



**Santa Clara Valley Water District
Federal Emergency Management Agency
Cooperating Technical Community
Mapping Activity Statement**

Agreement 1- Hydrologic and Hydraulic Analyses and Floodplain Mapping

In accordance with the Cooperating Technical Community (CTC) Memorandum of Agreement dated September 13, 1999, between the Santa Clara Valley Water District (SCVWD) and the Federal Emergency Management Agency (FEMA), Agreement 1 is as follows:

1. **Objective and Scope:** The objective of this Mapping Activity is to develop detailed hydrologic and hydraulic analyses and floodplain and floodway mapping in the City of Los Gatos. Hydrologic analyses will be completed by the District to determine the outflows from Vasonna Dam and downstream intermediate points, as necessary. The flows shall represent existing conditions for frequencies of 10, 50, 100, and 500 year recurrence intervals. Hydraulic analysis and floodplain mapping will be conducted by the FEMA Study Contractor for approximately one linear mile of flooding of Los Gatos Creek. This is a joint H&H task. Part of the work will be performed by the SCVWD and part by the FEMA SC. The responsibilities of each party are shown in the attached detailed Scope of Work.
2. **Period of Performance:**
This Mapping Activity will begin on 9-30-99 and end no later than 9-30-2000. This Mapping Activity may be terminated at the option of FEMA or SCVWD in accordance with the provisions of the September 13, 1999, CTC Memorandum of Agreement.
3. **Funding/Cost-Sharing:** FEMA will provide the CTC sponsor, SCVWD with _____ to accomplish the Scope of Work.
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: SCVWD will make available the following items for inclusion to the Technical Support Data Notebook (TSDN) format. These include:

- Cross Section Data
- Aerial basemaps and aerial photo data
- Certifications for RM, survey and aerial mapping data.
- Certifications and computations for all levee and floodwalls.
- Digital copies of all hydrologic modeling (input and output files); and
- All back-up data used in the analyses or mapping.

6. Schedule and Milestones:

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

- Annotated copies of effective FIRMs depicting limits of proposed study.
- 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 summary of the initial data research; proposed analysis methodologies; and a work plan.
- 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 provided.
- Copies of topographic maps depicting proposed cross section locations.

Milestone 2 (Hydrology Phase): Upon completion, products for the second milestone will be provided to the FEMA Project Officer. This includes draft hydrologic analyses in accordance with the TSDN format.

Milestone 3 (Hydraulics Phase): Upon completion, products for the third milestone will be provided to the FEMA Project Officer. These include the documentation necessary to certify the floodwalls and the levee sections.

Milestone 4 (Final Products): Upon completion, final products will be provided to the FEMA Project Officer. These include:

- The completed documentation for inclusion in the TSDN. This shall include all base maps, cross sections, hydrologic computations, and necessary certifications.

- 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:** SCVWD 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.
- 9. Subcontractors:** 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 the FEMA Technical Evaluation Contractor.

11. **Reporting:** A quarterly progress report shall be submitted within 30 days after the end of each quarter (January 30, April 30, July 30, and October 30). A final financial report shall be provided 90 days after the completion of the task, which will be December 31, 2000
12. **Points of Contact:** The FEMA Project Officer is Les Sakumoto, P.E. and the CTC's Project Manager is Randy Talley, P.E., 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.