	
Task 14 – DFIRM Production (Merge Revised and Non-Revised Information)	X		
Task 14A – Application of DFIRM Graphic and Database Specifications	X		
Task 14A – Independent QA/QC Review of DFIRM Product Meeting FEMA Graphic and Database Specifications		X	
Task 15 – Preliminary DFIRM and FIS Report Distribution		X	
Task 16 – Post-Preliminary Processing		X	

FEMA has developed tools to assist in the development of the flood hazard data studies and the Digital Flood Insurance Rate Maps (DFIRMs) if the mapping partner wishes to use them. FEMA will, through the National Service Provider, provide all mapping partners access to and training in these tools. The tools available at this time include WISE software and the DFIRM production tools. The use of these tools will improve the Map Modernization and efficiency of all mapping partners.

QA/QC review activities may be performed by the National Service Provider at the discretion of FEMA. Please note the NSP will also be performing periodic audits and overall study/project management to ensure study quality.

FEMA will be providing download/upload capability for intermediate data submittals through the Management Information Portal (MIP). Data submittals uploaded via the MIP, will include the same data required prior to the existence of the MIP.

Task 1 – Scoping

Responsible Mapping Partner: Kansas Dept. of Agriculture – Division of Water Resources; FEMA; NSP

Scope: This task involves collecting data from a variety of sources including community surveys, other Federal and State Agencies, NFIP State Coordinators, Community Assistance Visits (CAV's) and FEMA archives. Kansas Dept. of Agriculture – Division of Water Resources will evaluate the effective FIS report and FIRM maps to see if it needs to be updated. Lists of mapping needs will be obtained from the MNUSS database, community surveys and CAV's if available.

Data collection will include obtaining the best available base map materials (corporate limits, roads, orthophotos, etc) along with stream centerline files. The acquired data will be imported into the scoping tool and used during the Scoping Task. In the Scoping Tool all streams should have unique names, the limits of the effective FEMA studies should be identified, LOMC areas should be identified, and community requests should be identified. This task also includes populating the streamlines with existing pipeline and scoped studies currently underway.

In cooperation with the FEMA Region, a Project Management Team will be established consisting of the Kansas Dept. of Agriculture – Division of Water Resources, FEMA's regional engineer, the NSP and other appropriate officials. The Project Management Team will be responsible for coordinating the activities of this project and completing all tasks identified in this Statement of Work.

Preliminary Research Activities can be separated into two categories—researching effective information and researching available data for the Flood Map Project. The following tasks shall be completed to research effective information: inventory the FEMA archives for effective FIRM panels, FRFM panels, FIS reports, and other flood hazard data or existing study data; summarize the information in the MNUSS database; summarize contiguous community agreement checks; review CAV and CAC files; and develop a "scoping map" and an overview of the results of the research.

FEMA will co-ordinate, set-up, and hold the Scoping Meeting. This includes identifying a time, place, and all participants. The purpose of this meeting is to present the current information to the local officials (state, county and municipal) and coordinate on prioritization and identification of study areas. FEMA & Edwards County shall be responsible for compiling the necessary information for the meeting. These items may include: FIS and FIRM for affected communities; USGS quads for the study area; best available community base map(s); effective FIRM summary; Available Data Inventory; Scoping Map; Scoping Meeting Agenda/Minutes form; Aerial photos/topographic mapping if available; existing drainage studies or other H&H data; Community master plan(s)/Drainage Master Plan(s); Zoning Maps; Street Maps; As-built plans; and Floodplain Ordinance(s).

The project management team shall review the initial mapping needs list, review the research findings, and make selections of proposed methods for obtaining/producing flood data. Any additions or changes to the needs list shall be discussed with all members. All needs shall also be prioritized. In general, highest priority shall be given to the following areas: areas of dense existing or anticipated development, including areas where new road crossings have been constructed over stream(s); areas affected by flood-control structures and/or channelization; areas where natural physical changes in the floodplain have been significant (due to subsidence or extreme erosion, for example); areas that were studied by approximate methods and unmapped areas, especially those with development pressure; areas where the community has experienced flooding outside mapped floodplains, with severe damage to buildings and/or infrastructure; areas where mapped flood hazards do not match those shown on contiguous FIRMs (unless those FIRMs are not considered to be accurate); and areas where flood data (BFEs, floodplains, and regulatory floodways) are likely to be changed the most by a restudy.

Based on the discussion of mapping needs, Kansas Dept. of Agriculture – Division of Water Resources and FEMA Project Officer will finalize the areas to be included in the project (based on recommendations provided by the Project Team). Areas to be studied by detailed and approximate 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.

Standards: All work under Activity 1 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: The Final Scoping Report shall be completed in the Scoping Tool component of the WISE software.

Task 2 – Outreach

Responsible Mapping Partner: Kansas Dept. of Agriculture – Division of Water Resources

Scope: The outreach activities for a Flood Map Project can best be understood as a process that begins during the Project Scoping phase and continues through the Map Production and Post-preliminary phases. A regulatory overview of required activities is followed by a description of tools that can be used in working with stakeholders to keep them informed and to solicit their input.

The overarching goal for conducting outreach is to create a climate of understanding and ownership of the mapping process at the State and local levels. Well-planned outreach activities 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 Project Team in responding to congressional inquiries.

All communication with local governments will be done in accordance with Title 44 Code of Federal Regulations Part 66.

Standards: All work under Task 2 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon Completion of Outreach and Coordination the Kansas Dept. of Agriculture – Division of Water Resources shall deliver the following to the FEMA Regional Project Officer in accordance with the schedule outlined in Section 6 for this Task:

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

Task 3 - Field Surveys and Reconnaissance

Responsible Mapping Partner: Kansas Dept. of Agriculture – Division of Water Resources

Scope: To supplement any field reconnaissance conducted during the Project Scoping phase of this project, Kansas Dept. of Agriculture – Division of Water Resources 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.

