LETTER TO AMEND THE "MASTER DEVELOPMENT DRAINAGE PLAN FOR VILLAGE CENTER AT PINE CREEK AND PRELIMINARY/FINAL DRAINAGE REPORT FOR VILLAGE CENTER AT PINE CREEK FILING NO. 2 AND PINE CREEK VILLAGE CENTER FILING NO. 1" AND THE "FINAL DRAINAGE REPORT FOR PINE CREEK VILLAGE CENTER FILING NO. 3"

J·R ENGINEERING
A Subsidiary of Westrian

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DRAINAGE LETTER TO AMEND THE "MASTER DEVELOPMENT DRAINAGE PLAN FOR VILLAGE CENTER AT PINE CREEK AND PRELIMINARY/FINAL DRAINAGE REPORT FOR VILLAGE CENTER AT PINE CREEK FILING NO. 2 AND PINE CREEK VILLAGE CENTER FILING NO. 1" AND THE "FINAL DRAINAGE REPORT FOR PINE CREEK VILLAGE CENTER FILING NO. 3"

February 3, 2000
July 6, 2000

Prepared For:

LP47, LLC dba LA PLATA INVESTMENTS
2315 Briargate Parkway
Colorado Springs, CO 80920
(719) 260-7477

Prepared By:

JR ENGINEERING
4310 ArrowsWest Drive
Colorado Springs, CO 80907
(719) 593-2593

Job No. 8716.44

DRAINAGE LETTER TO AMEND THE "MASTER DEVELOPMENT DRAINAGE PLAN FOR VILLAGE CENTER AT PINE CREEK AND PRELIMINARY/FINAL DRAINAGE REPORT FOR VILLAGE CENTER AT PINE CREEK FILING NO. 2 AND PINE CREEK VILLAGE CENTER FILING NO. 1" AND THE "FINAL DRAINAGE REPORT FOR PINE CREEK VILLAGE CENTER FILING NO. 3"

JR ENGINEERING
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DRAINAGE REPORT STATEMENT

ENGINEER'S STATEMENT:
The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

COLORADO REGISTERED KYLE RAE CAMPBELL 29794 PROFESSIONAL ENGINEER

7/14/06

Kyle R. Campbell, Colorado P.E. #29794
For and On Behalf of JR Engineering

Date

DEVELOPER'S STATEMENT:
I, the developer, have read and will comply with all of the requirements specified in this drainage report and plan.

Business Name: LP47, LLC dba La Plata Investments

By: _____
Bob Ingels

Title: _____

Address: 7150 Campus Drive, Suite 365
Colorado Springs, Colorado 80920

Business Name: Fairfield Residential, LLC

By: _____

Title: VP-President

Address: 5670 Greenwood Plaza Blvd., Suite 400
Englewood, CO 80111

CITY OF COLORADO SPRINGS ONLY:
Filed in accordance with Section 15-3-906 of the Code of the City of Colorado Springs, 1980, as amended.

_____ for _____ July 18, 2006
City Engineer Date

Conditions:

4310 ArrowsWest Drive, Colorado Springs, CO 80907
719-593-2593 • Fax: 719-528-6613 • www.jrengineering.com

February 3, 2000
Revised July 6, 2000

J·R ENGINEERING
A Subsidiary of Westrian

City of Colorado Springs
Subdivision Engineering and Review Team
101 W. Costilla, Room 113
Colorado Springs, CO 80903

ATTN: Mr. Tim Mitros

RE: Drainage Letter To Amend The "Master Development Drainage Plan (MDDP) for Village Center At Pine Creek And Preliminary/Final Drainage Report for Village Center At Pine Creek Filing No. 2 and Pine Creek Village Center Filing No. 1"And The "Final Drainage Report For Pine Creek Village Center Filing No. 3" (FDR for VC-3)

Dear Tim:

The purpose of this drainage letter is to provide supporting documentation for proposed modifications to the Lexington Drive Storm Drain System. This storm drain system is located in the Briargate area between Briargate Parkway and Chapel Hills Drive. The proposed modifications include eliminating two drainage inlets, upsizing two drainage inlets, routing additional surface flow to Lexington Drive from Pine Creek Village Center Filing No. 3, deferring construction of a 42" diameter storm drain between the intersection of Briargate Parkway and Lexington Drive and Pine Creek, and construction of a temporary, private detention pond at the northeast corner of the Lexington Drive and Briargate Parkway intersection.

