City of Albuquerque

June 21, 2000

Kevin Patton, P.E.
Bohannan-Huston, Inc.
7500 Jefferson NE
Albuquerque, New Mexico 87109

RE: Grading and Drainage Certification Plan for The Enclave at High Desert, Tract 8C, (E23/D3B1) Submitted for Release of Financial Guarantees, Engineer's Certification Stamp Dated 6/20/00.

Dear Mr. Patton:

Based on the information provided, the above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement per the Infrastructure List dated December 8, 1998 for the release of Financial Guarantees for The Enclave at High Desert.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Terri Martin, DRB-98-344, City Project # 607091
John Clarke, Mesa Verde Development
File

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 2, 1999

Kevin Patton, P.E.
Bohannan-Huston, Inc.
7500 Jefferson NE
Albuquerque, New Mexico 87109

RE: Revised Grading and Drainage Plan for The Enclave at High Desert, Tract 8C, (E23/D3B1) Submitted for Final Plat Approval, Engineer's Stamp Dated 2/19/99.

Dear Mr. Patton:

Based on the information provided in the submittal of February 19, 1999, the above referenced revised plan for The Enclave at High Desert is approved for Final Plat action.

The above referenced plan should also be submitted to the DRB for revised Preliminary Plat action since some of the Lot lines have changed.

It appears that retaining walls are needed between Lots 42 and 43, and Lots 43 and 44. Please verify that these walls have been constructed on the Engineer's Certification for this subdivision.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Fred Aguirre, DRB-98-344
John Clarke, Mesa Verde Development
File

DRAINAGE REPORT
FOR
THE ENCLAVE AT HIGH DESERT
(TRACT 8C)

OCTOBER 30, 1998

PREPARED BY:

BOHANNAN HUSTON, INC.
COURTYARD I, 7500 JEFFERSON STREET NE
ALBUQUERQUE, NM 87109

PREPARED FOR:

MESA VERDE DEVELOPMENT
6060 SAN MATEO BLVD. NE
ALBUQUERQUE, NM 87109

PREPARED BY:

Tim Gergen, E.I.

Date 10/30/98

Kevin Patton, P.E.

Date 10/30/98

KEVIN G. PATTON
NEW MEXICO
13685
REGISTERED PROFESSIONAL ENGINEER

I. PURPOSE

The purpose of this report is to provide site-specific drainage analysis for existing and proposed conditions for the residential development of Tract 8C at High Desert, referred to as *The Enclave at High Desert.* This plan is prepared and submitted to support rough grading, infrastructure design, preliminary and final plat approvals.

This report will reference the following City of Albuquerque and the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) approved studies prepared for the High Desert Development: 1) the *High Desert Drainage Management Master Plan*, dated December 1993; 2) the *Final High Desert Phase 1 Hydrology and Design Drainage Report*, dated March 1994; 3) the *Final High Desert Subdivision Academy Storm Drain Design Report*, dated September 1994; 4) the *Grading and Drainage Plan for the High Desert Park*, stamped dated October 15, 1997.

The *High Desert Drainage Management Master Plan*, dated December, 1993 (hereafter referred to as the HDDMMP), was prepared to support future drainage plans submitted for the development of individual land parcels within High Desert and to provide design guidance for the design of primary drainage infrastructure to be constructed by High Desert in advance of or simultaneously with individual parcel development.

The *Final High Desert Phase 1 Hydrology and Design Drainage Report*, dated March 1994 was prepared to support the existing infrastructure design of Phase 1A (COA Work Order #4809.90) and Phase 1B (COA Work Order #4809.91). The report establishes existing and proposed drainage conditions for Imperata Street that is adjacent to Tract 8C.

The *Final High Desert Subdivision Academy Storm Drain Design Report*, dated September 1994, was prepared to establish a conveyance system for the Highlands Development from High Desert Street to Tramway Boulevard and to determine the required land area and potential grading for the desiltation pond immediately upstream of High Desert Street. This storm drain system was designed to accept the fully developed flows generated by the proposed development of Tract 8C.

The *Grading and Drainage Plan for the High Desert Park*, stamped dated October 15, 1997, was prepared to support rough grading, and infrastructure design for the High Desert Park, Tract 8B, that is directly west of the Enclave (Tract 8C). The plan establishes existing and proposed drainage conditions for the development of Tract 8C that is located east of park intercepting upstream flows from the park (Tract 8B).