In addition to the initial field reconnaissance, Kansas Dept. of Agriculture – Division of Water Resources shall conduct field surveys, including obtaining channel and floodplain cross sections, identifying or establishing Temporary Bench Marks, and obtaining the physical dimensions of hydraulic and flood-control structures. Kansas Dept. of Agriculture – Division of Water Resources also shall coordinate with other Mapping Partners that are collecting topographic data under Task 4.

This product will be in NAVD 88.

Standards: All work under Task 3 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Kansas Dept. of Agriculture – Division of Water Resources shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- A report summarizing the findings of the field reconnaissance;
- Maps and drawings that provide the detailed survey results; and
- NSP Format Survey Database or Intermediate Data Delivery consistent with the NSP Data Capture Standards– Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 4 - Topographic Data Development

Responsible Mapping Partner: Kansas Dept. of Agriculture – Division of Water Resources

Scope: For Detailed Study, to supplement the field surveys conducted under Task 3, Kansas Dept. of Agriculture – Division of Water Resources shall obtain additional topographic data of the overbank areas of the flooding sources studied to delineate floodplain boundaries. Specifically, Kansas Dept. of Agriculture – Division of Water Resources shall generate new topographic data for Walnut Creek, Nugent Creek, and Rock Creek using LIDAR or stereophotogrammetry. Kansas Dept. of Agriculture – Division of Water Resources also shall coordinate with other team members conducting field surveys under Task 3. Contour interval and/or accuracy for the topographic data shall be selected based on the current FEMA requirements as documented in *Guidelines and Specifications for Flood Hazard Mapping Partners*.

For Approximate Study, Kansas Dept. of Agriculture – Division of Water Resources shall obtain topographic data of the overbank areas of the flooding sources studied to delineate floodplain boundaries. Specifically, Kansas Dept. of Agriculture – Division of Water Resources shall obtain the 10 m DEM from the USGS.

For this Task, Kansas Dept. of Agriculture – Division of Water Resources also shall develop topographic maps and/or Digital Elevation Models for the subject flooding sources using the data collected under Task 4. In addition, Kansas Dept. of Agriculture – Division of Water Resources shall address all concerns or questions regarding Task 4 that are raised by National Service Provider during the independent QA/QC review under Task 5.

Standards: All work under Task 4 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of topographic data collection and processing for Walnut Creek, Nugent Creek, and Rock Creek, Kansas Dept. of Agriculture – Division of Water Resources shall submit these data to NSP for an independent QA/QC review under Task 5 in accordance with the schedule outlined in Section 6 for this Task. Kansas Dept. of Agriculture – Division of Water Resources shall submit data for the remaining flooding sources for a final QA/QC review at the completion of this Task.

In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Kansas Dept. of Agriculture – Division of Water Resources shall make the following products available to FEMA:

- Report summarizing methodology and results;
- Mass points and breaklines data on CD-ROM;
- Digital work maps with contours;
- Checkpoint analyses to assess the accuracy of data, including Root Mean Square Error calculations to support vertical accuracy;
- Identification of remote-sensing 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; and

- Metadata compliant with Federal Geographic Data Committee standards.
- NSP Format Terrain Database or Intermediate Data Delivery consistent with the NSP Data Capture Standards– Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 5 - Independent QA/QC Review of Topographic Data

Responsible Mapping Partner: NSP

Scope: NSP shall review the mapping data generated by Kansas Dept. Of Agriculture – Division of Water Resources under Task 4 to ensure that these data are consistent with FEMA standards and standard engineering practice and are sufficient to prepare the DFIRM.

Standards: All work under Task 5 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, NSP shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- 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.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 6 – Hydrologic Analyses

Responsible Mapping Partner: Kansas Dept. of Agriculture – Division of Water Resources

Scope: For streams listed earlier in Section 1 of this MAS that will be studied by approximate methods, Kansas Dept. of Agriculture – Division of Water Resources shall perform hydrologic analyses for approximately 2255 square miles of drainage area for the flooding source(s). The hydrologic methods used for this analysis will be Log Pearson Type III procedure for streams with appropriate stream gage information or regression equations for streams with no gage information available. Peak flood discharges will be calculated for the 1% annual chance storm event.

For the streams identified in Section 1 that will be studied by detailed methods, hydrologic analyses will be completed for approximately 200 square miles of drainage area. Kansas Dept. Of Agriculture – Division of Water Resources shall calculate peak flood discharges for the 10%, 2%, 1%, and 0.2% annual chance storm events using an appropriate computer program.

These flood discharges will be the basis for subsequent hydraulic analyses under Task 8. In addition, Kansas Dept. of Agriculture – Division of Water Resources shall address all concerns or questions regarding Task 6 that are raised during the independent QA/QC review performed by National Service Provider uring the QA/QC review under Task 7.

If Geographic Information System (GIS)-based modeling is used, Kansas Dept. of Agriculture – Division of Water Resources shall document automated data processing and modeling algorithms and provide them to FEMA to ensure they are consistent with the standards outlined above. Digital datasets (such as elevation, basin, or land use data) are to be documented and provided to FEMA for approval before performing the hydrologic analyses to ensure the datasets meet minimum requirements. If non-commercial (i.e., custom-developed) software is used for the analysis, then Kansas Dept. of Agriculture – Division of Water Resources shall provide full user documentation, technical algorithm documentation, and the software to FEMA for review before performing the hydrologic analyses.

Standards: All work under Task 6 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of approximate hydrologic modeling for all streams that drain greater than 1 square mile as well as detailed hydrologic modeling on selected stretches of Walnut Creek, Nugent Creek, and Rock Creek, Kansas Dept. of Agriculture – Division of Water Resources shall submit the results to National Service Provider for an independent QA/QC review under Task 7.