This modification is due in part to difficulties in acquiring the permits from the US Army Corps of Engineers required to extend the above mentioned 42" diameter storm drain to Pine Creek. Pine Creek contains potential habitat for the Prebles Meadow Jumping Mouse (PMJM), a species listed as "threatened" under the "endangered species act". The process for obtaining permits to construct outfall facilities near or in potential PMJM habitat has become complicated and lengthy. The modifications proposed in this letter will allow construction of Lexington Drive and adjacent development to occur without dependence on the outfall permit to Pine Creek.

The MDDP proposed that a portion of the runoff from the east side of Pine Creek Village Center Filing No. 3(VC-3) and adjacent Lexington Drive be intercepted and conveyed in the above mentioned 42" diameter storm drain to Pine Creek. The remainder of the flow from this area and the balance of VC-3 was to be routed via street and storm drain conveyance to a detention pond

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located near Chapel Hills Drive. A review of the drainage calculations done for the subject MDDP and FDR revealed that the time of concentration and percent impervious assumptions made to perform the MDDP runoff calculations for the VC-3 site were conservative in comparison with the actual development as analyzed in the "FDR for VC-3". Due to this, the "FDR for VC-3" indicates lower peak runoff rates from the VC-3 site than were planned for in the MDDP. The runoff analysis done for this drainage letter ties the "FDR for VC-3" runoff analysis to the MDDP runoff analysis. The current analysis demonstrates that all of the runoff from the VC-3 site and adjacent Lexington Drive can be handled in the downstream storm drain system, street section and detention pond. Thus the diversion of a portion of the runoff from the VC-3 site and Lexington Drive flow to Pine Creek can be eliminated.

Copies of the drainage maps for the subject MDDP and FDR have been attached to this letter. The maps have been modified to reflect the proposed modifications.

Description of Modifications

Runoff from "FDR for VC-3" Basin M (Q_5 = 0.6 cfs, Q_{100} = 1cfs) will be collected on the VC-3 site in an area drain as indicated in the FDR but will be conveyed to the Lexington Drive right-of-way in a 8" diameter storm drain then discharged to Lexington Drive via a sidewalk chase to be located near MDDP Design Point 3A. The sump inlet planned to be located at "FDR for VC-3" Design Point 12 will be deleted and the adjacent driveway will be regraded to convey the runoff from "FDR for VC-3" Basin O (Q_5 = 1 cfs, Q_{100} = 2 cfs) and Basin P (Q_5 = 4 cfs, Q_{100} = 8cfs) to Lexington Drive. Flow from these basins along with "FDR for VC-3" Basin OS-1(Q_5 = 2 cfs, Q_{100} = 4 cfs) will be conveyed to the west in the south side of Lexington Drive. At MDDP Design Point 3A the combined peak flow rates from these basins are estimated at Q_5 = 7 cfs, Q_{100} = 14 cfs.

The flow at MDDP Design Point 3A will be conveyed along with the runoff from "FDR for VC-3" Basin F (Q_5 = 2 cfs, Q_{100} = 5 cfs) and Basin OS-2 (Q_5 = 3 cfs, Q_{100} = 5 cfs) to MDDP Design Point 4A near the intersection with Pine Village Way. The peak flow rates at Design Point 4A are estimated at Q_5 = 11 cfs and Q_{100} = 21 cfs. A 10' long D-10-R inlet called for in the MDDP will be upsized to be 20' long to intercept additional flow at this location. The 20' long inlet will intercept an estimated Q_5 = 8 cfs and Q_{100} = 13 cfs which will be added to flow from the VC-3 site ("FDR VC-3" Design Point 8) (Q_5 = 29 cfs, Q_{100} = 56 cfs) in the MDDP planned 36" diameter storm drain. The combined peak flows in the storm drain at MDDP Design Point 3A are estimated at Q_5 = 37 cfs, Q_{100} = 69 cfs. The combined flow will be routed in the 36" diameter storm drain from MDDP Design Point 3A to MDDP Design Point 3B.

