

Memorandum

To: Programs, Projects and Operations Subcommittee

Re: FEMA Coordinated Needs Management Strategy Assessment

Date: June 29, 2010

From: Lori Ann Laster, Stormwater Management Engineer

As a Cooperating Technical Partner (CTP) for FEMA, the District will receive funding to perform a Coordinated Needs Management Strategy (CNMS) assessment on currently mapped streams within the District.

The CNMS assessment will validate current effective floodplains along detailed streams in the District. FEMA defines validation as the confirmation of an adequate level of flood hazard risk identification on a community's Flood Insurance Rate Map (FIRM), based on its supporting engineering analysis for a flooding source with respect to physical, climate, and engineering methodology changes since the date of the effective analysis. The assessment will become part of a database FEMA will use to determine priority ranking for future map updates.

AMEC Earth and Environmental has performed the CNMS assessment for many counties throughout FEMA Region VII. As stated in the attached proposal, AMEC will complete the assessment for \$23,730. FEMA Region VII has indicated that the District will receive \$23,930 to complete the assessment.

Staff recommends that the District's consultant selection procedure be waived in this case. Should the consultant selection process be followed per District Policy 15.2, it is likely that AMEC would be selected due to their experience with the CNMS program. The District is required to have all work completed and accepted by FEMA prior to December 31, 2010. Waiving the consultant selection process will ensure that we meet the deadline for completion.

- **Recommendation that the General Manager be authorized to execute for and on behalf of the District the attached contract with AMEC Earth and Environmental to complete work for the Coordinated Needs Management Strategy Assessment as required by FEMA not to exceed \$23,730, subject to changes deemed necessary by the General Manager and approved as to form by District Legal Counsel.**



FEMA

Papio-Missouri River Natural Resources District COOPERATING TECHNICAL PARTNERS COORDINATED NEEDS MANAGEMENT STRATEGY MAPPING ACTIVITY STATEMENT

CNMS Mapping Activity Statement No. 6

In accordance with the Cooperating Technical Partners (CTP) Partnership Agreement dated April 11, 2003 between Papio-Missouri River Natural Resources District and the Federal Emergency Management Agency (FEMA), CNMS Mapping Activity Statement (MAS) No. 6 is as follows:

SECTION 1—OBJECTIVE AND SCOPE

Section 575 of the National Flood Insurance Reform Act of 1994 mandates that at least once every 5 years FEMA assess the need to revise and update all floodplain areas and flood risk zones identified, delineated, or established under Section 1360 of the National Flood Insurance Act, as amended.

In order to meet this requirement FEMA has developed a next generation strategy that utilizes modern geospatial technologies along with current FEMA policies, requirements and procedures to coordinate the management of mapping needs in a comprehensive approach referred to as the Coordinated Needs Management Strategy (CNMS).

It is necessary to determine the relative accuracy of flood hazard data presented on a community's Flood Insurance Rate Map (FIRM) before the map production process begins. The effective date of the FIRM does not provide an indication that the engineering analyses have been updated or are in need of an update to account for existing watershed characteristics that may influence the flood hazard information. Therefore, a needs assessment must be conducted to determine whether the flood hazard information reflected on the FIRM represents existing conditions and is deemed to be valid or current. The age of the analysis shall not be a determining factor in assessing the need for a restudy if the results of the needs assessment reflect the potential for minimal change to the flood hazard information.

The goal of CNMS is to define the validity of the engineering study data within the mapped inventory at the stream level. For the initial population of CNMS, Papio-Missouri River Natural Resources District shall coordinate with the Regional office to have all flooding source centerlines included in CNMS and have defined every segment contained in the CNMS stream network as valid, invalid, or in progress. The intent of having this information is to define the mapping need of each engineering study, determine and time-stamp the validity of the engineering study, and establish a national baseline record of New, Validated or Updated Engineering (NVUE) reporting geospatially that will influence future program production planning activities. In FY11, CTPs shall utilize CNMS as the sole source for reporting flood map update needs to the FEMA Regional Offices through the Annual Business Plan process. The appropriate Regional Service Center (RSC) will be used to collect Regional data once it is

completed. Future maintenance of this data will be documented in a future project specific MAS or Program Management MAS.

Papio-Missouri River Natural Resources District will validate all flooding source centerlines in the CNMS inventory for each watershed identified in Table 1.1, Watershed(s) to be Validated, as determined by the CNMS Inventory.