In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Kansas Dept. of Agriculture – Division of Water Resources shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- Digital copies of all hydrologic modeling (input and output) files for the 10-, 2-, 1-, and 0.2-percent-annual-chance storm events;
- Digital versions of the Summary of Discharges Table presenting discharge data for the flooding sources for which hydrologic analyses were performed;
- Digital versions of draft text for Section 3.1, Hydrologic Analyses, of the FIS report; and
- Digital versions of all backup data used in the analysis, including work maps.
- NSP Format Hydrology Database or Intermediate Data Delivery consistent with the NSP Data Capture Standards– Appendix N of the Guidelines and Specifications for Flood Mapping Partners

For GIS-based modeling, deliverables shall include all input and output data, intermediate data processing products, and GIS data layers.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 7 - Independent QA/QC Review of Hydrologic Analyses

Responsible Mapping Partner: National Service Provider

Scope: National Service Provider shall review the technical, scientific, and other information submitted by Kansas Dept. of Agriculture – Division of Water Resources under Task 6 to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to prepare the DFIRM. This work shall include, at a minimum, the activities listed below.

- 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.

- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- Maintain an archive of all data submitted for hydrologic modeling review. (All supporting data must be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.)

Standards: All work under Task 7 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, National Service Provider shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- 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.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 8 – Hydraulic Analyses

Responsible Mapping Partner: Kansas Dept. of Agriculture – Division of Water Resources

Scope: For the streams identified in Section 1 of this MAS that will be studied by approximate methods, Kansas Dept. of Agriculture – Division of Water Resources shall perform hydraulic analyses for all flooding sources within Edwards County that have a drainage are greater than or equal to 1 mi^2. The estimated length of streams is 500 miles for the flooding source(s). The modeling will include the 1% annual chance storm event based on peak discharges computed under Task 6. The hydraulic methods used for this analysis may include the normal depth method. The hydraulic analyses will be used to approximate flood elevations for the subject flooding sources.

For the streams identified in Section 1 that will be studied by detailed methods, Kansas Dept. Of Agriculture – Division of Water Resources will perform hydraulic analyses for approximately 10 miles of the flooding sources listed in the section 1 of this MAS. The modeling will include the 10%, 2%, 1% and 0.2% annual chance storm events based on peak discharges computed under Task 6. The hydraulic methods used for this analysis will include an appropriate computer program. The hydraulic analyses will be used to establish flood elevations and regulatory floodways for the subject flooding sources.

Kansas Dept. of Agriculture – Division of Water Resources shall document automated data processing and modeling algorithms for GIS-based modeling and provide them to FEMA for review to ensure they are consistent with the standards outlined above. Digital datasets are to be documented and provided to FEMA for approval before performing the hydraulic analyses to ensure the datasets meet minimum requirements. If non-commercial (i.e., custom-developed) software is used for the analyses, then Kansas Dept. of Agriculture – Division of Water Resources shall provide full user documentation, technical algorithm documentation, and software to FEMA for review before performing the hydraulic analyses

Standards: All work under Task 8 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of approximate hydraulic modeling for all drainage areas greater than or equal to 1 mi^2 as well as detailed hydraulic modeling on selected stretches of Walnut Creek, Nugent Creek, and Rock Creek, Kansas Dept. of Agriculture – Division of Water Resources shall submit the results to National Service Provider for an independent QA/QC review under Task 9. Kansas Dept. of Agriculture – Division of Water Resources shall submit the results of the hydraulic analyses for the remaining flooding sources for a final QA/QC review at the completion of this Task.

In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Kansas Dept. of Agriculture – Division of Water Resources shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- Digital versions of all hydraulic modeling (input and output) files;
- Digital versions of table with range of Manning's "n" values;
- Explanations for unresolved messages from the CHECK-2 or CHECK-RAS program, as appropriate;
- Digital versions of all backup data used in the analyses;
- Digital versions of draft text for inclusion in the FIS report.

For GIS-based modeling, deliverables include all input and output data, intermediate data processing products, GIS data layers, and final products in the format of the DFIRM database structure.

- NSP Format Hydraulic Database or Intermediate Data Delivery consistent with the NSP Data Capture Standards– Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 9 - Independent QA/QC Review of Hydraulic Analyses

Responsible Mapping Partner: National Service Provider

Scope: National Service Provider shall review the technical, scientific, and other information submitted by Kansas Dept. of Agriculture – Division of Water Resources under Task 8 to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to revise the FIRM. This work shall include, at a minimum, the activities listed below.

- 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 them readily available to FEMA.
- Maintain an archive of all data submitted for hydraulic modeling review. (All supporting data must be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.)

Standards: All work under Task 9 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, National Service Provider shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- 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.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 10 - Floodplain Mapping (Detailed Riverine Analysis)

Responsible Mapping Partner: Kansas Dept. Of Agriculture – Division of Water Resources

Scope: Kansas Dept. Of Agriculture – Division of Water Resources shall delineate the 1- and 0.2-percent-annual-chance floodplain boundaries and the regulatory floodway boundaries (if required) for the flooding sources for which detailed hydrologic and/or hydraulic analyses were performed. Kansas Dept. Of Agriculture – Division of Water Resources shall incorporate all new or revised hydrologic, hydraulic,

and/or coastal modeling and shall use the topographic data acquired under Task 4 to delineate the floodplain and regulatory floodway boundaries on a digital work map. In addition, Kansas Dept. Of Agriculture – Division of Water Resources shall incorporate the results of all effective Letters of Map Change (LOMCs) within the revised areas as appropriate. Also, Kansas Dept. Of Agriculture – Division of Water Resources shall address all concerns or questions regarding Task 10 that are raised by NSP during the independent QA/QC review under Task 11.