Flow by from the proposed 20' long inlet at Design Point 4A (Q_5 = 3 cfs, Q_{100} = 8 cfs) will be conveyed in the south side of Lexington Drive to MDDP Design Point 5. At Design Point 5 this flow will be combined with runoff from MDDP Basin 3C (Q_5 = 2 cfs, Q_{100} = 4 cfs), MDDP Basin 6 (Q_5 = 1 cfs, Q_{100} = 2 cfs), "FDR for VC-3" Basin A (Q_5 = 1 cfs, Q_{100} = 2 cfs), "FDR for VC-3" Basin E (Q_5 = 4 cfs, Q_{100} = 8 cfs), and "FDR for VC-3" Basin E (Q_5 = 4 cfs, Q_{100} = 8 cfs). The estimated combined peak flow rates at MDDP Design Point 5 are Q_5 = 12 cfs and Q_{100} = 25 cfs. This compares well to the peak rates of Q_5 = 10 cfs and Q_{100} = 25 cfs estimated for this point in the MDDP. No modifications are proposed below this point on the south side of Lexington Drive.

On the north side of Lexington Drive runoff from ½ of MDDP Basin 1C (Q_5 = 2 cfs, Q_{100} = 3 cfs) will be conveyed down the street section along with runoff from MDDP Basin 1B (Q_5 = 5 cfs, Q_{100} = 10 cfs) and MDDP Basin 2A (Q_5 = 7 cfs, Q_{100} = 17 cfs) to MDDP Design Point 6 (Q_5 = 13 cfs, Q_{100} = 25 cfs). The 20' long D-10-R inlet called for in the MDDP at this point will be lengthened to 26'. The lengthened inlet will intercept an estimated Q_5 = 10 cfs and Q_{100} = 17 cfs. The intercepted flow will be added to the MDDP planned storm drain at MDDP Design Point 3B for total estimated peak flows in the storm drain of Q_5 = 47 cfs and Q_{100} = 86 cfs. These are less than the peak flow rates of Q_5 = 54 cfs and Q_{100} = 101 cfs estimated for Design Point 3B in the MDDP.

Estimated flow by rates from the lengthened inlet at MDDP Design Point 6 (Q_5 = 3 cfs,Q_{100} = 8 cfs) equate to the flow by rates estimated for this point in the MDDP. No modifications are proposed below this point.

The design and construction of the 42" diameter storm drain proposed between Briargate Parkway and Pine Creek in the MDDP will be deferred until MDDP Basins 9 and 10 are developed. The storm drain will be routed through these basins verses the Lexington Drive right-of-way route proposed in the MDDP. The existing 42" storm drain in the Lexington Drive right-of-way at Briargate Parkway will be extended north and east to outside of the right-of-way. A temporary private extended detention pond will be constructed at the outfall of the 42" storm drain. The purpose of the proposed temporary pond is to mitigate the potential for erosion of the steep overland slopes within the potential PMJM habitat between the 42" storm drain outfall and Pine Creek. The temporary pond is planned to have a storage volume of 2.8-acre feet. This volume equates to the 10-year design storm runoff from the watershed of the storm drain as estimated by SCS TR-55 methodology. Runoff will be released from the temporary detention pond at a very low rate via a private 12" diameter outfall to daylight then overland to Pine Creek. Peak runoff rates from storms larger than the 10-year event (in the unlikely event that one occurs in the expected short life of the pond) will be mitigated by the pond but will likely overtop an 15' wide x 80' long earthen spillway designed to match the natural grade at the outlet side. Flow from the spillway will be conveyed overland to Pine Creek. The temporary pond and it's outfall will be owned and maintained by La Plata Investments, the developer of the property.