Table 1.1 Watershed(s) to be Validated

Watershed(s)	Flooding Source Types to be Evaluated				
	Requires Assessment	Unknown	Valid	Invalid	In Progress
10170101	✓	✓			✓
10200202	✓	✓			✓
10220003	✓	✓			✓
10220004	✓	✓			✓
10230001	✓	✓			✓
10230006	✓	✓			✓

This CNMS Project will be completed by the following Mapping Partners:

- Papio-Missouri River Natural Resources District;
- AMEC Earth and Environmental (as a contractor to Papio-Missouri River NRD);

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

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

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

Papio-Missouri River NRD is responsible for the implementation of an independent Quality Control (QC) plan for all assigned tasks. The Papio-Missouri River NRD will submit a Summary

Report that describes and provides the results of all automated or manual QC review steps. The report should include the process for all assigned tasks.

Independent QC review activities may be performed by the RSC contractor at the discretion of FEMA. The Papio-Missouri River NRD will need to submit its QC plan to the Regional Project Officer for approval before the start of planned activities. The Papio-Missouri River NRD will be responsible for addressing any and all comments resulting from independent QC, including re-submittal of deliverables as needed to pass technical review.

Deliverables should be submitted to the RSC every 30 days for an independent review. The Papio-Missouri River NRD will coordinate with the RSC to determine submittal schedules.

The stream assessment should be prioritized to assist with the development of future projects.

1. Streams in counties with an effective DFIRM;
2. Streams in counties with an unmodernized FIRM;
3. Streams in counties in the 6 month adoption period (LFD has been issued);
4. Streams in counties where the appeal period has been concluded
5. Streams in counties with preliminary data

Validation Process Documentation Checksheet

Responsible Mapping Partner: Papio-Missouri River Natural Resources District

Scope: Documentation of research and methodologies influencing validation findings recorded in the S_Studies_Ar feature class are to be retained by Papio-Missouri River Natural Resources District and recorded in the validation process documentation checksheet (CNMS Database User's Guide, Appendix B). This checksheet must be provided to support validation decisions and inputs into CNMS. Information provided in these fields will document the location, source, and methodologies used in order to determine various validation decisions. GIS data layers and output results from the CNMS validation process will be maintained and stored by Papio-Missouri River Natural Resources District but must be referenced in the Validation Process Documentation Checksheet. The need of the mapping partner to maintain records is important as the deliverable is subject to scrutiny of the validation decisions made by Papio-Missouri River Natural Resources District.

Standards: All Program Management work shall be performed in accordance with the standards specified in Section 4 - Standards.

Deliverables:

- Validation Process Documentation Checksheet

Populating the CNMS Studies Database

Responsible Mapping Partner: Papio-Missouri River Natural Resources District

Scope: Papio-Missouri River Natural Resources District will use the Validation Checklist (CNMS Database User's Guide, Appendix A) and populate appropriate table records in the S_Studies_Ar feature class in the CNMS Geodatabase.

Utilization of the Validation Checklist is primarily directed toward the evaluation of existing detailed floodplain studies, the results of which are captured as a 'CNMS Study Record'. Lack of an existing FEMA flood hazard study should result in development of a CNMS 'Request' Record. The central purpose of the Validation Checklist is to outline a format that must be utilized to document a flood study as being VALIDATED or an UNMET NEED.

The CNMS Validation checklist is divided into three main categories; Background Information, Critical Elements, and Secondary Elements. The Background Information category contains the date of the effective analyses for each studied stream, the Hydrologic and Hydraulic (H&H) models used for the effective study, and if the H&H models are available in a digital format. The Critical Elements section of the checklist includes 7 critical elements that consist of physical factors, climatological factors, and engineering methodology that have changed since the date of the effective analyses. The Secondary Elements section contains 10 secondary factors that have changed since the date of the effective analyses, and are used in the validation process.

Any deficiency identified as an UNMET NEED or a CNMS Request Record will warrant a review for inclusion in the map update investment process. For existing floodplain studies, this review will be triggered when one critical or four or more secondary deficiencies have been identified to mark the area as having an UNMET NEED. Based on the Validation Checklist, if the validation evaluation identifies no critical elements and less than four secondary deficiencies for a stream segment flood study, the engineering analysis is considered VALIDATED. Validating approximate studies is completed independent of the Validation Checklist. For validation rules applicable to approximate studies refer to CNMS Database User's Guide.