Standards: All work under Task 10 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of floodplain mapping for Walnut Creek, Nugent Creek, and Rock Creek, Kansas Dept. Of Agriculture – Division of Water Resources shall submit the results NSP for an independent QA/QC review under Task 11. The mapping for the remaining flooding sources is to be submitted for a final QA/QC review at the completion of this Task.

In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Kansas Dept. Of Agriculture – Division of Water Resources shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- 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;
- Any backup or supplemental information used in the mapping required for the independent QA/QC review outlined under Task 9; and
- An explanation for the use of existing topography for the studied reaches, if appropriate.
- NSP Format Mapping Database or Intermediate Data Delivery consistent with the NSP Data Capture Standards– Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 10A - Floodplain Mapping (Redelineation of Detailed Floodplain Boundaries Using Updated Topographic Data)

This task is not applicable for the project.

Task 10B - Floodplain Mapping (Refinement or Creation of Zone A)

Responsible Mapping Partner: Kansas Dept. of Agriculture – Division of Water Resources

Scope: Kansas Dept. of Agriculture – Division of Water Resources shall delineate the 1-percent-annual-chance floodplain boundaries for the flooding sources listed earlier in this MAS. Kansas Dept. of Agriculture – Division of Water Resources shall use existing topographic data or the topographic data acquired under Task 2 to delineate the floodplain boundaries on a digital work map. In addition, Kansas Dept. of Agriculture – Division of Water Resources shall address all concerns or questions regarding Task 10B that are raised by National Service Provider during the independent QA/QC review under Task 11.

Kansas Dept. of Agriculture – Division of Water Resources may expand on the approaches for analyzing Zone A areas outlined in *Guidelines and Specifications for Flood Hazard Mapping Partners* and in FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas* (April 1995), and/or develop new approaches. Such approaches must be coordinated with the FEMA Regional Project Officer identified in Section 12 of this MAS before analysis and mapping begin.

Standards: All work under Task 10B shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of floodplain mapping for all drainage areas greater than or equal to 1 mi^2, Kansas Dept. of Agriculture – Division of Water Resources shall submit the results to National Service Provider for an independent QA/QC review under Task 11.

In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Kansas Dept. of Agriculture – Division of Water Resources shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- Digital work maps showing the 1-percent-annual-chance floodplain boundary delineations, flood insurance risk zone labels, and all applicable base map features;
- Written summary of the analysis methodologies;
- Any backup or supplemental information, including supporting calculations and assumptions for any computed 1-percent-annual-chance water-surface elevations used in the mapping required for the independent QA/QC review under Task 11;
- Digital versions of input and output for any computer programs that were used;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- 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.
- NSP Format Mapping Database or Intermediate Data Delivery consistent with the NSP Data Capture Standards– Appendix N of the Guidelines and Specifications for Flood Mapping Partners.

If automated GIS-based models are applied, all input data, output data, intermediate data processing products, and GIS data layers shall be submitted.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 11 - Independent QA/QC Review of Floodplain Mapping (Revised Areas)

Responsible Mapping Partner: National Service Provider

Scope: National Service Provider shall review the floodplain mapping submitted by Kansas Dept. of Agriculture – Division of Water Resources under Tasks 10, 10A, and 10B to ensure that the results of the analyses performed are accurately represented. This work shall include, at a minimum, the activities listed below.

- Review the cross sections for proper location and orientation on the work map and agreement with the Floodway Data Table.
- Review the BFEs shown on the work map for proper location and agreement with the results of the hydraulic 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 boundaries for agreement with the flood elevations shown in the Floodway Data Table and the contour lines and other topographic information shown on the work maps.
- Review the floodplain widths at cross sections as shown on the work maps to ensure they match the Floodway Data Table.
- Review the floodplain boundaries as shown on the work maps to ensure they match the Flood Profiles.
- Review the flood insurance risk zones as shown on the work maps to ensure they are labeled properly.
- Review the DFIRM mapping files to ensure they were prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners.*
- Review the metadata files to ensure they include all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners.*

Standards: All work under Task 11 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, National Service Provider shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- 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; and
- An annotated work map with all questions and/or concerns indicated, if necessary.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 12 - Base Map Acquisition

Responsible Mapping Partner: Kansas Dept. of Agriculture – Division of Water Resources

Scope: Task 12 consists of obtaining the digital base map, Digital Orthophoto Quarter Quads from the USGS for the project. Kansas Dept. of Agriculture – Division of Water Resources shall provide the digital base map. The required activities are as follows:

- Obtain digital files (raster or vector) of the base map.
- 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.
- Certify that the digital data meets the minimum standards and specifications that FEMA requires for DFIRM production.
- Populate the DFIRM database with the information required by FEMA.

Standards: All work under Task 12 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Kansas Dept. of Agriculture – Division of Water Resources shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- Written certification that the digital data meet the minimum standards and specifications and
- Documentation that FEMA can use the digital base map.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 13 – DFIRM Production (Non-Revised Areas)

Responsible Mapping Partner: Kansas Dept. of Agriculture – Division of Water Resources

Scope: For all flooding sources except those segments for which updated flood data will be developed under Tasks 1 through 11, Kansas Dept. of Agriculture – Division of Water Resources shall convert the information shown on the effective FIRM and Flood Boundary Floodway Map (FBFM) panels for all incorporated and unincorporated areas of Franklin County to digital format in conformance with FEMA DFIRM specifications. Kansas Dept. of Agriculture – Division of Water Resources shall use the base map acquired under Task 12 for the conversion. Kansas Dept. of Agriculture – Division of Water Resources shall digitize 7 FIRM panels and 0 FBFM panels. Kansas Dept. of Agriculture – Division of Water Resources also shall incorporate the results of LOMCs issued by FEMA since the date of the current effective FIRM for each affected community.