The analysis and text presented in this letter/report demonstrate that the proposed modifications to the drainage facilities proposed in the MDDP will not negatively impact the planned design flows downstream. The area is within the Pine Creek Drainage Basin. Pine Creek is a no-fee basin, thus fees are not affected by this drainage letter. The drainage facilities proposed in this drainage letter have been constructed.

Respectfully submitted,

JR Engineering

Vancel Fossinger

Vancel Fossinger, P.E.
Project Manager

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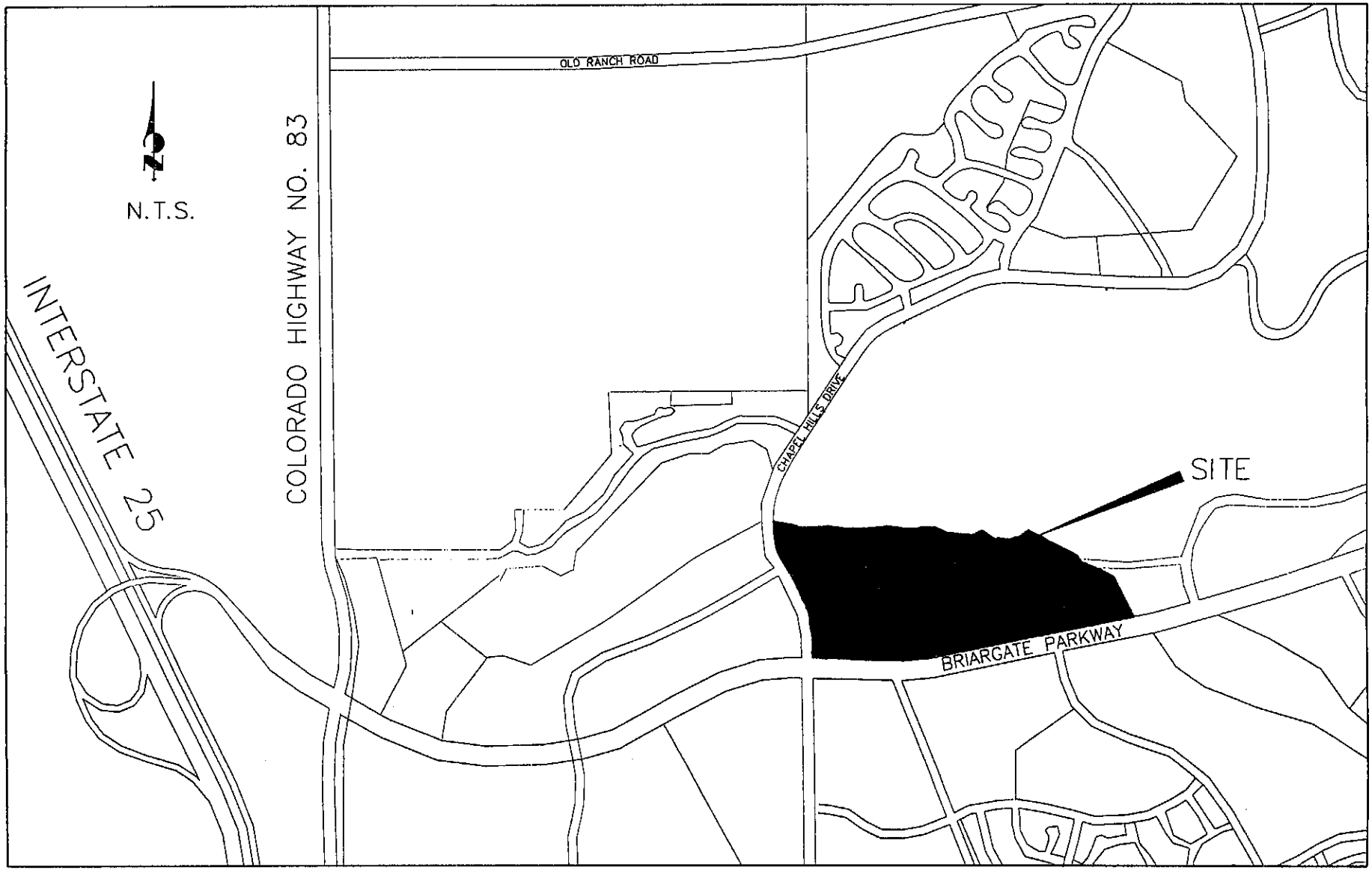
APPENDIX