Standards: All Program Management work shall be performed in accordance with the standards specified in Section 4 - Standards.

Deliverables:

- CNMS Geodatabase with the following elements populated as specified in the CNMS User's Guide:
 - 'S_Studies_Ar' Polygon feature class populated for detailed engineering studies.
 - 'S_Requests_Ar' Point/Polygon feature class populated as necessary.
 - 'Specific_Needs_Info' Table populated as necessary.
 - 'Point_of_Contact' Table populated as necessary.

Updating the CNMS Inventory

Responsible Mapping Partner: Papio-Missouri River Natural Resources District

Scope: The CNMS Inventory serves as spatial linework representing flooding sources within FEMA's map inventory and the foundation for NVUE reporting. Validation status assigned to the CNMS Inventory linework is sourced from the CNMS Studies dataset (S_Studies_Ar). Papio-Missouri River Natural Resources District will use the existing CNMS Inventory linework acquired from the Region as a baseline for updating the flooding source centerlines previously attributed as "Requires Assessment" or "Unknown". As study validation categories are updated or changed in the CNMS Studies records (polygons created under the Populating the CNMS Studies Database task of this MAS) these changes will be imprinted on the respective flooding source centerlines in the CNMS Inventory. Modifying the Inventory linework geometry prior to attribute transfer from the S_Studies_Ar polygons may be necessary due to a) better quality line geometry available, or b) due to inaccurate representation of stream miles for

the SFHAs in the existing Inventory. The validation status of all streams within the CNMS Inventory shall be labeled as Valid, Invalid, In Progress, or Unknown as described in Section 2.3 of the CNMS Database User's Guide.

Standards: All Program Management work shall be performed in accordance with the standards specified in Section 4 - Standards.

Deliverables:

- CNMS Geodatabase with 'S_Studies_Ln' Feature Class (Polyline) updated to inherit the current validation statuses from the 'S_Studies_Ar' feature class and updated to reflect any changes in validation status of approximate studies.

SECTION 2—PERIOD OF PERFORMANCE

The mapping activities outlined in this CNMS MAS will be completed as specified in the Agreement Articles of the Cooperative Agreement. The Activities may be terminated at the option of FEMA or Papio-Missouri River Natural Resources District in accordance with the provisions of the Partnership Agreement dated April 11, 2003. If these activities are terminated, all products produced to date must be returned to the FEMA Regional Office and the remaining funds from uncompleted activities, provided by FEMA for this CNMS MAS, will be returned to FEMA.

SECTION 3—FUNDING/LEVERAGE

FEMA is providing funding, in the amount of \$23,930, to Papio-Missouri River Natural Resources District for the completion of this CNMS Project. Papio-Missouri River Natural Resources District shall provide any additional resources required to complete the assigned activities for this CNMS Project. Activities associated with any additional needs would be performed based on availability of additional funds. The leverage listed below includes in-kind services and estimated values for acquired information (i.e. database population, CNMS Inventory update, validation process documentation, etc.). Papio-Missouri River Natural Resources District shall complete Table 3.1 Contribution and Leverage

Table 3.1 Contribution and Leverage

CNMS Task	FEMA Contribution	Partner Contribution	% Partner Leverage	Total Project Cost
CNMS	\$23,930	\$0	0%	\$23,930
TOTAL FUNDING AMOUNTS	\$23,930	\$0	0%	\$23,930

SECTION 4—STANDARDS

The standards relevant to this CNMS MAS are the CNMS File Geodatabase, the CNMS Database User's Guide, Version 3.0, April 2010, CNMS Sample Validation Process Documentation Checksheet, and

appropriate FEMA Procedural Memorandums. These documents can be obtained from the FEMA library at <http://www.fema.gov/library/index.jsp>.

SECTION 5— SCHEDULE

The activities documented in this CNMS MAS shall be completed and submitted by December 31, 2010 to the appropriate RSC for Regional consolidation. If gaps or missing information in the submittal is identified then the CTP shall provide missing information within 1 month of notification from the RSC. If changes to this schedule are required, the responsible Mapping Partner shall coordinate with FEMA and the other Mapping Partners in a timely manner.