Also, Kansas Dept. of Agriculture – Division of Water Resources shall address all comments and questions regarding Task 13 that are raised by National Service Provider during the independent QA/QC review under Task 13A.

Kansas Dept. of Agriculture – Division of Water Resources shall not digitize the flood theme for those segments of flooding sources for which updated flood data will be developed. Rather, Kansas Dept. of

Agriculture – Division of Water Resources shall leave these as "holes" in the digital flood theme that will be filled in as part of Task 14 using the digital flood data developed under Tasks 10, 10A, and 10B.

Standards: All work under Task 13 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of 7 DFIRM panels, Kansas Dept. of Agriculture – Division of Water Resources shall submit the panels to National Service Provider for an independent QA/QC review under Task 11. In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Kansas Dept. of Agriculture – Division of Water Resources shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- 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, including a check that the road and floodplain relationship is maintained for all non-revised areas.
- NSP Format Mapping Database or Intermediate Data Delivery consistent with the NSP Data Capture Standards– Appendix N of the Guidelines and Specifications for Flood Mapping Partners.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 13A – Independent QA/QC Review of DFIRM Production (Non-Revised Areas)

Responsible Mapping Partner: NSP

Scope: NSP shall review the DFIRM panels submitted by Kansas Dept. of Agriculture – Division of Water Resources under Task 13 to ensure that the new DFIRM panels accurately represent the information shown on the effective FIRMs and FBFMs for the area mapped. This work shall include, at a minimum, checking the following:

- Cross sections were properly located and oriented as shown on the FIRM or FBFM.
- BFEs are properly located and agree with the BFEs shown on the FIRM.
- Regulatory floodway widths agree with the widths shown on the FIRM or FBFM.
- The 1 and 0.2-percent-annual-chance floodplain boundaries agree with the floodplain boundaries shown on the FIRM and the contour lines, other topographic information, and planimetric information shown on the DFIRM base.

- Flood insurance risk zone designations are indicated properly.
- Road and floodplain relationships are maintained for all unrevised areas.
- DFIRM mapping files meet the GIS file and database format requirements specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those requirements for content and attribution.
- Metadata files describing the DFIRM data include the required information.

Standards: All work under Task 13A shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, NSP shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- 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; and
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 14 –DFIRM Production (Merging Revised and Non-Revised Information)

Responsible Mapping Partner: Kansas Dept. Of Agriculture – Division of Water Resources

Scope: Upon completion of the floodplain mapping activities for the revised areas (Tasks 10, 10A, and/or 10B) and the DFIRM production for non-revised areas (Task 13), Kansas Dept. Of Agriculture – Division of Water Resources shall merge the digital floodplain data into a single, updated DFIRM. This work is to include tie-in of flood hazard information for areas that were not studied as part of the Flood Map Project documented in this MAS. Kansas Dept. Of Agriculture – Division of Water Resources also shall tie in the revised and non-revised Flood Profiles, floodplain boundaries, and regulatory floodway boundaries with contiguous communities that were not studied as part of the Flood Map Project documented in this MAS. Kansas Dept. Of Agriculture – Division of Water Resources shall coordinate with FEMA and those Mapping Partners responsible for Tasks 10, 10A, 10B, and 13, as necessary, to resolve any potential tie-in issues.

Standards: All work under Task 14 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Kansas Dept. Of Agriculture – Division of Water Resources shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- 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.
- NSP Format Mapping Database or Intermediate Data Delivery consistent with the NSP Data Capture Standards– Appendix N of the Guidelines and Specifications for Flood Mapping Partners.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 14A – DFIRM Production (Application of DFIRM Graphics and Database Specifications)

Responsible Mapping Partner: Kansas Dept. of Agriculture – Division of Water Resources

Scope: Kansas Dept. of Agriculture – Division of Water Resources shall apply the final FEMA DFIRM graphic and database specifications to the DFIRM files produced under Task 14. 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). Kansas Dept. of Agriculture – Division of Water Resources shall coordinate with those Mapping Partners responsible for Tasks 10, 10A, 10B, 13, and 14, as necessary, to resolve any problems that are identified during Task 14A.

Standards: All work under Task 14A shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, Kansas Dept. of Agriculture – Division of Water Resources shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- Metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*;
- The FIS report in the FEMA County-wide Format as documented in Appendix J of *Guidelines and Specifications for Flood Hazard Mapping Partners.*
- 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.

- NSP Format DFIRM Database or Intermediate Data Delivery consistent with the NSP Data Capture Standards– Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 14B – Independent QA/QC Review of DFIRM Product Meeting FEMA Graphics and Database Specifications

Responsible Mapping Partner: National Service Provider

Scope: Upon completion of the floodplain mapping activities (Tasks 10, 10A, and/or 10B) and DFIRM production activities (Tasks 13, 14, and 14A), National Service Provider shall review the DFIRM to ensure it meets current FEMA graphic specifications. In addition, National Service Provider shall review the DFIRM spatial database to determine if it meets current FEMA database specifications. National Service Provider shall coordinate with other Mapping Partners, as necessary, to resolve any problems identified during this QA/QC review. This work shall ensure that the requirements below are met.