VICINITY MAP



VICINITY MAP

DRAINAGE CALCULATIONS

VILLAGE CENTER AT PINE CREEK/ LEXINGTON DRIVE
DRAINAGE LETTER
(Surface Routing Summary)

		CA EQUIVALENT		*Initial Tc*	*ROUTING*				*Tc*	*INTENSITY*		*TOTAL FLOWS*	
DESIGN POINTS	*CONTRIBUTING BASINS AND DESIGN POINTS*	CA_5	CA_{100}	*For Basin/ Design Pt*	Length	Slope	Velocity	T_t	TOTAL	I_5	I_{100}	Q_5	Q_{100}
		* For Calculation See Runoff Summary		*(min)*	*(ft)*	*(%)*	*(fps)*	*(min)*	*(min)*	*(in/hr)*	*(in/hr)*	*(c.f.s.)*	*(c.f.s.)*
DP-1	(FDR for VC-3) BASIN OS-1	0.45	0.48	8.0					8.0	4.4	7.7	*2*	*4*
	TOTAL	0.45	0.48								CA=	*0.45*	*0.48*
DP-2	1/2 BASIN 1C	0.39	0.41	8.0					8.0	4.4	7.7	*2*	*3*
	TOTAL	0.39	0.41								CA=	*0.39*	*0.41*
DP-3A	DP-1	0.45	0.48	8.0						4.1	7.2	*7*	*14*
	(FDR for VC-3) BASIN M	0.14	0.17	10.1									
	(FDR for VC-3) BASIN 0	0.24	0.26	6.7									
	(FDR for VC-3) BASIN P	0.96	1.07	9.6					9.6				
	TOTAL	1.79	1.98								CA=	*1.79*	*1.98*
DP-4A	DP-3A	1.79	1.98	9.6	980.0	3.9%	6.9	2.4	12.0	3.8	6.5	*11*	*21*
	(FDR for VC-3) BASIN OS-2	0.63	0.67	8.8									
	(FDR for VC-3) BASIN F	0.49	0.60	5.4									
	TOTAL	2.91	3.25								CA=	*2.91*	*3.25*
DP-5	FLOW BY FROM DP 4A	0.81	1.23	12.0	80.0	3.9%	6.9	0.2	12.2	3.8	6.5	*12*	*25*
	BASIN 6	0.20	0.20	6.2									
	BASIN 3C	0.37	0.41	5.7									
	(FDR for VC-3) BASIN A	0.22	0.27	5.8							CA=	*3.13*	*3.83*
	(FDR for VC-3) BASIN E	0.99	1.15	10.1									
	(FDR for VC-3) BASIN OS-3	0.54	0.57	8.3									
	TOTAL	3.13	3.83										
DP-6	DP-2	0.39	0.41	8.0						3.9	6.7	*13*	*25*
	BASIN 1B	1.22	1.39	10.0	640.0	3.9%	6.9	1.5	11.5				
	BASIN 2A	1.71	1.97	10.3									
	TOTAL	3.32	3.77								CA=	*3.32*	*3.77*

Calculated by: VSF
Date: 1/29/00

VILLAGE CENTER AT PINE CREEK/ LEXINGTON DRIVE
DRAINAGE LETTER
(Storm Drain RoutingSummary)

