*Missouri State Emergency Management Agency (SEMA)*
Federal Emergency Management Agency
Cooperating Technical Community
Mapping Activity Statement

**Agreement #5- Refinement of Approximate Zone A Boundaries**

In accordance with the Cooperating Technical Community (CTC) Memorandum of Agreement dated June 17, 1999 between the Missouri State Emergency Management Agency (SEMA) and the Federal Emergency Management Agency (FEMA), Agreement #5 is as follows:

1. **Objective and Scope:** The objective of this Mapping Activity is to refine and/or establish approximate Zone A flood zone boundaries in **Iron County, and the Cities of Annapolis, Des Arc, and Viburnum, Missouri if applicable.** Analyses will be of the 1% annual chance flood representing existing conditions and will encompass approximately 580 of square miles of drainage area and 378 of stream miles linear miles of flooding including the following flooding sources: All streams with drainage areas greater than one square mile.

2. **Period of Performance:** This Mapping Activity will begin on July 1, 2000 and end no later than September 30, 2001. This Mapping Activity may be terminated at the option of FEMA or SEMA in accordance with the provisions of the June 17, 1999 CTC Memorandum of Agreement.

3. **Funding/Cost-Sharing:** This project will be funded with DR-1253 and DR-1270 unmet needs funds. The local match will be met with State General Revenue funds.

4. **Standards:** The following standard and documents are relevant to this Mapping Activity:

   - 1% annual chance (100-year) water surface elevations for approximate Zone A floodplain mapping will be determined using analyses consistent with the methods detailed in FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas (*April 1995) and Chapter 6 of FEMA 37, *Guidelines and Specifications for Study Contractors* (January 1995). (FEMA 37 and 265 are available at FEMA's web site at http://www.fema.gov/mit/tsd/EN reg.htm). The CTC partner may expand on the approaches for analyzing Zone A areas outlined in FEMA 37 and FEMA 265 and/or develop new approaches. Such approaches should be coordinated with the FEMA Project Officer prior to commencement of analysis and mapping.

   - Computer models used for hydrologic and/or hydraulic analyses will meet the requirements of 44 CFR 65.6(a)(6) and be listed on FEMA's *Numerical Models Accepted by FEMA for NFIP Usage* (http://www.fema.gov/mit/tsd/EN_modl.htm).

   - Topographic mapping used to delineate the Zone A floodplain boundaries will be of adequate scale and topographic definition to provide reasonable accuracy. Planimetric features will be compatible with the base map (with respect to horizontal accuracy) to be

used by FEMA for Digital FIRM production. Topographic mapping taken from aerial photogrammetry or surveys will comply with the requirements of Appendix 4 of FEMA 37. The selection of the topographic mapping source to be used will be coordinated with the FEMA Project Officer prior to analysis and mapping.

- For areas depicted as Zone A on the effective FIRM that have been altered by the placement of earthen fill, the requirements of 44 CFR 65.5(a) apply.

- Work maps depicting the revised Zone A boundaries will comply with the requirements outlined in Chapter 9 of FEMA 37.

- Digital mapping submissions will comply with the requirements of Chapter 9 and Appendix 7 of FEMA 37.

- Automated data processing and modeling algorithms for GIS-based modeling and mapping will be documented and submitted to ensure they are consistent with the standards outlined above. Digital data sets (such as elevation, basin, or land use data) will be documented and submitted to FEMA for approval prior to performing the analysis to ensure they meet minimum requirements. If non-commercial (i.e., custom developed) software is used for the analysis, then full user documentation, technical algorithm documentation, and the software will be submitted to FEMA for review prior to performing this Mapping Activity.

5. **Products:** SEMA shall make the following products available:
   - Topographic work maps depicting the revised 1% annual chance approximated floodplain boundaries, designated as Zone A.

   - Written summary of the analysis methodologies used.

   - All back-up data, including supporting calculations and assumptions for any computed 1% annual chance water surface elevations. If computer models are utilized, input and output should be provided in both hardcopy and digital (CD-ROM, 3.5" diskette, or zip disk) format.

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

   - Completed form numbers 1 through 5 of *Revisions to National Flood Insurance Program Maps, Application/Certification forms and Instructions* (MT-2).