II. METHODOLOGIES

Please refer to the above referenced reports for the specific methodologies used in preparing those individual reports or plans.

Site conditions are analyzed for a 100-year, 6-hour storm events in accordance with the City of Albuquerque Drainage Ordinance and the Development Process Manual (DPM), Volume 2, Design Criteria, Section 22.2, Hydrology for the City of Albuquerque, January 1993.

The site, as describe in the 'Site Location and Characteristics' section below, is approximately 10.0 acres. Therefore, Part A of the DPM, Section 22.2, which provides a simplified procedure for projects with sub-basins smaller than 40 acres was used.

III. SUMMARY OF THE RELATED PLATTING AND EASEMENTS

Tract 8 at High Desert is subdivided into three separate tracts, Tract 8A, 8B and 8C, via a bulk land plat recorded June 30, 1994.

Tract 8A is adjacent to Academy Road and Cortaderia Street and is planned to be a future commercial site. Tract 8A is west of the High Desert Park (Tract 8B).

Tract 8B, the High Desert Park, is located between Tracts 8A and 8B and is adjacent to Academy Road. A small northern portion of the park is encompassed by an existing drainage easement granted to the City of Albuquerque and the High Desert Residential Owners Association. The existing drainage easement contains a portion of the Bear Tributary Arroyo, which is a "dry" arroyo. This arroyo is dry because of the Bear Tributary Arroyo Diversion Dike located within Tract 15D, and the construction of Academy Road. Despite the dry condition of this arroyo, an existing FEMA Flood plain is located within this easement area. The Bear Tributary Arroyo is a part of the High Desert Open Space Concept, which is preserving the natural arroyos and implementing water harvesting techniques to enhance the natural vegetation.

Tract 8C, the proposed development site, is located adjacent to Academy Road and Imperata Street. The existing High Desert Park is located to the west of this tract. A small northern portion of this tract is also encompassed by an existing drainage easement granted to the City of Albuquerque and the High Desert Residential Owners Association. The area encompassed by this existing drainage easement will become a separate tract (Tract 8C-1) and a part of the High Desert Open Space, owned by the High Desert Residential Owners Association.

The proposed development within Tract 8C is currently zoned SU-2 HD-C-1. The C-1 Neighborhood Commercial zone in the Comprehensive City Zoning Code allows for dwelling units as a conditional use. A request was made and approved by the City Zoning Hearing Examiner (ZHE), ZA-98-239, allowing the development of dwelling units within Tract 8C. As approved by the ZHE, the regulation concerning the required open space will be met within the designated existing High Desert Open Space.

As shown on the preliminary plat, private streets have been proposed within this development. The private roadways will contain the necessary public drainage and utility easements to serve this development.

IV. SITE LOCATION AND CHARACTERISTICS

For location of the site, please refer to the vicinity map on the grading plan enclosed with this report.

The Enclave at High Desert (Tract 8C) is located in the far northeast heights of Albuquerque, on Zone Atlas page E-23. The project is bounded on the west by the High Desert Park (Tract 8B), on the south by The Pinnacle Apartments (Tract 7), on the east by Imperata Street, and on the north by Academy Road. Access to the site will be provided from Imperata Street. The site is currently zoned SU-2 HD/C-1 and is approximately 10.0 acres in size.

Vegetation on the site consists primarily of prairie grasses and a few juniper trees in the undisturbed areas. Slopes in the project site range from 2% to 5%, with the majority of the project sloping from east to west at 2% to 4%. The Soil Conservation Service has classified the soils on this site as Embudo Tijeras complex, Embudo gravely fine sandy loam, and Tijeras gravely fine sandy loam, all of which correspond to a common hydrological soil group classification of B.

A majority of this site has been used to store additional fill from other sites. Some of the fill was placed and compacted per the geotechnical investigation referenced for the site early on, while other areas contain unknown storage procedures and specifications.

V. EXISTING HYDROLOGIC AND SITE DRAINAGE CONDITIONS

The existing hydraulic and hydrologic conditions of this site adheres to the *Grading and Drainage Plan for the High Desert Park*, stamped dated October 15, 1997, which was prepared for High Desert Investment Corporation and approved by the City of Albuquerque. The existing site consists of three drainage basins, labeled Basins A, B and C. The existing basins mentioned above are referenced from the *Grading and Drainage Plan for the High Desert Park*, Proposed Hydraulic and Hydrologic Conditions, Tract 8B Off-Site Basins.