SECTION 6—CERTIFICATIONS

For completion of the CNMS Validation Checklist, some of the validation elements should be completed under the supervision of an engineer or other responsible party. For example, investigation of updated and effective peak discharges based on confidence limits criteria in the FEMA Guidelines and Specifications (G&S) for Flood Hazard Mapping Partners. Entering & updating the validation elements in the Geodatabase should be performed by users experienced with Geographic Information Systems (GIS) software.

SECTION 7—TECHNICAL ASSISTANCE AND RESOURCES

Project Team members may obtain copies of FEMA-issued LOMCs, archived engineering backup data, and data collected from FEMA and/or your Regional Project Officer. Specific technical and programmatic support may be provided through FEMA and/or its contractor; such assistance should be requested through the FEMA Project Officer specified in Section 11 – Points of Contact.

Data requests to the FEMA library will follow guidance documentation within the CNMS Procedure Memorandums for data library requests. 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 8—CONTRACTORS

Papio-Missouri River Natural Resources District intends to use the services of AMEC Earth and Environmental as a contractor for this CNMS Project. Papio-Missouri River Natural Resources District 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 United States Government Printing Office website at http://www.access.gpo.gov/nara/cfr/waisidx_04/44cfr13_04.html.

SECTION 9—REPORTING

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

Papio-Missouri River Natural Resources District shall provide financial reports to the FEMA Regional Project Officer and Assistance Officer in accordance with the terms of the signed Cooperative Agreement for this MAS.

Status Reporting: Status reports will be submitted on a quarterly basis in accordance with the financial reporting submittals. Papio-Missouri River Natural Resources District shall refer to 44 CFR 13.4 to obtain minimum requirements for status reporting. The Project Officer, as needed, may request additional information on status.

Papio-Missouri River Natural Resources District may meet with FEMA and/or its contractor up to bi-weekly, or more frequently if needed, to review the progress of the project in addition to the quarterly financial and status submittals. These meetings will alternate between FEMA's Regional Office, the Papio-Missouri River Natural Resources District office, and conference calls, as necessary.

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

Section 10—Project Coordination

Throughout the project, all members of the PMT 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
- Telephone conversations with FEMA and other Project Team members every 30 days throughout the project;
- E-mail, facsimile transmissions, and letters, as required.

SECTION 11—POINTS OF CONTACT

The points of contact for this CNMS Project are Bob Franke, the FEMA Regional Project Officer; Lori Laster, the Project Manager for Papio-Missouri River Natural Resources District; or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. When necessary, any additional FEMA assistance should be requested through the FEMA Regional Project Officer.

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

John Winkler
General Manager
Papio-Missouri River Natural Resources District

Date

Bob Franke
Regional Project Officer
Federal Emergency Management Agency, Region VII

Date



AMEC Earth & Environmental, Inc

**Papio-Missouri River NRD CNMS
(Coordinated Needs Management Strategy)
Database**

Scope of Work and Cost Proposal

June 2010

1. Introduction

The Papio-Missouri River Natural Resources District (Papio), as a part of its ongoing partnership with FEMA to provide local communities with the most modern floodplain maps possible, has committed to support FEMA's new Coordinated Needs Management Strategy (CNMS) initiative. Papio's continued support of the Map Modernization Program and Levee Certification Program lead its evolution into RiskMap. Papio's partnership with AMEC is a vital link in that chain of support for FEMA Headquarters.

CNMS is the mechanism by which FEMA will use to fund future NFIP (National Flood Insurance Program) studies. Section 575 of the National Flood Insurance Reform Act of 1994 mandates that at least once every 5 years FEMA assess the need to revise and update all floodplain areas and flood risk zones identified, delineated, or established under Section 1360 of the National Flood Insurance Act, as amended. In order to meet this requirement FEMA has developed a next generation strategy that utilizes modern geospatial technologies along with current FEMA policies, requirements and procedures to coordinate the management of mapping needs in a comprehensive approach referred to as the Coordinated Needs Management Strategy (CNMS).

The goal of CNMS is to define the validity of the engineering study data within the mapped inventory at the stream level. For the initial population of CNMS, each CTP is tasked with creating a stream centerline for each flooding source within their district which defines every segment contained in the CNMS stream network as valid, invalid, or in progress. The intent of having this information is to define the mapping need of each engineering study, determine and time-stamp the validity of the engineering study, and establish a national baseline record of New, Validated or Updated Engineering (NVUE) reporting geospatially that will influence future program production planning activities. In FY11, this will be the sole source for reporting flood map updates needs to the FEMA Regional Offices through the Annual Business Plan process. Only those streams who's CNMS status is 'Invalid' will qualify for funding under this new system.

