

CHAPTER 1. INTRODUCTION

The purpose of this hydrology manual is to provide hydrologic analysis procedures that can be applied to studies and designs of drainage and flood control facilities throughout Solano County to produce consistent and equivalent results. The manual describes two methods of analysis that are widely used for hydrologic analysis – the rational method and HEC-1/HEC-HMS (see Section 3.2 for information about HEC-1/HEC-HMS) – and provides as much information as possible to simplify their use. The manual also provides information intended to simplify the submittal process by identifying essential elements of a complete hydrology report.

There are many hydrologic analysis methods available other than the rational method and HEC-1/HEC-HMS, and it is not the purpose of this manual to preclude the use of valid analysis methods. Much of the information provided in this manual for use with the rational method or HEC-1 is also useful for other hydrologic analysis methods.

The manual contains the following information:

- Chapter 2—general hydrologic information for Solano County, including topography, precipitation, soil, land use, and tidal information.
- Chapter 3—summary of the drainage criteria and requirements established by Solano County and the cities in Solano County, procedures for use of the rational method and HEC-1/HEC-HMS, and much of the data necessary to implement these analysis methods.
- Chapter 4—information which should be included in a complete hydrology report to facilitate the approval of planning and design of drainage facilities.
- Appendix A—copy of a 1998 precipitation duration-depth-frequency report for Solano County.
- Appendix B—example using the rational method.
- Appendix C—rural HEC-1 example using gaged precipitation and creek flow data.
- Appendix D—urban HEC-1 example.

This manual does not supercede any city or county drainage requirements or recommendations, or establish any design criteria for drainage facilities. Design criteria are established by the agencies responsible for approving drainage facilities. This manual also does not address the hydraulic analyses necessary to evaluate hydraulic grade line elevations.

The HEC-1/HEC-HMS methodologies presented in this manual were developed through comparison of modeled flows and actual gaged flows for a watershed in Solano County and comparisons with peak flows resulting from other County/City methodologies. This level of evaluation of the HEC-1/HEC-HMS methodologies is considered to be only a preliminary

verification of these methodologies. The methodologies have not been verified under all possible hydrologic conditions in which this manual will likely be used.

Recently, several rain gages and stream gages have been installed in watersheds around Solano County. These gages are collecting rain and flow data in 5-minute to 1-hour increments. After two or three more winters, a significant rain/flow database will be available which can be used to more precisely calibrate the analysis methodologies described in this manual.

It is anticipated that this manual will be revised in the future (after it has been used for 2 or 3 years). The revisions may include such items as:

- Revision of the hydrologic methodologies after they have been compared against hydrologic analyses using other methodologies over a wide range of conditions. In particular, comparisons of peak flows calculated using the Snyder's Method in this manual against other methods are requested (*e.g.* city master planning efforts within Solano County, other County methods, other hydrologic computer programs).
- Addition of more examples to cover a wider range of uses of the manual.
- Expansion of the manual to include hydraulic evaluation methodologies and programs.

Users of the manual are encouraged to submit written comments, comparisons of peak flow analyses using the manual methodology and other approaches, criticisms, and suggestions for improving the manual to:

Address: David Okita
General Manager
Solano County Water Agency
508 Elmira Road
Vacaville CA 95687
Phone: (707) 451-2852

Correspondence can also be e-mailed to dokita@solanobiz.net.