Basin A (4.70 acres,Q_{100}= 10.34 cfs) drains from Tract 11 into an existing natural arroyo to a permanent detention pond located at the western edge of the basin within Tract 8C. The permanent detention pond within Basin A was sized to accept more than the final proposed flow indicated. The permanent detention pond was sized and constructed with the Phase 1A Improvements (COA Work Order #4809.91).

Basin B (8.69 acres, Q_{100}= 19.12 cfs) and Basin C (2.14 acres, Q_{100}= 4.71 cfs) drain via natural sheet flows and shallow concentrated flows (small existing natural arroyos) from the west side of High Desert Street adjacent to Tract 11 to the temporary detention ponds located along the western edge of their respective basins along Tract 8C. The temporary detention ponds were sized and constructed in accordance with the *Grading and Drainage Plan for the High Desert Park*.

For additional assistance, please refer to the Existing Conditions Basin Map located in the Exhibit section of this report and the *Grading and Drainage Plan for the High Desert Park*.

A. FEMA Flood Plain

Please reference the Preliminary Plat located in the Exhibit section of this report for location information.

There is an existing FEMA Floodplain on Tract 8C, within the existing drainage easement granted to the City of Albuquerque and the High Desert Residential Owners. This area will become Tract 8C-1, High Desert Open Space, and will remove the floodplain status as a part our LOMR submittal mentioned below. Therefore, no lot will be located within a FEMA Floodplain.

Bohannan Huston Inc. is currently preparing a Letter of Map Revision (LOMR) to remove and revise flood plains within the High Desert subdivision. The portion of the LOMR that will affect this development includes the North Bear Tributary. It is anticipated that the North Bear Tributary Desiltation Pond, located in the Highlands Development, will remove the North Bear Tributary FEMA floodplain within the High Desert from east of

Tramway Boulevard to Imperata Street.. The submittal of this LOMR to FEMA is anticipated in late Fall of 1998.

VI. DEVELOPED HYDROLOGICAL AND HYDRAULIC CONDITIONS

For additional assistance throughout this section, please refer to the Grading Plan, the Proposed Conditions Basin Map and a portion of the Ultimate Condition Map taken from the 1993 HDDMMP enclosed with the Exhibit section of this report.

The proposed site will be divided into four off-site basins labeled **IMP(E), IMP(W), T11** and **HDST**, and four on-site basins, labeled **1** through **4**. All of the off-site basins will be directed away from Tract 8C in accordance with the *Final High Desert Phase 1 Hydrology and Design Drainage Report* via the standard water blocks at the subdivision entrances.

A. Off-Site Basins

Basin HDST (0.38 acres, Q_{100}=1.71 cfs) is an off-site basin that encompasses the southern/western half of High Desert Street from its high point to its intersection with Imperata Street. Storm water has the ability to continue traveling westward down Academy Road or diverting south down Imperata Street. The existing downstream inlets and storm drains in Academy Road and Imperata Street have been sized to accommodate the storm water from this basin.

Basin T11 (4.03 acres, Q_{100}=8.87 cfs) is an off-site basin within the northerly portion of Tract 11 that is located east of our site. This basin is bounded by Imperata Street on the west and High Desert Street on the east and north. The basin drains from the east to the west until storm water is intercepted by Imperata Street adjacent to Tract 8C. Storm water from Basin T11 is combined with the storm water in the eastern half of Imperata Street along Tract 8C, **Basin IMP(E)** (0.66 acres, Q_{100}=3.16 cfs) and from Basin HDST. The combined flow travels down the eastern

half of the roadway to a number of existing inlets that were constructed with Phase 1-B (COA Work Order #4809.91). The inlets then capture the flow in the roadway and redirect it into the Spain Storm Drain.

Basin IMP(W) (0.93 acres, Q_{100}=4.21 cfs) is the western half of Imperata Street along the frontage of Tract 8C. The storm water runoff from this basin is directed southward to a number of existing inlets that were constructed with Phase 1-B. Tract 8C has two entrances proposed. Each entrance provides the necessary water blocks to keep storm water in Imperata Street. This analysis is consistent with the approved *Final High Desert Phase 1 Hydrology and Design Drainage Report* dated March 1994.