6. **Schedule and Milestones:**

   - The State Emergency Management Agency (SEMA) will provide a schedule for the Milestones listed in this section. Milestone 1 by January 1, 2001 and Milestone 2 by September 30, 2001.

**Milestone 1:** Upon completion, products for the first milestone will be provided to the FEMA Project Officer. These include:

- A county–wide map depicting limits of proposed revisions and/or Zone A areas to be added.

- Documentation of the proposed source of topographic data, including: scale; contour interval; source/methodology; date of survey/data collection; vertical and horizontal datums; and comparison of planimetric features with the Digital FIRM base map planned for use by FEMA.

- A written description of the proposed analysis methodology.

- Documentation of digital data sets to be used (such as elevation, basin, and land use data). Full user documentation; technical description of methodologies and algorithms; and a copy of the source codes and custom-developed software applications for GIS-based modeling will also be submitted.

**Milestone 2 (Final Product):** Upon completion, final products will be provided to the FEMA Project Officer. These include:

- Topographic work maps depicting 1% annual chance (Zone A) floodplain boundaries.

- All supporting computations, including computer model input and output.

- Completed form numbers 1 through 5 of *Revisions to National Flood Insurance Program Maps, Application/Certification Forms and Instructions* (MT-2).

- If GIS-based models are applied, all input and output data, intermediate data processing products, and GIS data layers. A Quality Assurance/Quality Control (QA/QC) report documenting the results of the independent review of all computational and data processing procedures were independently reviewed will also be submitted.

7. **Certification:** The following certifications apply to this Mapping Activity (as appropriate):
   - Hydrologic and/or hydraulic analyses and data will be certified by a registered professional engineer or licensed land surveyor in accordance with 44 CFR 65.6 (f).

   - Topographic information will be certified by a registered professional engineer or licensed land surveyor in accordance with 44 CFR 65.5 (c).

   - If fill is to be considered in the mapping to raise land areas above the 1% annual chance flood elevation, certification of the fill will be provided in accordance with 44 CFR 65.5 (a)(6) by the community's NFIP permit official, a registered professional engineer, or a licensed land surveyor.

8. **Technical Assistance and Resources:** The State Emergency Management Agency may obtain copies of FEMA-issued Letters of Map Change (LOMCs), archived engineering back-up data, and data collected as part of the Five-Year Mapping Needs Assessment from FEMA's Mapping Coordination Contractor (MCC). The MCC may be contacted at 1-877 FEMA MAP. General technical and programmatic information, such as FEMA 265, the Quick-2 computer program, and the MT-2 forms can be downloaded from FEMA's Flood Hazard Mapping web site (www.fema.gov./mit/tsd/). Specific technical and programmatic support may be provided through FEMA's MCC; such assistance should be requested through the FEMA Project Officer specified in section 12 of this Mapping Activity Statement.

   The CTC partner name may also consult with the FEMA Project Officer to request support in the areas of: selection of data sources, digital data accuracy standards, assessing vertical data accuracy, data collection methods or sub-contractors, and GIS-based engineering and modeling training.

9. **Subcontractors:** The USGS office in Rolla, Missouri will be a subcontractor for this activity. Procurement of subcontractors using Federal funds provided as part of this Mapping Activity will comply with the requirements of 44 CFR 13.36.

10. **QA/QC Procedures:** The QA/QC procedures outlined in Chapter 10 of FEMA 37 should be followed during the development of the approximate Zone A analysis and mapping. Analyses and mapping should be independently reviewed for compliance with the standards defined in Section 4 of this Mapping Activity Statement. This independent review will be conducted by SEMA.

    For GIS-based, automated modeling, QA/QC activities should insure automated calculations are reasonable and in compliance with standard flood modeling and mapping approaches. CTC Partner will document internal QA/QC procedures to FEMA to ensure all calculations and data processing were reviewed.

    **Reporting:** Specify reporting requirements, if any.

11. **Points of Contact:** The FEMA Project Officer is Robert Franke and the CTC's Project Manager is George Riedel, SEMA, or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities.

Each party has caused this Mapping Activity Statement to be executed by its duly authorized representatives.

Buck Katt, Deputy Director — date 6/30/00

Robert G. Bissell, Director, Mitigation Division — date 7/11/00