		CA EQUIVALENT		*Initial Tc*	*ROUTING*				*Tc*	*INTENSITY*		*TOTAL FLOWS*	
DESIGN POINTS	*CONTRIBUTING BASINS AND DESIGN POINTS*	CA_5	CA_{100}	*For Basin/ Design Pt*	Length	Slope	Velocity	T_t	TOTAL	I_5	I_{100}	Q_5	Q_{100}
JUNCTION		* For Calcs See Runoff Summary		*(min)*	*(ft)*	*(%)*	*(fps)*	*(min)*	*(min)*	*(in/hr)*	*(in/hr)*	*(c.f.s.)*	*(c.f.s.)*
3-A	(FDR for VC-3) DP-8	7.29	8.08	10.7	120.0	14.0%	20.0	0.1	10.8	4.0	6.8	*37*	*69*
	FLOW FROM INLET @ DP-4A	2.10	2.00	12.0									
	TOTAL	9.39	10.08								CA=	*9.39*	*10.08*
3-B	JUNCTION 3-A	9.39	10.08	10.8	100.0	3.8%	15.0	0.1	10.9	3.9	6.8	*47*	*86*
	FLOW FROM INLET @ DP-6	2.56	2.54										
	TOTAL	11.95	12.62								CA=	*11.95*	*12.62*

Calculated by: VSF

Date: 1/29/00

VILLAGE CENTER AT PINE CREEK/ LEXINGTON DRIVE
DRAINAGE LETTER

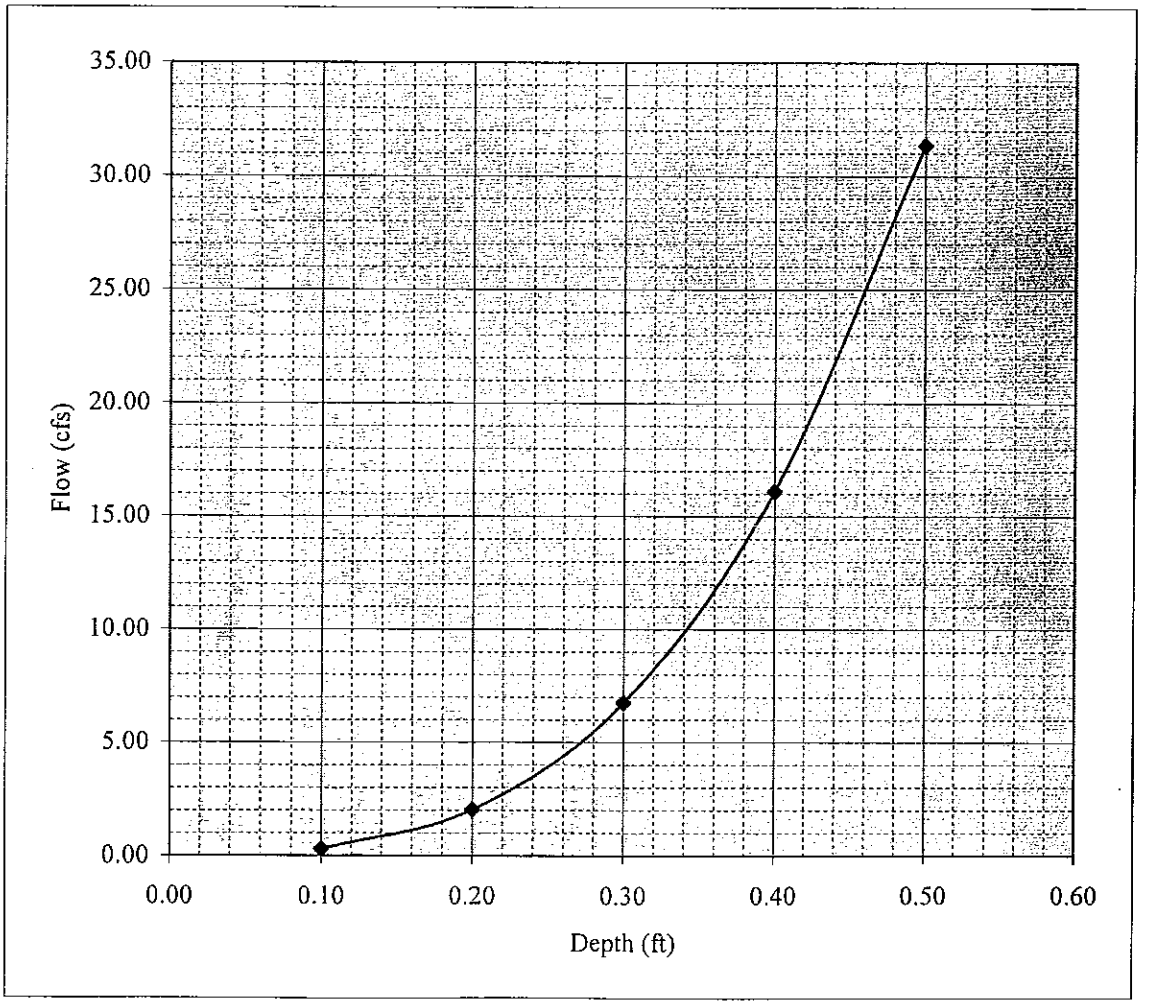
(Inlet Calculations - At-Grade)