B. On-Site Basins

Basin 1 (4.87 acres, Q_{100}=21.48 cfs) consists of the southern half of Tract 8C and is broken into five sub-basins. Storm water from this basin drains from each lot into the adjacent private roadways. Lots 1 – 25 and 62 – 67 in Basin 1 have double frontage to roadways within this site. The backyards of lots 11 – 25 will drain to the roadway adjacent to the backyard (Cactus Canyon Trail). Lots 62 – 67 will drain the entire lot to the roadway adjacent to the front yard (Enclave Lane). Storm water from each lot is ushered to the adjoining roadway where its is directed to inlets downstream.

Storm water within **sub-basins 1A and 1B**, Q_{100}=9.29 cfs, will drain from lots within the sub-basins to Enclave Lane and Cactus Canyon Trail. The roadways then direct the storm water into an inlet in Cactus Canyon Trail located at the intersection with Hibiscus Trail. The inlet captures 5.30 cfs and channels it into a existing public storm drain traveling through Tract 8B, The High Desert Park. This inlet allows a residual runoff of 3.99 cfs to pass by that then flows to a downstream inlet (in a sump condition) at the end of the street.

Storm water within **sub-basins 1D and 1E**, Q_{100}=9.33 cfs, drain from the lots within the sub-basins into the adjacent private roadways. The roadways, Enchantment Lane and Silverlace

Trail, channel the storm water runoff from the lots to the drop inlet located in Hibiscus Trail. The inlet in Hibiscus Trail accepts 4.70 cfs and allows 4.63 cfs to pass by. The residual from the Hibiscus inlet, 4.63 cfs, is combined with the residual from the Cactus inlet and **sub-basin 1C**, Q_{100}=2.89 cfs, and channeled down to an inlet and the end of Cactus Trail. The inlet at the end of Cactus Trail is located in a sump condition and is able to handle two times the 100-year event (Q_{100}=11.51 cfs, Q_{2x100}=23.02 cfs). Turned blocks will be provided in the wall adjacent to the sump inlet in Cactus Trail, for emergency purposes, should the inlet become clogged. If needed, the emergency spillway corridor for this inlet will direct flows to the park below.

The runoff from Basin 1 is conveyed to the existing public storm drain system in the High Desert Park and is consistent with it's approved grading and drainage plan. The park storm drain connects to the Academy Storm Drain from Cortaderia Street.

Basin 2 (3.46 acres, Q_{100}=14.94 cfs) consist of the developed portion of the northern half of this tract. Basin 2 is broken into three sub-basins.

Sub-basin 2A, Q_{100}=6.56 cfs, conveys runoff to Callalily Circle from the adjoining lots within its sub-basin. Storm water is conveyed from the low point in Callalily Circle to Bluemist Lane, **sub-basin 2B**, Q_{100}=5.44 cfs. An inlet in Bluemist Lane intercepts portion of the combined flow from sub-basins 2A and 2B, Q_{100}=12.0 cfs, at the intersection to Greyleaf Trail. The Bluemist inlet captures 6.60 cfs and allows 5.40 cfs to pass by. The residual flow from the Bluemist inlet is combined with the runoff from **sub-basin 2C**, Q_{100}=2.94 cfs, and direct to an inlet at the end of Greyleaf Trail. The inlet at the end of Greyleaf Trail is located in a sump condition and is able to handle two times the 100-year event (Q_{100}=8.34 cfs, Q_{2x100}=16.68 cfs). Turned blocks will be provided in the wall adjacent to the sump inlet in Greyleaf Trail, for emergency purposes, should the inlet become clogged. If needed, the emergency spillway corridor for this inlet will direct flows to an existing detention pond located in basin 3. The runoff from basin 2 is directed into a public storm drain system which is connect to the Academy Storm Drain in Academy Road.

Basin 3 (1.64 acres, Q_{100}=3.61 cfs) consist of the undeveloped portion, an existing natural dry arroyo, in the northern half of this tract. There is an existing FEMA Floodplain on Basin 3, within the existing drainage easement granted to the City of Albuquerque and the High Desert Residential Owners. This area will become Tract 8C-1, High Desert Open Space, and will remove the floodplain status as a part our LOMR submittal mentioned below. Basin 3 contains an existing detention pond that was constructed with the Phase 1-A project. Existing conditions currently drains more runoff, Q_{100}=10.34 cfs, to this pond than the proposed conditions will, Q_{100}=3.61 cfs. The storm water within the pond in basin 3 is conveyed to the Academy Storm Drain from the existing 24" RCP.

