Thurston County, Nebraska
Cooperating Technical Partner
Mapping Activity Statement

Agreement #12 - Refinement of Approximate Zone A Boundaries

In accordance with the Cooperating Technical Partner (CTP) Memorandum of Agreement dated August 16, 1999, between the Nebraska Department of Natural Resources (NDNR) and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement #12 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 Thurston County, Nebraska. Analyses will be of the 1% annual chance flood representing existing conditions and will encompass approximately 400 square miles of drainage area and 320 linear miles of flooding including the following flooding sources: all flooding sources with greater than one square mile of drainage. Approximate Zone A boundaries will be delineated for the incorported areas of:

   - Emerson (portions of Emerson are within other counties),
   - Macy,
   - Rosalie,
   - Thurston,
   - Walthill, and
   - Winnebago.

   New flood boundaries will not be generated for

   - Pender, which has an existing detailed study.

   Note that portions of Thurston County are administered by the Winnebago and Omaha Native American Nations.

2. **Period of Performance:**

   The period of performance will be in accordance with Agreement Article II.

3. **Funding/Cost-Sharing:**

4. **Standards:** The following standards and documents are relevant to this Mapping Activity:
   - 1% annual chance 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 FEMA 265 are available at FEMA's Web site at

http://www.fema.gov/mit/tsd/EN_reg.htm). NDNR 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 Regional 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 floodplains 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) selected 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 that 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 that 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**: NDNR shall make the following products available:
   - Topographic work maps depicting the revised 1% annual chance approximate floodplain boundaries, designated as Zone A. Areas with existing detailed mapping should be differentiated on the work maps as an area not included in the study.
   - 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 Forms 1 through 5 of *Revisions to National Flood Insurance Program Maps, Application/Certification Forms and Instructions* (MT-2).
   - Submittals will include a digital data submission checklist and metadata. Contact the MCC for formats.

6. **Schedule and Milestones:**

Milestone 1: Products for the first milestone to be provided to the FEMA Project Officer include:

- Copies of correspondence to notify communities within the study area of the intentions of the NDNR to delineate the 1% annual chance approximate floodplain boundaries.
- Documentation of the proposed source of topographic data, 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 selected 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): Final products to be provided to the FEMA Project Officer include:

- Topographic work maps depicting 1% annual chance (Zone A) floodplain boundaries.
- All supporting computations, including computer model input and output.
- Completed Forms 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 that the results of the independent review of all computational and data processing procedures were independently reviewed will also be submitted.
- All work maps and reports developed as part of this Mapping Activity shall include this statement: "Financial support to prepare this publication was provided by the Federal Emergency Management Agency through a cooperative agreement with the NDNR. The information contained in this publication has not been reviewed for technical accuracy, and does not necessarily reflect the view of the Federal Emergency Management Agency".

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:** NDNR may obtain copies of FEMA-issued Letters of Map Change (LOMCs), archived engineering back-up data, and data collected as part of the Mapping Needs Assessment Process from FEMA's Mapping Coordination Contractor (MCC). The MCC may be contacted at 1-877 FEMA MAP (1-877-336-2627). 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 MCC Project Officer specified in Section 12 of this Mapping Activity Statement.

NDNR may also consult with the FEMA MCC Project Officer to request support in the areas of selection of data sources, selection of digital data accuracy standards, assessment of vertical data accuracy, selection of data collection methods, selection of sub-contractors, and GIS-based engineering and modeling training.

9. **Contractors:** Not Applicable

Quality Assurance/Quality Control (QA/QC) Procedures: NDNR will undertake internal QC reviews to ensure that the products described under Section 5 of this Mapping Activity Statement conform with the standards outlined under Section 4 of this Mapping Activity Statement. Additionally, an independent review for compliance with these standards will be undertaken by NDNR. The QA/QC procedures outlined in Chapter 10 of FEMA 37 should be followed during the development of the approximate Zone A analyses and mapping.

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

Reporting: Reporting requirements will be in accordance with Agreement Articles V & VI.

10. **Points of Contact:** The FEMA Regional Project Officer is Robert Franke, and the CTP Project Manager is Brian P. Dunnigan or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. If it is necessary, the assistance of FEMA's MCC should be requested through the FEMA MCC Project Officer, William Blanton.

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

Brian P. Dunnigan

Brian P. Dunnigan, P.E.,
Head, Floodplain Management/Dam Safety
Nebraska Department of Natural Resources

Date 8/03/01

Robert G Bissell

Robert G. Bissell, Director, Mitigation Division
Federal Emergency Management Agency

Date 7/17/01

APPROVED
AS TO FORM & CONTENT
BY NDNR LEGAL COUNSEL
JRC DATE 8-03-01