z = 1/s zA = 16

Q = 0.56 (z/n) d^(8/3) s^(1/2) nb = 0.013 zB =50

slope (s) = 0.039 ft/ft na = 0.016

Total Depth dT (ft)	Depth of A dA (ft)	Depth of B dB (ft)	Depth of C dC (ft)	Flow Q (cfs)
0.10	----	$0.10^{8/3}$		0.29
0.20	$0.07^{8/3}$	$0.20^{8/3} - 0.07^{8/3}$		2.04
0.30	$0.17^{8/3}$	$0.30^{8/3} - 0.17^{8/3}$		6.73
0.40	$0.27^{8/3}$	$0.40^{8/3} - 0.27^{8/3}$		16.10
0.50	$0.37^{8/3}$	$0.50^{8/3} - 0.37^{8/3}$		31.34



VILLAGE CENTER AT PINE CREEK/ LEXINGTON DRIVE DRAINAGE LETTER

(Inlet Calculations - At-Grade)

Proposed 20' Type D-10-R Inlet at DP-4A

100-YR. FLOW					
Q(100)	21	I(100)	6.5		
DEPTH	0.44	Fr	2.60	Inlet size ? L(i) =	20
SPREAD	15.5	L(1)	31.0	If Li < L(2) then Qi =	14
CROSS SLOPE	2.0%	L(2)	18.6	If Li > L(2) then Qi =	13
				CA(equ) = 2.00	
STREET SLOPE	3.9%	L(3)	66.5	FB =	8
				CA(eqv.)=	1.23

5-YR. FLOW					
Q(5)	11	I(5)	3.8		
DEPTH	0.35	Fr	2.44	Inlet size ? L(i) =	20
SPREAD	11.3	L(1)	21.1	If Li < L(2) then Qi =	10
CROSS SLOPE	2.0%	L(2)	12.7	If Li > L(2) then Qi =	8
				CA (equ) = 2.10	
STREET SLOPE	3.9%	L(3)	45.3	FB =	3
				CA(eqv.)=	0.81

VILLAGE CENTER AT PINE CREEK/ LEXINGTON DRIVE DRAINAGE LETTER

(Inlet Calculations - At-Grade)

Proposed 26' Type D-10-R Inlet at DP-6

100-YR. FLOW

Q(100)	25	I(100)	6.7		
DEPTH	0.46	Fr	2.63	Inlet size ? L(i) =	26
SPREAD	16.5	L(1)	33.4	If Li < L(2) then Qi =	19
CROSS SLOPE	2.0%	L(2)	20.1	If Li > L(2) then Qi =	17
				CA (equ) = 2.54	
STREET SLOPE	3.9%	L(3)	71.6	FB =	8
				CA(eqv.)=	1.24

5-YR. FLOW

Q(5)	13	I(5)	3.9		
DEPTH	0.37	Fr	2.48	Inlet size ? L(i) =	26
SPREAD	12.3	L(1)	23.4	If Li < L(2) then Qi =	14
CROSS SLOPE	2.0%	L(2)	14.1	If Li > L(2) then Qi =	10
				CA (equ) = 2.56	
STREET SLOPE	3.9%	L(3)	50.2	FB =	3
				CA(eqv.)=	0.77

DRAINAGE MAPS