Basin 4 (0.10 acres, Q_{100}=0.36 cfs) is the private pedestrian access easement along the southern boundary to Tract 8C. This basin will drain to the High Desert Park to the west of this tract.

VII. CONCLUSION

This report has presented a comprehensive drainage management plan for the proposed residential subdivision. The plan provides safe and adequate drainage protection for the proposed development and is consistent with the previous, approved *HDDMM,P Final High Desert Phase 1 Hydrology and Design Drainage Report*, *Final High Desert Subdivision Academy Storm Drain Design Report*, and the *Grading and Drainage Plan for the High Desert Park*.

Therefore, it is recommended that this report and plans be approved for rough grading, preliminary and final platting actions for Tract 8C.

EXISTING CONDITIONS FOR
THE ENCLAVE AT HIGH DESERT
Oct-98

BASIN ID	DISCHARGES TO	AREA (ACRES)	% LAND TREATMENT* A	B	C	D	PEAK DISCHARGE - (CFS/ACRE)** A	B	C	D	Q(100-YR) UNDEVELOPED (CFS)
A	Existing Desiltation Pond	4.70	100.00	0.00	0.00	0.00	2.20	2.92	3.73	5.25	10.34
B	Existing Desiltation Pond	8.69	100.00	0.00	0.00	0.00	2.20	2.92	3.73	5.25	19.12
C	Existing Desiltation Pond	2.14	100.00	0.00	0.00	0.00	2.20	2.92	3.73	5.25	4.71
	TOTAL	15.53									34.17

NOTES:
1. Obtained from Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria for the City of Albuquerque, January, 1993
   * Table A-4
   ** Table A-9

PROPOSED CONDITIONS FOR
THE ENCLAVE AT HIGH DESERT
Oct-98

BASIN ID	DISCHARGES TO	AREA (ACRES)	% LAND TREATMENT* A	B	C	D	PEAK DISCHARGE - (CFS/ACRE)** A	B	C	D	Q(100-YR) DEVELOPED (CFS)
1	PROPOSED INLETS	4.87	0.00	36.00	0.00	64.00	2.20	2.92	3.73	5.25	21.48
2	BASIN 3	3.46	0.00	40.00	0.00	60.00	2.20	2.92	3.73	5.25	14.94
3	DESILT. POND w/ 24" STUB	1.64	100.00	0.00	0.00	0.00	2.20	2.92	3.73	5.25	3.61
4	EXISTING PARK SITE	0.10	0.00	70.00	0.00	30.00	2.20	2.92	3.73	5.25	0.36
IMP(E)	EXISTING INLETS	0.66	0.00	20.00	0.00	80.00	2.20	2.92	3.73	5.25	3.16
IMP(W)	EXISTING INLETS	0.93	0.00	31.00	0.00	69.00	2.20	2.92	3.73	5.25	4.21
T11	BASIN IMP(E)	4.03	100.00	0.00	0.00	0.00	2.20	2.92	3.73	5.25	8.87
HDST	BASIN IMP(E)	0.38	0.00	32.00	0.00	68.00	2.20	2.92	3.73	5.25	1.71
	TOTALS	16.07									58.34

NOTES:
1. Obtained from Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria for the City of Albuquerque, January, 1993
   * Table A-4
   ** Table A-9

PROPOSED CONDITIONS FOR THE SUB-BASINS OF BASIN 1
THE ENCLAVE AT HIGH DESERT
Oct-98

SUB-BASIN ID	DISCHARGES TO	AREA (ACRES)	% LAND TREATMENT* A	B	C	D	PEAK DISCHARGE - (CFS/ACRE)** A	B	C	D	Q(100-YR) DEVELOPED (CFS)
1A	SUB-BASIN 1B	0.96	0.00	40.00	0.00	60.00	2.20	2.92	3.73	5.25	4.15
1B	PROPOSED INLET	1.19	0.00	40.00	0.00	60.00	2.20	2.92	3.73	5.25	5.14
1C	PROPOSED INLET	0.67	0.00	40.00	0.00	60.00	2.20	2.92	3.73	5.25	2.89
1D	SUB-BASIN 1E	1.59	0.00	30.00	0.00	70.00	2.20	2.92	3.73	5.25	7.24
1E	PROPOSED INLET	0.46	0.00	30.00	0.00	70.00	2.20	2.92	3.73	5.25	2.09
	TOTALS	4.87									21.51

NOTES:
1. Obtained from Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria for the City of Albuquerque, January, 1993
   * Table A-4
   ** Table A-9

