

**SUBMITTED TO THE  
SEMSWA BOARD OF  
DIRECTORS**

**January 23, 2008**



WRC ENGINEERING, INC.

May 26, 1999

Mr. Steve Gardner  
Arapahoe County  
5334 South Prince Street  
Littleton, Colorado 80165

WRC File: 1845/229

RE: Dove Valley Apartments - Phase I

Dear Mr. Gardner:

WRC Engineering, Inc. (WRC), on behalf of the Arapahoe Water and Wastewater Authority (ACWWA), has been requested to respond to an Arapahoe County (AC) comment regarding the regional detention facilities which serve, among others, the Dove Valley Apartments-Phase I (DVA-1) project. The request was to provide analysis that the regional detention facilities have the capacity for the 100-year fully developed flows from the DVA-1 project site.

The Regional Stormwater Program is based on a pay-as-you-develop system. As such, regional facilities are constructed prior to or concurrent with the project or projects which cause the "with project" flow rates to exceed Master Planned flow limits. For the Lone Tree Creek, Windmill Creek, and Dove Creek areas, the Master Planned flow rates have been set as the rate of flow occurring in 1986 (Baseline Flow) or the Ultimate buildout flow rate (Ultimate Flow) with all regional facilities in place, which ever is greater. The 1986 Baseline Flow was established in the 1986 Outfall Systems Plan (OSP) for Lone Tree, Windmill, and Dove Creeks. The Ultimate Flow rates were established as part of the 4-Basin Study in November, 1994. Regional detention facilities are brought on-line, as needed, to maintain these flow rates.

For Windmill Creek, the status of the present flows (including DVA-1) as compared to the Master Planned flows is presented in Figure-1. Figure-1 indicates that the present regional detention facilities have sufficient current capacity to accommodate the fully developed runoff from the DVA-1 site.

For Dove Creek, the status of the present flows (including DVA-1) as compared to the Master Planned flows is presented in Figure-2. The present flows condition includes the benefits of existing detention at detention basin site D-1. This existing detention is based upon an agreement for land acquisition

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currently being negotiated by ACWWA. It is expected that this site will be under ACWWA's control by early fall, 1999. Final grading of this detention facility will take place as needed to meet future development growth. Figure-2 indicates that the present regional detention facilities have adequate capacity to accommodate the fully developed runoff from the DVA-1 site.

We would be happy to provide the present condition CUHP/SWMM models if requested. The present conditions model is under continual update as developments occur in the subject basins in order to determine the timing for construction of regional detention facilities.

If you have any further questions, please do not hesitate to call.

Respectfully Submitted,

WRC ENGINEERING, INC.



