

# CE 3354 Engineering Hydrology

Lecture 10: Report Writing Workshop  
HEC-HMS Workshop

# Outline

- Writing Workshop
  - Report Writing
  - RP-1 Expectations
- HEC-HMS Workshop
  - Minimal Model (just to get started)

# Fundamentals

- Know your audience - Professional!
  - Explain the problem
  - Discuss solving method
  - Describe findings/results
- 
- Example: Car Service Repair

# Example Requirements

- HCFCD Reports:

10/5/04

## SECTION 19 – REPORT REQUIREMENTS

### 19.1 Introduction

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**Overview**  
19.1.1

A drainage or design report is important to confirm a proposed project is designed in accordance with the policies, guidelines, and criteria in this manual and sound engineering practice. The report communicates the justification of the drainage plan or design for review and approval purposes, and is a reference document for others in the future who want to perform additional work in, on, over, under, or adjacent to the same HCFCD facility.

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**Purpose of Reports**  
19.1.2

The purpose of a drainage or design report is to document, identify, and resolve as many design issues as possible early in the project development phase in order to facilitate completion of the construction drawings and a successful project.

The length of the report is not important provided the applicable design topics are covered clearly and completely.

It is suggested that reports over ten pages be bound.

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**Report Content**  
19.1.3

Prepare clear, concise, and complete reports for the proposed project that:

- Cover applicable topics.
- Explain the decisions made.
- Indicate where and why criteria were not followed.
- Summarize pertinent information and data.
- Include tables, maps, exhibits, photographs, calculations, etc.

[Exhibits 19-1](#) and [19-2](#) are examples of a plan view and profile view for a

# Project report (1 of 2)

- Transmittal Letter
- Cover Page
- Table of Contents
- List of Tables and Figures
- Executive Summary

# Project report (2 of 2)

- ▶ Section 1 - Introduction
- ▶ Section 2 - Existing and Proposed Conditions
- ▶ Section 3 - Hydrologic Analysis
- ▶ Section 4 - Discharge and Water Surface Estimation
- ▶ Section 5 - Conclusions and Recommendations

# Transmittal letter

- Formal business letter to person that commissioned the report
- Brief. Includes:
  - Salutation (Dear Mr. \_\_\_\_\_)
  - Purpose of letter
  - Describe what is being sent
  - Main findings of report
  - End transmittal letters with a one-sentence paragraph that establishes goodwill by thanking or complimenting the recipient.
  - Signature from all members with credentials

# Cover

- Include Team name and members
- Title of the Project
- Date



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## **LIST OF TABLES**

- Table 1 – Existing Cross-Section Data – 200 CFS
- Table 2 – Existing Cross-Section Data – 650 CFS
- Table 3 – Proposed Cross- Section Data – 200 CFS
- Table 4 – Proposed Cross-Section Data – 650 CFS

## **LIST OF FIGURES**

- Figure 1 – X-Y-Z Perspective Plot
- Figure 2 – Comparison of Exist and Prop Cross-Sections 37 and 38
- Figure 3 – HEC-RAS Geometric View
- Figure 4 – HEC-RAS Geometric View
- Figure 5 – HEC-RAS Culvert Input Data
- Figure 6 – HEC-RAS Roadway Input Data

## **LIST OF EXHIBITS**

- Exhibit 1 – Top View of HEC-RAS Cross Sections
- Exhibit 2 – Proposed Side View of Roadway and Culvert
- Exhibit 3 – Proposed Cross-Section 38 Culvert and Roadway View
- Exhibit 4 – Proposed Cross-Section 37 Culvert and Roadway View

## **LIST OF APPENDICES**

- Appendix 1 – Hand Calculations



# Executive Summary

- Informs reader precisely of:
  - research problem
  - analysis method
  - results
- Transmittal Letter and Executive Summary
  - Reader shouldn't have to read whole report to get main points
- Summary!!
  - Limit to one (1) page

# Section 1 - Introduction

- Project Name and Purpose
- Project Limits
- Project Objectives
- Assumptions and Constraints
- Prior Studies (if appropriate)

# Section 1 - Introduction

- Explains the study problem and its context briefly
  - Importance of problem
  - Reasons and goals for study
  - Limitations
- You want your audience to understand
  - WHY the report is important
  - WHY it's being written
  - WHY reader should read it
- Present Tense

# Section 2 - Existing & Proposed Conditions

- Location and Topography
- Land Use
- Right-of-Way (if appropriate)
- Pipelines and Utilities (if appropriate)
- Other

# Section 3 - Hydrologic Analysis

- Analysis Objective
- Methodology
- Pre-Project Conditions
- Post-Project Conditions



# Section 3 - Hydrology

- Methodology - Explains how:
  - Data was gathered/generated
  - Data was analyzed
- Assumes reader understands material
- Is in *past tense*
  - The research was conducted to .....

# Section 3 - Hydrology

- Active vs. Passive
  - Active: I observed the angle to be...
  - Passive: The angle was observed to be...
- Active: The authors suggest...
- Passive: It is suggested..
- Active: We used HEC-HMS to..
- Passive: The hydrologic model HEC-HMS was used to ..

# Section 3 - Hydraulics

- Hedging words
  - It would appear that
  - These results suggest
  - It would seem
  - A cause of this may be
  - A possible explanation for this is

## Section 4 - Discharge and WSE

- Could be part of Section 3, or as separate item.
- It is actually a results section - here you present the results of the study and interpret them for the reader.

# Section 4 - Discharge and WSE

- Results - Visually *and* textually represents findings
  - Visually:
    - Graphs, tables, diagrams, charts, screen captures
    - Please describe Figures and Tables correctly
  - Explanatory text:
    - Points out most significant portions of research findings
    - Highlights expected and/or unexpected findings

# Section 5 - Conclusions

- Discussion - Assesses and comments on research results
  - Explanation for Results
  - Recommendations
- Summary - Similar to the Exec Summary
  - Focuses more of results, cost, etc.

# Other Expectations

- Label Figures and Tables correctly
- Headings and sub-headings
- Proper grammar
- Flow
- No contractions (won't, cant)
- No rhetorical questions

# HEC-HMS Workshop

- Install HEC-HMS
  - Verify Install when GUI loads
- Build a minimal model
  - Project Create
    - Basin Model
    - Meteorological Model
    - Control Specifications
  - Change Meteorology - to use a raingage
    - Time Series Manager
  - Examine the output



# Next Time

- RP-1 Questions (then hand in)
- Review for Exam 1