PROPOSED CONDITIONS FOR THE SUB-BASINS OF BASIN 2
THE ENCLAVE AT HIGH DESERT
Oct-98

SUB-BASIN ID	DISCHARGES TO	AREA (ACRES)	% LAND TREATMENT* A	B	C	D	PEAK DISCHARGE - (CFS/ACRE)** A	B	C	D	Q(100-YR) DEVELOPED (CFS)
2A	SUB-BASIN 2B	1.52	0.00	40.00	0.00	60.00	2.20	2.92	3.73	5.25	6.56
2B	PROPOSED INLET	1.26	0.00	40.00	0.00	60.00	2.20	2.92	3.73	5.25	5.44
2C	PROPOSED INLET	0.68	0.00	40.00	0.00	60.00	2.20	2.92	3.73	5.25	2.94
	TOTALS	3.46									14.94

NOTES:
1. Obtained from Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria for the City of Albuquerque, January, 1993
   * Table A-4
   ** Table A-9

SUMMARY OF THE ROADWAY CAPACITY ANALYSIS FOR THE ENCLAVE AT HIGH DESERT

IMPERATA STREET (EAST) - Drainage Basins IMP(E), T11 & HDST

Roadway Grade (%)	Roadway Cross-slope (%)	Q(100 YR) in roadway (cfs)	Curb Type	Depth of water in roadway (ft)	Velocity of storm water in roadway (ft/s)	V^2/2*G	EGL	Crown / ROW Elevation (ft)	Comments
1.00	2.00 (crown)	13.74	STD	0.51	3.05	0.14	0.65	0.57 / 0.79	see note below
5.18	2.00 (crown)	13.74	STD	0.39	5.72	0.51	0.90	0.57 / 0.79	see note below
1.20	2.00 (crown)	13.74	STD	0.49	3.27	0.17	0.66	0.57 / 0.79	see note below
3.50	2.00 (crown)	13.74	STD	0.42	4.94	0.38	0.80	0.57 / 0.79	see note below
4.88	2.00 (crown)	13.74	STD	0.40	5.57	0.48	0.88	0.57 / 0.79	see note below

Note:
By observation, the product of the depth times the velocity is below 6.5 for the 100-year design storm, therefore for the 10-year design storm the product of the depth times the velocity will be well below the recommended value of 6.5.
The calculations of the flow in the roadway take into account the residual flow of High Desert Street and an undistributed amount of runoff from Tract 11 (a conservative calculation).
The depth of water on the east side of Imperata St. will still be contained by the crown and Right-of Way, but any hydraulic jumps will occur over the crown and be contained by the crown and Right-of-Way on the west side of Imperata St.

IMPERATA STREET (WEST) - Drainage Basin IMP(W)

Roadway Grade (%)	Roadway Cross-slope (%)	Q(100 YR) in roadway (cfs)	Curb Type	Depth of water in roadway (ft)	Velocity of storm water in roadway (ft/s)	V^2/2*G	EGL	Crown / ROW Elevation (ft)	Comments
1.00	2.00 (crown)	4.21	ROLL	0.29	2.26	0.08	0.37	0.50 / 0.67	OK
5.18	2.00 (crown)	4.21	ROLL	0.22	4.21	0.28	0.50	0.50 / 0.67	OK
1.20	2.00 (crown)	4.21	ROLL	0.28	2.47	0.09	0.37	0.50 / 0.67	OK
3.50	2.00 (crown)	4.21	ROLL	0.23	3.60	0.20	0.43	0.50 / 0.67	OK
4.88	2.00 (crown)	4.21	ROLL	0.22	4.11	0.26	0.48	0.50 / 0.67	OK

Note:
By observation, the product of the depth times the velocity is below 6.5 for the 100-year design storm, therefore for the 10-year design storm the product of the depth times the velocity will be well below the recommended value of 6.5.
The calculations of the flow in the roadway take into account an undistributed amount of flow from Basin IMP(W) (a conservative calculation).

ENCLAVE LANE - Drainage Sub-Basin 1A

Roadway Grade (%)	Roadway Cross-slope (%)	Q(100 YR) in roadway (cfs)	Curb Type	Depth of water in roadway (ft)	Velocity of storm water in roadway (ft/s)	V^2/2*G	EGL	Top of Curb Elevation (ft)	Comments
5.91	2.00	4.15	STD/ROLL	0.21	4.44	0.31	0.52	0.33	Pad Elev.
									above EGL

Note:
By observation, the product of the depth times the velocity is below 6.5 for the 100-year design storm, therefore for the 10-year design storm the product of the depth times the velocity will be well below the recommended value of 6.5.