Alan J. Leak, P.E.  
Project Manager

ajl/jlb

cc: Mr. Newell Wright, ACWWA  
Mr. Bill Keller, Carter and Burgess

# WINDMILL CREEK PEAK FLOW DIAGRAM

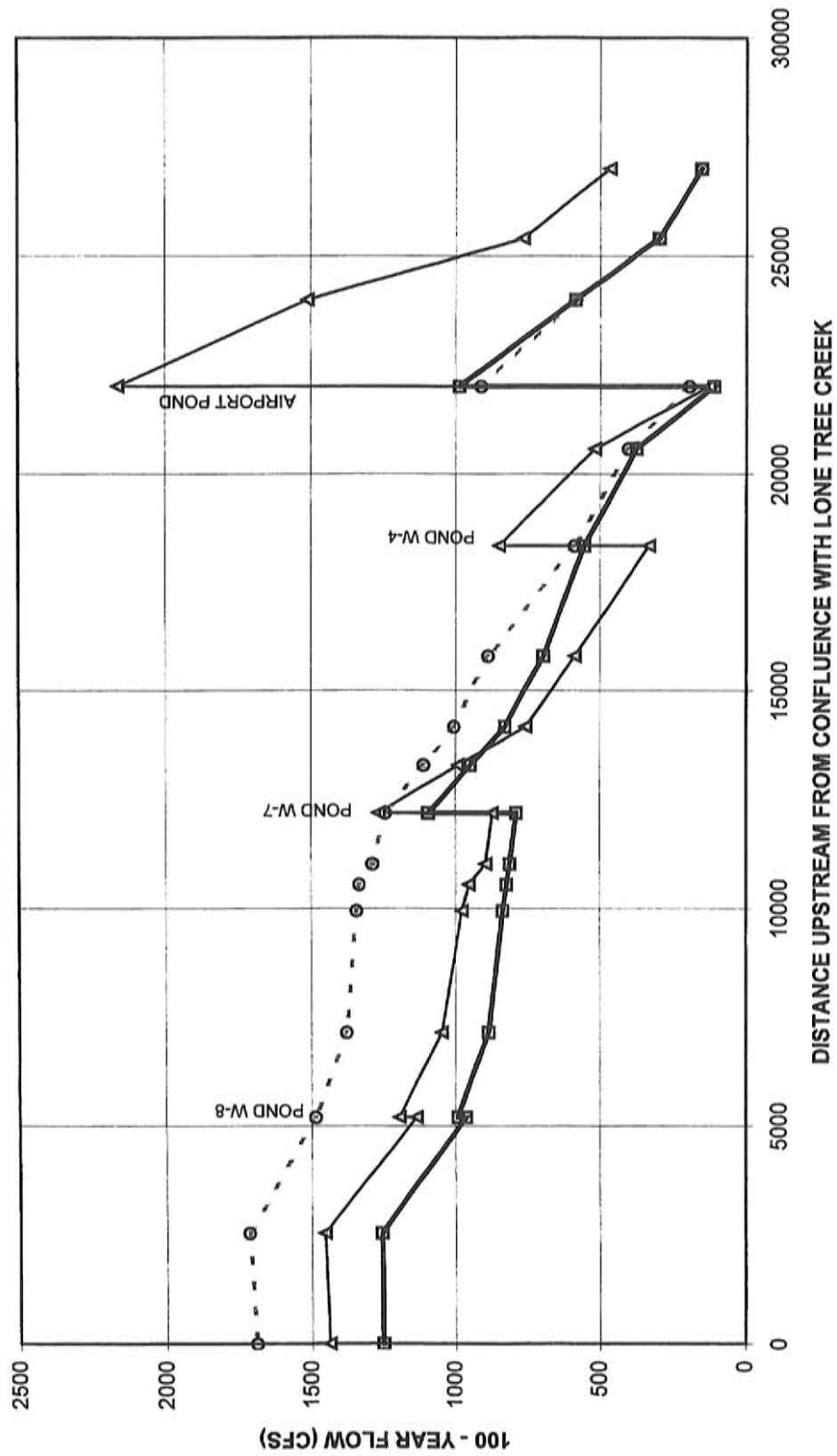


FIGURE 1

—▲— Future (Ultimate) Flow - ○ - Base Flow-1986 —■— Present Flow 12/15/98

# DOVE CREEK PEAK FLOW DIAGRAM

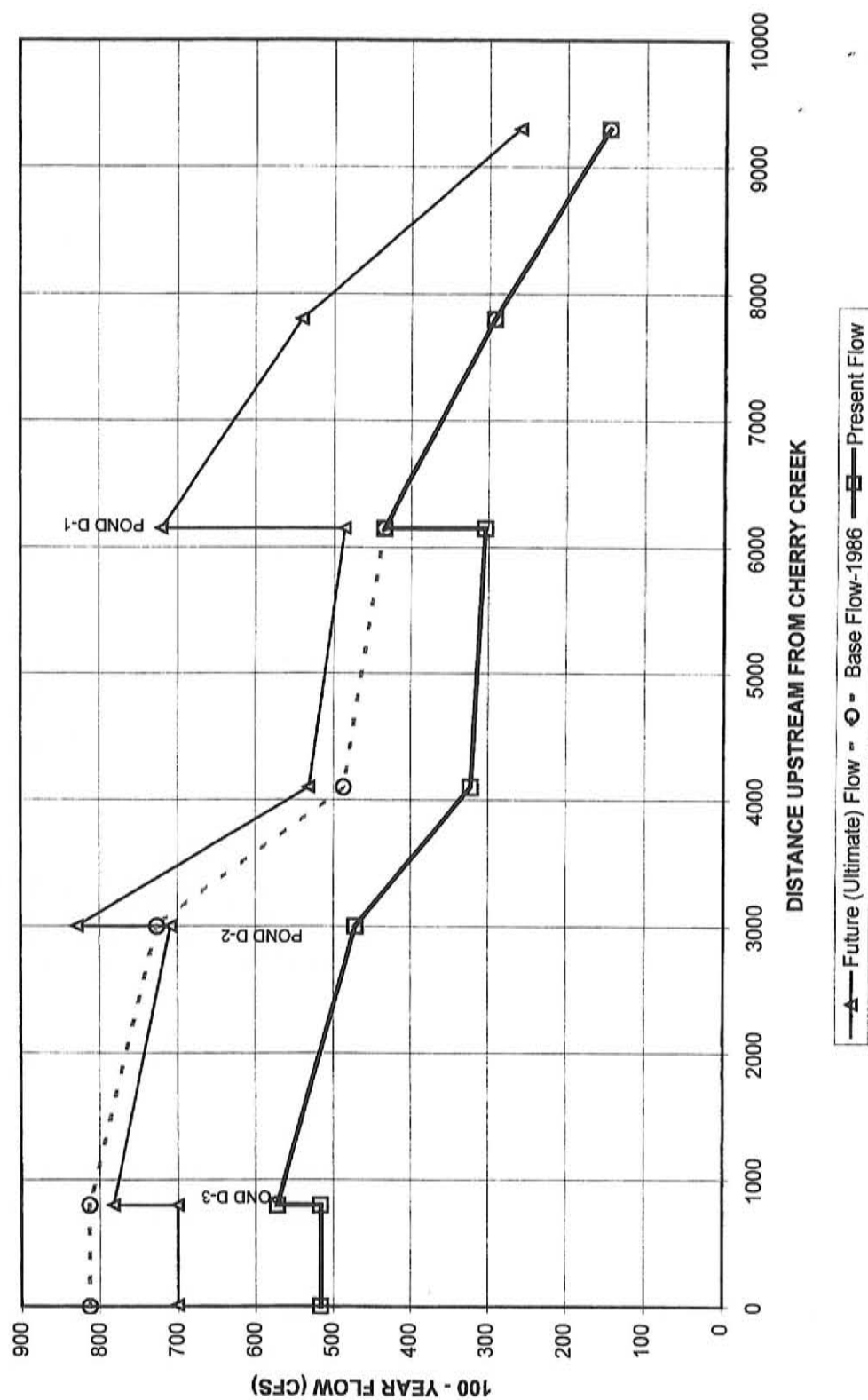


FIGURE 2





WRC ENGINEERING, INC.

December 12, 1997

Mr. Doug Barnes  
Land Services, Inc.  
5031 South Ulster Street, Suite 420  
Denver, Colorado 80237

WRC File: 1845/101

RE: Flow Rates and Channel Design  
at  
Proposed East Freemont Street Crossing  
of Windmill Creek

Dear Mr. Barnes:


Per your request, included herein is the information needed for sizing of the East Freemont Street crossing at Windmill Creek. The current 100-year flow rate at said crossing (Design Point 119 in the Master Plan SWMM model) is 835 cfs. The ultimate master plan flow rate with future upstream regional detention facilities in place is 755 cfs. The crossing should be designed to pass the 755 cfs flow rate within the criteria limits set by Arapahoe County. The crossing should also be sized to safely pass the 835 cfs (i.e. sizing of downstream riprap).

The approach and downstream channel should be designed as an Urban Drainage and Flood Control District (UD&FCD) "wetlands bottom channel". As such, we anticipate the channel will have an approximate low flow channel depth of about three feet with standard buried riprap side slopes per the wetlands bottom channel design. We also anticipate that a channel bottom slope of 0.5% will result from the wetlands bottom channel analysis. In addition, the outlet of the crossing should conform to the UD&FCD's outlet requirements for wetland bottom channels which requires a minimum two foot outlet drop.

If you have any questions, please do not hesitate to call.

Respectfully submitted,

WRC ENGINEERING, INC.

  
Alan J. Leak, P.E.  
Project Manager

ajl/jlb

cc: Ms. Cindy Edwards, P.E.

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