



Federal Emergency Management Agency
King County
Cooperating Technical Community
Mapping Activity Statement

Hydrologic and Hydraulic Analyses and Floodplain Mapping Agreement - No. 1

In accordance with the Cooperating Technical Community (CTC) Memorandum of Agreement dated September 26, 2000 between King County and the Federal Emergency Management Agency (FEMA), Agreement No. 1 is as follows:

1. **Objective:** The objective of the Upper Snoqualmie Floodplain Mapping Project is to re-evaluate existing hydrologic and hydraulic analyses and prepare floodplain and floodway mapping for the upper Snoqualmie River Basin along the lower South and Middle Forks of the Snoqualmie River. The detailed study area for the project is shown on the attached map and consists of approximately 7 river miles.
2. **Period of Performance:**
This Mapping Activity will begin on September 26, 2000 and end no later than September 30, 2001. This Mapping Activity may be terminated at the option of FEMA or King County in accordance with the provisions of the September 26, 2000 CTC Memorandum of Agreement.
3. **Funding/Cost-Sharing:** FEMA agrees to provide \$50,000 to King County to assist in this project. King County will provide in-kind resources for project management, contract administration and coordination of study/mapping products with the Cities of North Bend and Snoqualmie and affected property owners and residents.
4. **Standards:** The following standards and documents are relevant to this Mapping Activity:
 - Detailed hydrologic and hydraulic analyses and floodplain mapping will follow the standards set forth in FEMA 37, *Guidelines and Specifications for Study Contractors* (January 1995) and Title 44 of the Code of Federal Regulations (CFR), Part 65. FEMA 37 is available at FEMA's web site at http://www.fema.gov/mit/tsd/EN_reg.htm.
 - Computer models used for hydrologic and/or hydraulic analyses will meet the requirements of 44 CFR 65.6(a)(6) and be 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 floodplain and floodway 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.

- Any levee or dike systems to be shown on the community's FIRM as providing protection from the 1% annual chance flood will comply with the requirements of 44 CFR 65.10. Chapter 7 of FEMA 37 provides guidelines for evaluating levee systems.
 - Flood elevations and floodplain and floodway boundaries will reasonably tie in to non-revised information in accordance with 44 CFR 65.6(a)(6).
 - The floodway will be established in accordance with 44 CFR 65.7, as well as any applicable state requirements.
 - Digital mapping will comply with the requirements of Chapter 9 and Appendix 7 of FEMA 37.
 - Digital Elevation Models (DEMs) and field survey data will meet vertical accuracy requirements contained in Appendix 4 of FEMA 37.
5. **Products:** King County will make available items outlined in Chapter 11 of FEMA 37 in the Technical Support Data Notebook (TSDN) format. These include:
- Digital 1% and 0.2 % annual chance floodplain and floodway boundaries;
 - Digital profiles of the 10%, 2%, 1%, and 0.2% annual chance water surface elevations representing existing conditions;
 - Floodway data tables;
 - Digital copies of all hydrologic and hydraulic modeling (input and output files); and
 - All back-up data used in the analyses or mapping.

6. **Scope of Work and Schedule:**

The Upper Snoqualmie Floodplain mapping project will consist of a comprehensive re-evaluation of FEMA's preliminary floodway and floodplain maps (PFIRMs) and Flood Insurance Study (PFIS) for the lower Middle and South Fork Snoqualmie Rivers, dated June 30, 1999. The re-evaluation will entail an assessment of the major elements noted below to determine the reliability of source information, the technical accuracy of the analyses and study findings and the overall study conformance with applicable FEMA guidelines and specifications:

- 1) control survey, cross-section survey and mapping of topographic data for the study area,
- 2) the hydrologic and hydraulic methods and analyses used to develop the PFIRMs and PFIS, and
- 3) the base flood elevations, flood plain boundaries and floodways depicted on the PFIRMs and the documentation incorporated in the PFIS and other associated reports.

The re-evaluation will include an assessment of the major issues and concerns raised in letters of appeal on the PFIRMs and PFIS and information from FEMA contractors and FEMA Hazards Study Branch concerning the recommended disposition of the issues of appeal.

Based on the assessment outlined above, King County will prepare an updated PFIRM and PFIS for the study area. The updated PFIRM and PFIS will be coordinated with the FEMA Region X and the Cities of North Bend and Snoqualmie. King County and the Cities will conduct a joint public meeting with the community to review the updated study results and take community input. Issues raised in the community involvement process will be evaluated and a final PFIRM and PFIS prepared.

The final PFIRM and PFIS will be developed in accordance with all applicable FEMA guidelines and specifications as provided in Sections 4, 7 and 10 of this Agreement. The final PFIRM and PFIS will be made available in accordance with the Period of Performance described in Section 2 of this Agreement.

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.
 - Any levee systems to be accredited as discussed in Section 4 of this Mapping Activity Statement will be certified in accordance with 44 CFR 65.10(e).
8. **Technical Assistance and Resources:** King County may obtain copies of 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)/Technical Evaluation Contractor (TEC) as part of the initial data research. Copies of FEMA's rule-based engineering software packages such as CHECK-2 to evaluate HEC-2 models and FISPLOT, an automated flood profile plotting software package, may also be obtained through the MCC/TEC. The MCC/TEC may be contacted at 1-877-FEMA-MAP (336-2627). General technical and programmatic information 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/TEC; such assistance should be requested through the FEMA Project Officer specified in Section 12 of this Mapping Activity Statement.

FEMA will provide to King County copies of all studies, reports, analyzes, maps, models and related technical information associated with the Seattle District, U.S. Army Corps of Engineers floodplain mapping study of the subject area including FEMA's review of the Corps study. Further, FEMA will provide King County with copies of all letters of appeal and related correspondence on the current Preliminary Flood Insurance Study (PFIS) and Preliminary Flood Insurance Rate Maps (PFRMs) and any technical information, studies or other relevant information from FEMA contractors or FEMA's Hazards Study Branch, Mitigation Directorate concerning recommendations and positions regarding issues of appeal.

9. **Subcontractors:** The engineering firm of Harper, Houf, Righelliis, Inc. will be utilized by King County to assist in this project. 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:** The QA/QC procedures outlined in Chapter 10 of the *Guidelines and Specifications for Study Contractors* should be followed during the development of the hydrologic and hydraulic analyses and floodplain 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 King County.

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

11. **Points of Contact:** The FEMA Project Officer is Carl Cook and the CTC's Project Manager is Dave Clark, 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.

Tiberah L. Arima for Nancy Hansen
CTC Partner's authorized representative

9/22/00
date

Carl P. Cook Jr.
FEMA authorized representative

9/25/00
date

State representative*

date

* In States where statutory and/or regulatory requirements require the State's review and/or approval of new flood hazard data, the State will be a signatory to a community's Mapping Activity Statement.