- All required DFIRM features are accurately and legibly labeled and follow the examples shown in the FEMA DFIRM specifications. This includes all flood insurance risk zones, BFEs, cross sections, studied streams, 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 *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- All map collar information is complete, correct, and follows the requirements specified in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- DFIRM mapping files are in one of the GIS file and database formats specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those specifications for content and attribution.
- DFIRM database files are in one of the database formats specified in FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* and conform to those specifications for content and attribution.
- Metadata files describing the DFIRM data include all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*.
- The FIS report is prepared in the FEMA Countywide Format as documented in Appendix J of *Guidelines and Specifications for Flood Hazard Mapping Partners.*

Standards: All work under Task 14B shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, National Service Provider shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- 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; and

- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 15 - Preliminary DFIRM and FIS Report Distribution

Responsible Mapping Partners: National Service Provider

Scope: Task 15 consists of the final preparation, review, and distribution of the Preliminary copies of the DFIRM and FIS report for community official and general public review and comment. The activities to be performed are summarized below.

Preliminary Transmittal Letter Preparation. The National Service Provider shall prepare letters to 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.

Final QA/QC Review of Preliminary DFIRM and FIS Report: The National Service Provider shall perform a final QA/QC review of the Preliminary DFIRM and FIS report, including all data tables, Flood Profiles, and other components of the FIS report. The QA/QC review procedures shall be consistent with the *Guidelines and Specifications for Flood Hazard Mapping Partners.*

Discrepancy Resolution: The National Service Provider shall work with Kansas Dept. of Agriculture – Division of Water Resources and FEMA as appropriate to resolve discrepancies identified during the final QA/QC review.

Distribution of Preliminary DFIRM and FIS Report: The National Service Provider 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 National Service Provider shall prepare news release notifications of BFE changes for all affected communities if appropriate and perform QA/QC reviews of the notices for accuracy and compliance with FEMA format requirements. The National Service Provider shall file the notifications for later submittal to FEMA for review.

Preliminary Summary of Map Actions (SOMA) Preparation: The National Service Provider 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 work under Task 15 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners* and the requirements documented in Section 1 and Appendix A of the FEMA *Document Control Procedures Manual.* The National Service Provider shall make the products listed below available to FEMA in accordance with the schedule outlined in Section 6 for this Task.

- Preliminary transmittal letters shall be prepared. 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.*

- Preliminary copies 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.

- Revised DFIRM mapping files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM.

- Revised DFIRM database files, prepared in accordance with the requirements in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM.

- Revised metadata files describing the DFIRM data, including all required information shown in *Guidelines and Specifications for Flood Hazard Mapping Partners*, shall be provided on CD-ROM.

- 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 shall be provided.

Task 16 - Post-Preliminary Processing

Responsible Mapping Partners: National Service Provider

Scope: Task 16 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. The activities to be performed are summarized below.

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, National Service Provider shall arrange for and verify that the following activities are completed in accordance with the current version of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners* and *Document Control Procedures Manual*:

- Proposed BFE determination letters are sent to the community CEOs and floodplain administrators.

- News release notifications of BFE changes are published in prominent newspapers with local circulation.

- The appropriate notices (Proposed Rules) are published in the *Federal Register*.

Resolution of Appeals and Protests: National Service Provider shall support FEMA in reviewing and resolving 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; and
- Preparation of a draft resolution letter and revised DFIRM and FIS report materials for FEMA review.

National Service Provider shall mail all associated correspondence upon authorization by FEMA.

Preparation of Special Correspondence: National Service Provider 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 when requested by FEMA. National Service Provider 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, National Service Provider shall work together to revise the DFIRM and FIS report at the direction of the FEMA Regional Project Officer and 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: National Service Provider shall prepare Final SOMAs for the affected communities as appropriate.

Processing of Letter of Final Determination: National Service Provider shall work with FEMA to establish the effective date for the DFIRM and FIS report, and shall prepare a Letter of Final Determination (LFDs) for each affected community for FEMA review in accordance with the FEMA *Document Control Procedures Manual*. They also shall mail the final signed LFDs and enclosures and distribute appropriate copies of the signed LFDs and enclosures upon receipt of authorization from FEMA.

Processing of Final DFIRM and FIS Report for Printing: National Service Provider shall prepare final reproduction materials for the DFIRM and FIS report and provide these materials to the FEMA Map Service Center for printing by the U.S. Government Printing Office. The MCC also shall 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. National Service Provider shall prepare and distribute letters 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: National Service Provider shall ensure that technical and administrative support data are packaged in the FEMA required format and stored properly in the library archives until they are transmitted to the FEMA Engineering Study Data Package Facility. In addition, the National Service Provider will maintain copies of all data for a period of no less than 3 years.

Standards: All work under Task 16 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of *Guidelines and Specifications for Flood Hazard Mapping Partners* and the requirements documented in Section 1 and

Appendix A of the FEMA *Document Control Procedures Manual*, National Service Provider shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Task:

- 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 negatives 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; and
- Complete, organized archived technical and administrative support data

SECTION 2—TECHNICAL AND ADMINISTRATIVE SUPPORT DATA SUBMITTAL

The Project Team members for this Flood Map Project that have responsibilities for activities included in this MAS shall comply with the data submittal requirements summarized below.

All supporting documentation for the activities in this MAS shall be submitted in the TSDN format in accordance with Appendix M of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners*, dated April 2003. Appendix M is available for viewing or download on the FEMA Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf. Table 2-1 indicates the sections of the TSDN that apply to each Task.

If any issues arise that could affect the completion of a Task 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 Appendix M, Subsection M.2.1.1 of *Guidelines and Specifications for Flood Hazard Mapping Partners*.)

Table 2-1. Mapping Tasks and Applicable TSDN Sections

TSDN Section	Mapping Tasks														
	2	3	4	5	6	7	8	9	10, 10A, 10B	11	12	13, 13 A	14, 14A	15	16
General Documentation															
Special Problem Reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Telephone Conversation Reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Meeting Minutes/Reports	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
General Correspondence	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Engineering Analyses															
Hydrologic Analyses		X			X	X	X	X	X	X					
Hydraulic Analyses		X			X	X	X	X	X	X					
Key to Cross-Section Labeling		X			X	X	X	X	X	X					
Draft FIS Report					X	X	X	X							
Mapping Information	X		X	X					X	X	X	X	X	X	X
Miscellaneous Reference Information	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

SECTION 3—PERIOD OF PERFORMANCE

The mapping activities assigned to Kansas Dept. of Agriculture – Division of Water Resources 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 Kansas Dept. of Agriculture – Division of Water Resources in accordance with the provisions of the September 1, 1999 CTP Partnership Agreement.