Currently there are four full and two partial Nebraska counties that require CNMS databases for the Papio NRD. They are Dakota, Douglas, Sarpy, Washington and portions of Burt and Thurston. See Figure 1.

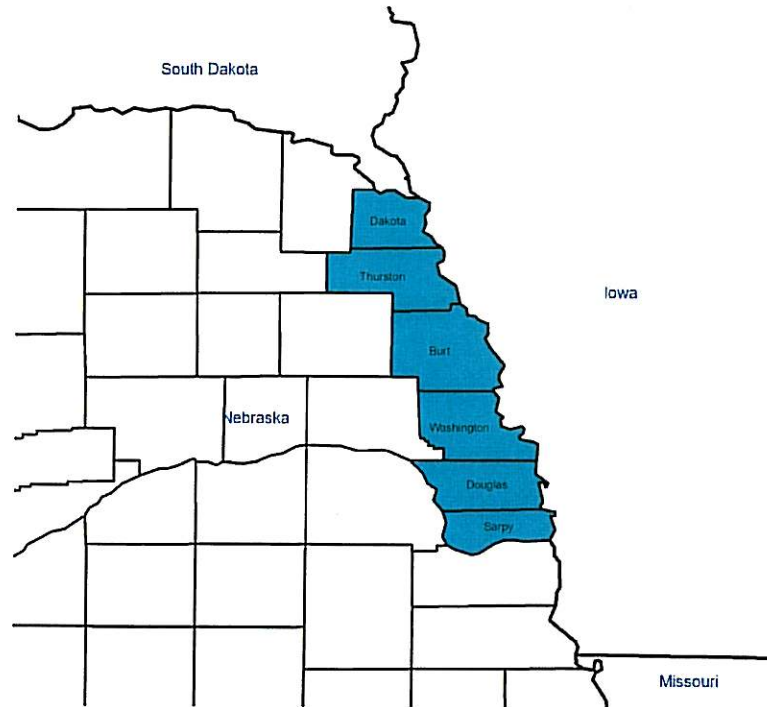


Figure 1: Counties for CNMS for Papio-NRD

AMEC was part of the initial 2009 Pilot Project for FEMA for the CNMS process designed to help refine the process. AMEC conducted studies for 63 counties in Kentucky, Missouri and Alabama for the Pilot Project. This was the largest number completed by any other entity in the nation. Currently, AMEC is under contract to complete statewide CNMS databases for both Missouri and Kansas which includes 221 counties or municipalities. Furthermore, AMEC has completed a website for the state of Missouri which enables Floodplain Administrators to assist in identifying unmet study needs at the point they are initially identified. This website is under review by FEMA headquarters for possible incorporation nationwide.

2. Scope of Work

AMEC will research and create FEMA compliant CNMS databases using existing, available data as listed below for the four full counties and portions of two others that make up the Papio-Missouri River Natural Resource District.

3. Project Funding Source

Project will be funded in full by the FEMA Region VII CNMS Grant funds.

4. Project Deliverables

AMEC will deliver four full county and two partial county FEMA compliant Phase II CNMS databases. The data obtained in order to execute this scope will be delivered. Such data may include, but not be limited to, any of the following:

- a. DFIRM databases
- b. Master Stream Network (Stream Centerlines with Current Flood Zones identified)
- c. Rectified FIRMs
- d. Aerial photography
- e. MNUSS reports
- f. FIS reports
- g. FEMA Library data request results
- h. USGS DEMs
- i. USGS Land Cover data
- j. USGS Gage Data
- k. Flow accumulations
- l. Repetitive Loss reports
- m. Additional H&H studies provided from local sources

Note: All data may not be available for all counties.

5. Project Completion Date

Assuming that a Notice To Proceed is granted by August 19, 2010, delivery of the CNMS databases would be completed by December 15, 2010

6. Project Cost

Creation of CNMS Databases

\$23,730

Total Fixed Fee Cost

\$ 23,730

Andy Clevenger
Business Unit Manager
AMEC Earth and Environmental

Date

John Winkler
General Manager
Papio-Missouri River NRD

Date