CACTUS CANYON TRAIL - Drainage Sub-Basins 1B & 1C

Roadway Grade (%)	Roadway Cross-slope (%)	Q(100 YR) in roadway (cfs)	Curb Type	Depth of water in roadway (ft)	Velocity of storm water in roadway (ft/s)	V^2/2*G	EGL	Top of Curb Elevation (ft)	Comments
0.74	2.00	11.51	STD	0.51	2.53	0.10	0.61	0.67	OK

Note:
By observation, the product of the depth times the velocity is below 6.5 for the 100-year design storm, therefore for the 10-year design storm the product of the depth times the velocity will be well below the recommended value of 6.5.
The calculations of the flow in the roadway take into account the runoff from Sub-Basin 1A and the residual flow from the inlet on Hibiscus Trail (Sub-Basin 1E).

HIBISCUS TRAIL - Drainage Sub-Basin 1E

Roadway Grade (%)	Roadway Cross-slope (%)	Q(100 YR) in roadway (cfs)	Curb Type	Depth of water in roadway (ft)	Velocity of storm water in roadway (ft/s)	V^2/2*G	EGL	Top of Curb Elevation (ft)	Comments
4.00	1.00	9.33	STD	0.32	3.82	0.23	0.55	0.67	OK
8.65	1.00	9.33	STD	0.29	5.21	0.42	0.71	0.67	Pad Elev.
									above EGL

Note:
By observation, the product of the depth times the velocity is below 6.5 for the 100-year design storm, therefore for the 10-year design storm the product of the depth times the velocity will be well below the recommended value of 6.5.
The calculations of the flow in the roadway take into account the runoff from Silverlace Trail (Sub-Basin 1D).

Silverlace Trail - Drainage Sub-Basins 1D & 1E

Roadway Grade (%)	Roadway Cross-slope (%)	Q(100 YR) in roadway (cfs)	Curb Type	Depth of water in roadway (ft)	Velocity of storm water in roadway (ft/s)	V^2/2*G	EGL	Top of curb Elevation (ft)	Comments
2.00	5.90	1.57	ROLL	0.20	2.88	0.13	0.33	0.33	OK
2.40	5.70	7.24	STD/ROLL	0.43	4.61	0.33	0.76	0.67	Pad Elev.
									above EGL

Note:
By observation, the product of the depth times the velocity is below 6.5 for the 100-year design storm, therefore for the 10-year design storm the product of the depth times the velocity will be well below the recommended value of 6.5.
The calculations of the flow in the roadway take into account the runoff from Enchantment Lane.

Enchantment Lane - Drainage Sub-Basin 1D

Roadway Grade (%)	Roadway Cross-slope (%)	Q(100 YR) in roadway (cfs)	Curb Type	Depth of water in roadway (ft)	Velocity of storm water in roadway (ft/s)	V^2/2*G	EGL	Top of Curb Elevation (ft)	Comments
1.69	1.00	1.81	ROLL	0.17	1.87	0.05	0.22	0.33	OK

Note:
By observation, the product of the depth times the velocity is below 6.5 for the 100-year design storm, therefore for the 10-year design storm the product of the depth times the velocity will be well below the recommended value of 6.5.

GREYLEAF TRAIL - Drainage Sub-Basin 2C

Roadway Grade (%)	Roadway Cross-slope (%)	Q(100 YR) in roadway (cfs)	Curb Type	Depth of water in roadway (ft)	Velocity of storm water in roadway (ft/s)	V^2/2*G	EGL	Top of Curb Elevation (ft)	Comments
1.00	2.00	8.34	STD	0.44	2.71	0.11	0.55	0.67	OK

Note:
By observation, the product of the depth times the velocity is below 6.5 for the 100-year design storm, therefore for the 10-year design storm the product of the depth times the velocity will be well below the recommended value of 6.5.
The calculations of the flow in the roadway take into account the residual flow from the inlet on Bluemist Lane (Sub-Basin 2B).