The mapping activities assigned to National Service Provider in this MAS will be completed as specified in the Task Order.

SECTION 4—FUNDING/COST-SHARING

Funds will be provided by FEMA for the completion for this Flood Map Project. The cooperative agreement budget identifies the amount to be provided by each party. The Kansas Dept. of Agriculture – Division of Water Resources shall provide any additional resources required to complete the assigned activities for this Flood Map Project.

SECTION 5—STANDARDS

The standards relevant to this MAS are provided in Tables 5-1 and 5-2. Information on the correct volume, appendix, section, or subsection of the FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners* to be referenced for each mapping activity are summarized in Table 5-2.

These Guidelines are available for viewing or download from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/fhm/dl_cgs.shtm.

Table 5-1. Applicable Standards for Project Tasks

	Tasks														
Applicable Standards	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10, 10 A, 10 B**	**11**	**12**	**13, 13A**	**14, 14A**	**15**	**16**
Guidelines and Specifications for Flood Hazard Mapping Partners, April 2003	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
American Congress on Surveying and Mapping Procedures		X	X	X											
Global Positioning System (GPS) Surveys: National Geodetic Survey (NGS-510), "Guidelines for Establishing GPS-Derived Ellipsoid Heights," November 1997		X	X	X											
Engineer Manual 1110-1-1000, *Photogrammetric Mapping* (USACE), July 1, 2002		X	X	X											
Engineer Manual 1110-2-1003, *Hydrographic Surveys* (USACE), January 1, 2002		X													
"Numerical Models Accepted by FEMA for NFIP Usage," Updated April 2003					X	X	X	X							
Content Standard for Digital Geospatial Metadata (Federal Geographic Data Committee), 1998	X		X	X					X	X	X	X	X	X	X
Document Control Procedures Manual, December 2000	X													X	X
44 Code of Federal Regulations Part 66 and 67	X														

Table 5-2. Project Tasks and Applicable Portions of FEMA Guidelines and Specifications

Task Number	Task Description	Applicable Volume, Section/Subsection, and Appendix
2	Outreach	44 Code of Federal Regulations Part 66 and 67
3	Field Surveys and Reconnaissance	Volume 1, Section 1.4 (specifically Subsection 1.4.2.1)
		Appendix A, Sections A.4, A.5, A.6, A.7, and A.8
		Appendix F, Section F.3
		Appendices B, C, and M
4	Topographic Data Development	Volume 1, Section 1.4 (specifically Subsection 1.4.2.1)
		Appendix A, Sections A.2, A.3, A.7, and A.8
		Appendix M
5	Independent QA/QC Review of Topographic Data	Volume 1, Section 1.4 (specifically Subsections 1.4.1 and 1.4.2.1)
		Appendix A, Sections A.2, A.3, A.7 (specifically Subsection A.7.5), and A.8 (specifically Subsection A.8.6)
		Appendix M
6	Hydrologic Analyses	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4)
		Appendix A, Section A.4
		Appendix C, Sections C.1 and C.7
		Appendices E, F, G, H, and M

Table 5-2. Project Tasks and Applicable Portions of FEMA Guidelines and Specifications (Cont'd)

Task Number	Task Description	Applicable Volume, Section/Subsection, and Appendix
7	Independent QA/QC Review of Hydrologic Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.1)
		Appendix A, Section A.4
		Appendix C, Section C.2
		Appendices E, F, G, H, and M
8	Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4)
		Appendix A, Section A.4 (specifically Subsection A.4.7)
		Appendix C, Sections C.3 and C.7
		Appendices B, E, F, G, H, and M
9	Independent QA/QC Review of Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.1)
		Appendix A, Section A.4 (specifically Subsection A.4.7)
		Appendix C, Section C.5
		Appendices B, E, F, G, H, and M
10	Floodplain Mapping (Detailed Riverine Analyses)	Volume 1, Section 1.4 (specifically Subsection 1.4.2.3)
		Appendix C, Sections C. 4 and C.6
		Appendix D, Sections D.2 (specifically Subsection D.2.7) and D.3 (specifically Subsection D.3.7)
		Appendices E, F, G, H, K, L, and M
10A	Floodplain Mapping (Redelineation Using Effective Flood Profiles and Updated Topographic Data)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.3)
		Appendix C, Section C.6 (specifically Subsection C.6.1.3)
		Appendices K. L, and M

Table 5-2. Project Tasks and Applicable Portions of FEMA Guidelines and Specifications (Cont'd)

10B	Floodplain Mapping (Refinement or Creation of Zone A)	Volume 1, Section 1.4 (specifically Subsection 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendices K, L, and M
11	Independent QA/QC Review of Floodplain Mapping (Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.1 and 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendix D, Sections D.2 (specifically Subsection D.2.7) and D.3 (specifically Subsection D.3.7) Appendices E, F, G, H, K, L, and M
12	Base Map Acquisition and Preparation	Volume 1, Section 1.3 (specifically Subsection 1.3.1.8) and 1.4 (specifically Subsections 1.4.3.1 and 1.4.3.2) Appendix A, Section A.1 (specifically Subsection A.1.1)
13	DFIRM Production (Non-Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2, 1.4.2.3, and 1.4.3.2) Appendices K, L, and M
13A	Independent QA/QC Review of DFIRM Production (Non-Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2, 1.4.2.3, and 1.4.3.2) Appendices K, L, and M
14	DFIRM Production (Merging Revised and Non-Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.3) Appendices K, L, and M
14A	DFIRM Production (Application of FEMA Graphics and Database Specifications)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3, 1.4.3.3, 1.4.3.9, and 1.4.3.10) Appendices K, L, and M
14B	Independent QA/QC Review of DFIRM Product Meeting FEMA Graphics and Database Specifications	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3, 1.4.3.3, 1.4.3.9, and 1.4.3.10) Appendices K, L, and M

