



OVERFLOW SWALE FLOW CAPACITY
USING MANNING FORMULA

$$Q = Va = \frac{1.49}{n} A R^{2/3} S^{1/2}$$

WHERE $n = .013$

FOR d = 1.5ft	Q = 111 cfs
WHEN S = .003	.002 90 cfs
	.001 64 cfs
	.0005 45 cfs
FOR d = 1.0ft	Q = 47 cfs
WHEN S = .003	.002 39 cfs
	.001 27 cfs
	.0005 19 cfs
FOR d = .75ft	Q = 27 cfs
WHEN S = .003	.002 22 cfs
	.001 15 cfs
	.0005 11 cfs

BENCH MARK

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

R. Young 7/27/99
RELIANT ENERGIES, INC./ENTEX

Mike Balin 7/27/99
SOUTHWESTERN BELL TELEPHONE CO.
Valid for One Year Only

R. Young 7/22/99
RELIANT ENERGIES, INC./H.L.B.P. CO.
Approval Only for Crossing Underground
Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REVIEWED BY	
PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
<i>Walter Salinas</i> 8/5/99 WATER	
<i>Mark B...</i> 8/5/99 WASTEWATER	PROJECT MANAGER
<i>Robert Wilson</i> 8/5/99 STORM WATER	CONSTRUCTION
	CHIEF ENGINEER
OTHER APPROVAL	
TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT

CITY ENGINEER: *Robert Wilson* 8-21-99
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

DESIGNED BY: DOBBY WILSON
DRAWN BY: BILL DCRRIC
SHEET NO. 3 OF 9 SHEETS
CITY DWG. NO. ARDRLAOT.DWG

HARRIS COUNTY MUD 191
DETENTION FACILITIES
to serve
HIGHLAND TIMBERS
SECTION 1 & 2
AREA DRAINAGE LAYOUT

PCI PROVIDENT CONSULTING, INC.
1200 WEST 11TH ST.
HOUSTON, TEXAS 77008
(713)802-1019