Dakota County, Minnesota
Cooperating Technical Partner
Mapping Activity Statement

Agreement 2003-01 – Digital Topographic Data Development

In accordance with the Cooperating Technical Partner (CTP) Memorandum of Agreement dated July 30, 2003, between Dakota County, Minnesota and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement 2003-01 is as follows:

1. **Objective and Scope:** The objective of this Agreement is to develop digital topographic data for the rivers and streams the southern two-thirds of Dakota County including: the Vermillion River watershed, including the South Branch through the north one-half of Castle Rock Township and an unnamed tributary located in the west one-half of Marshan Township and south one-half of Vermillion Township, Chub Creek watershed, the Cannon River, Trout Creek in Douglas Township and south one-half of Hampton Township and/or Digital Elevation Models (DEMs) for the subject flooding sources using the data collected in the field. The digital topographic data will be used for hydraulic modeling and floodplain mapping to produce Digital Flood Insurance Rate Maps (DFIRMs) for Dakota County.

   It is anticipated that the topographic data will cover approximately 321 square miles. This does not include the remaining 266 square miles that already has been mapped by Dakota County.

2. **Period of Performance:** Timely implementation of Agreement 2003-01 is critical to the conduct of Dakota County CTP Agreement 2003-02. Accordingly, the project management team has been established to create baseline schedules, review and comment on proposed contractor agreements and monitor all activities related to this Agreement. This Mapping Activity will begin in fall 2003 as RFP collection of vendors must be initiated and will be completed no later than 90-days after date of LIDAR flight. This Mapping Activity may be terminated at the option of FEMA or Dakota County in accordance with the provisions of the July 30, 2003 CTP Memorandum of Agreement.

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

4. **Standards:** The following standards and documents are relevant to this Mapping Activity:
   - Survey Methodology:
     - Global Positioning System (GPS) Surveys: Follow National Geodetic Survey publication NGS-58, "Guidelines for Establishing GPS-Derived Ellipsoid Heights (Standard: 2 cm and 5 cm)," November 1997.
     - Aerial Surveys: Follow United States Army Corps of Engineers (USACE) EM 1000-1-1000, "Photogrammetric Mapping," March 31, 1993.
     - Conventional Surveys: Follow standard American Congress on Surveying and Mapping (ACSM) procedures.

- Hydrographic Surveys: Follow USACE EM 1110-2-1003, "Hydrographic Surveys," October 31, 1994.

- *Guidelines and Specifications for Flood Hazard Mapping Partners*, February 2002, shall broadly define data accuracy and performance criteria. Section 1.4 of Volume 1 provides a general description of the decisions and criteria to be considered when data development is integral to floodplain mapping activities. All parts of *Guidelines and Specifications for Flood Hazard Mapping Partners*, February 2002, including Volume 1, can be found at www.fema.gov/mit/tsd/dl_cgs.htm.
- LIDAR specifications are found in Appendices A & M of *Guidelines and Specifications for Flood Hazard Mapping Partners*, February 2002. Section A.8 of Appendix A provides specific guidance on LIDAR performance and quality assurance procedures, including guidance on flight planning, GPS base station selection, system calibration, accuracy reporting methodology, treatment of artifacts, data voids and outliers, and the production of bare-earth Triangulated Irregular Network (TIN) data for use in hydrologic and hydraulic modeling. Appendix A can be found at www.fema.gov/mit/tsd/dl_cgs.htm.

5. **Products:** Dakota County shall make the following products available:
   - TIN data on CD-ROM.
   - Hardcopy topographic maps.
   - Report summarizing methodology and results.
   - Mass points and breaklines data on CD-ROM.
   - Digital workmap with contours.
   - Completed base map forms from *Revisions to National Flood Insurance Program Maps, Application/Certification Forms and Instructions* (MT-2), as appropriate.
   - Checkpoint analyses to assess the accuracy of TIN data, including Root Mean Square Error (RMSE) calculations to support vertical accuracy.
   - Identification of remote sensing data voids and methods used to supplement data voids.
   - National Geodetic Survey (NGS) data sheets for Network Control Points (NCP) used to control remote sensing and ground surveys.
   - Metadata compliant with Federal Geographic Data Committee.

6. **Schedule and Milestones:**

   Milestone 1: Products for the first milestone to be provided to the FEMA Project Officer include:
   - Documentation of methodology as per Appendix guidelines, data analyses, date of survey/data collection, NCP, and other relevant information.
   - Work plan for supplementing data voids caused by limitations of remote sensing and/or source of any supplementary data collection.

   Milestone 2 (Final Products): Final products for the first milestone to be provided to the FEMA Project Officer include:
   - The completed TSDN and accompanying data containing the information outlined in Section 5 of this Mapping Activity Statement.
   - A QA/QC report documenting the results of the independent review of all computational and data processing procedures.

Final products will be made available in accordance with the Period of Performance described in Section 2 of this Mapping Activity Statement.

7. **Certification:** The following certifications apply to this Mapping Activity (as appropriate):
   - Registered Professional Engineer or Licensed Land Surveyor will certify topographic information, in accordance with 44 CFR 65.5(c).
   - Certification of topographic information by the American Society for Photogrammetry and Remote Sensing (ASPRS) is also acceptable.

8. **Technical Assistance and Resources:** Dakota County may obtain copies of effective FIS hydraulic models, FEMA-issued Letters of Map Change (LOMCs), and archived engineering back-up data from FEMA's Mapping Coordination Contractor (MCC). The MCC may be contacted at 1-877 FEMA MAP (1-877-336-2627). 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.

   Dakota County, 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:** Procurement of subcontractors using Federal funds provided as part of this Mapping Activity will comply with the requirements of 44 CFR 13.36.

10. **Quality Assurance/Quality Control (QA/QC) Procedures:** Dakota County will undertake internal QC reviews to ensure that all work conforms to standards outlined under Section 4 of this Mapping Activity Statement. Overall QA/QC is the responsibility of the Dakota County and should be exercised at specific stages of the map production process. FEMA's role during data acquisition and map/data base compilation generally must be limited to performing QA/QC reviews, which may involve only cursory spot-checking of the FIRM work maps and supporting data, or to performing formal field map testing using FEMA or third-party forces. In addition, FEMA third-party forces will likely be available to conduct independent QC review at select milestones if requested.

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

12. **Points of Contact:** Dakota County's CTP Project Manager is Tom Berry, Shoreland Zoning Administrator, Dakota County Office of Planning, or subsequent personnel appointed to fulfill this responsibility. The FEMA contacts are: Ken Hinterlong, Project Officer, and Lee Traeger, Technical Monitor. It is anticipated that Suzanne Jiwani will represent the Minnesota DNR.

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

Greg Konat, Director, Physical Development Division
Dakota County, Minnesota

9-24-03
Date

Terry Reuss Fell, Branch Chief
Hazard and Risk assessment Branch, Region 5
Federal Emergency Management Agency

9-18-03
Date

Ogbazghi Sium, NFIP State Coordinator
Division of Waters
Minnesota Department of Natural Resources

9-26-03
Date