Table 5-2. Project Tasks and Applicable Portions of FEMA Guidelines and Specifications (Cont'd)

15	Preliminary DFIRM and FIS Report Distribution	Volume 1, Sections 1.4 (specifically Subsections 1.4.2 and 1.4.3) and 1.5 (specifically Subsection 1.5.1) Appendices J, K, L, and M
16	Post-Preliminary Processing	Volume 1, Section 1.5 (specifically Subsection 1.5.2) Appendices J, K, L, and M

SECTION 6—SCHEDULE

The tasks documented in this Mapping Activity Statement shall be completed in accordance with the project schedule. Monitoring Information for Contracted Studies (MICS) will be used to report progress for this Mapping Activity Statement. The initial schedule will be entered into MICS within two weeks of funds award, and the schedule progress will be updated no later than 30 days after the end of each quarter as specified in the agreement articles. The Kansas Dept. of Agriculture – Division of Water Resources will be identified as the MICS Lead. Upon MICS being transitioned to the MIP, reporting will include the same data required prior to the existence of the MIP.

If changes to the schedule are required, the responsible Mapping Partner shall coordinate with FEMA and the other Mapping Partners in a timely manner.

SECTION 7—CERTIFICATIONS

Task 3 (Field Surveys and Reconnaissance) and Task 4 (Topographic Data Development)

A Registered Professional Engineer or Licensed Land Surveyor shall certify topographic data, in accordance with 44 CFR 65.5(c). Certification of topographic data by the American Society for Photogrammetry and Remote Sensing is also acceptable.

Task 6 (Hydrologic Analyses). Task 8 (Hydraulic Analyses), Task 10 (Floodplain Mapping– Detailed Riverine Analysis), Task 10A (Floodplain Mapping {Redelineation Using Effective Flood Profiles and Updated Topographic Data}), and Task 10B (Floodplain Mapping {Refinement or Creation of Zone A})

- A Registered Professional Engineer shall certify hydrologic and hydraulic analyses and data in accordance with 44 CFR 65.6(f).
- A Registered Professional Engineer or Licensed Land Surveyor shall certify topographic information in accordance with 44 CFR 65.5(c).
- Any levee systems to be accredited will be certified in accordance with 44 CFR 65.10(e).

Task 10 (Floodplain Mapping– Detailed Riverine Analysis), Task 10A (Floodplain Mapping {Redelineation Using Effective Flood Profiles and Updated Topographic Data}), and Task 10B (Floodplain Mapping {Refinement or Creation of Zone A}), Task 11 (Independent QA/QC Review of Floodplain Mapping {Revised Areas}), Task 13 (DFIRM Production {Non-Revised Areas}), Task 14 (DFIRM Production {Merging Revised and Non-Revised Information}), and Task 14A (DFIRM Production {Application of FEMA Graphics and Database Specifications})

The DFIRM metadata files shall include a description of the horizontal and vertical accuracy of the DFIRM base map and floodplain information.

Task 12 (Base Map Acquisition and Preparation)

- 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 will still be 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.

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 Process from the National Service Provider.

General technical and programmatic information, such as FEMA 265 and the Quick-2 computer program, can be downloaded from the FEMA Web site (http://www.fema.gov./fhm/). Specific technical and programmatic support may be provided through the National Service Provider; such assistance should be requested through the FEMA Project Officer specified in Section 12 of this MAS.

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.

SECTION 9—CONTRACTORS

The Kansas Dept. of Agriculture – Division of Water Resources intends to use the services of a contractor to be determined after funds are awarded. If federal funds are used Kansas Dept. of Agriculture – Division of Water Resources shall ensure that the procurement for all contractors used for this Flood Map Project complies with the requirements of 44 CFR 13.36.

Part 13 may be downloaded in PDF or text format from the U.S. Government Printing Office Web site at http://www.access.gpo.gov/nara/cfr/waisidx_01/44cfr13_01.html.

SECTION 10—REPORTING

The Kansas Dept. of Agriculture – Division of Water Resources shall provide progress and financial reports to the FEMA Regional Project Officer and Contracting Officer in accordance with Cooperative Agreement Articles V & VI.

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 shall include:

- Meetings, teleconferences, and video conferences with FEMA and other Project Team members on an ad-hoc basis;
- Telephone conversations with FEMA and other Project Team members on an ad hoc basis, as required;
- Updates to the MICS, Mapping Needs Update Support System database, and other FEMA status information systems in accordance with requirements in Volumes 1 and 3 of *Guidelines and Specifications for Flood Hazard Mapping Partners*; and
- E-mail, facsimile transmissions, and letters, as required.

SECTION 12—POINTS OF CONTACT

The points of contact for this Flood Map Project are Bob Franke, the FEMA Regional Project Officer; Collin Olsen, the Project Manager for The Kansas Dept. of Agriculture; or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. When necessary, any additional assistance of FEMA should be requested through the FEMA Regional Project Officer.

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

Julie Grauer — 9/15/04

Julie Grauer, CFM, Floodplain Program Supervisor — Date

Kansas Dept. Of Agriculture – Division of Water Resources

Robert G Bissell — 9/17/04

Robert G. Bissell, Director — Date

Federal Insurance and Mitigation Division
Federal Emergency Management Agency