BLUEMIST LANE - Drainage Sub-Basin 2B

Roadway Grade (%)	Roadway Cross-slope (%)	Q(100 YR) in roadway (cfs)	Curb Type	Depth of water in roadway (ft)	Velocity of storm water in roadway (ft/s)	V^2/2*G	EGL	Top of Curb Elevation (ft)	Comments
4.03	1.50	12.00	STD	0.37	4.61	0.33	0.70	0.67	OK

Note:
By observation, the product of the depth times the velocity is below 6.5 for the 100-year design storm, therefore for the 10-year design storm the product of the depth times the velocity will be well below the recommended value of 6.5.
The calculations of the flow in the roadway take into account the runoff from Calla Lily Circle (Sub-Basin 2A).

CALLA LILY CIRCLE - Drainage Sub-Basin 2A

Roadway Grade (%)	Roadway Cross-slope (%)	Q(100 YR) in roadway (cfs)	Curb Type	Depth of water in roadway (ft)	Velocity of storm water in roadway (ft/s)	V^2/2*G	EGL	Top of Curb Elevation (ft)	Comments
1.39	4.77	1.19	STD/ROLL	0.25	2.39	0.09	0.34	0.67	OK
7.17	4.64	5.37	STD/ROLL	0.31	6.18	0.59	0.90	0.67	Pad Elev.
									above EGL

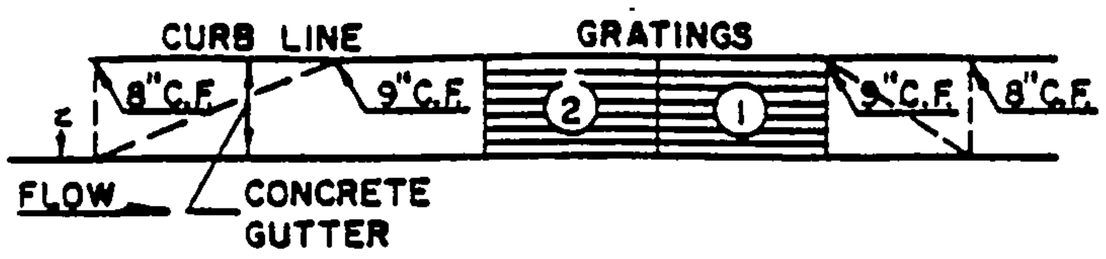
Note:
By observation, the product of the depth times the velocity is below 6.5 for the 100-year design storm, therefore for the 10-year design storm the product of the depth times the velocity will be well below the recommended value of 6.5.

DEVELOPED CONDITIONS FOR INLETS IN
THE ENCLAVE AT HIGH DESERT

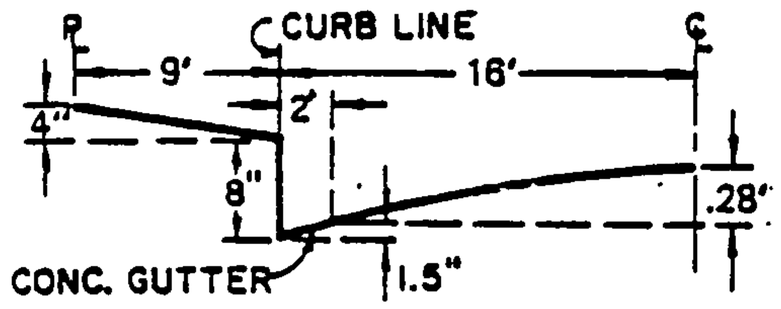
INLET	CONDITION	TYPE	CONTRIBUTING BASIN AND RESIDUAL INLET	FLOW TO INLET 100-YR (CFS)	STREET DEPTH (FT)	GRATE CAP. (CFS)	RESIDUAL FLOW (CFS)	TOP OF GRATE	INVERT
1	ON 4.00% GRADE	DOUBLE GRATE "A"	BASINS 1D & 1E	9.33	0.32	4.70	4.63	6107.97	6101.97
2	ON 0.74% GRADE	DOUBLE GRATE "A"	BASINS 1A & 1B	9.29	0.47	5.30	3.99	6106.67	6101.17
3	IN SUMP	DOUBLE GRATE "C"	BASIN 1C, INLETS 1 & 2	SEE NEXT PAGE FOR ANALYSIS				6105.45	6100.45
4	ON 4.03% GRADE	DOUBLE GRATE "A"	BASINS 2A & 2B	12.00	0.37	6.60	5.40	6109.61	6105.11
5	IN SUMP	DOUBLE GRATE "C"	BASIN 2C, INLET 4	SEE NEXT PAGE FOR ANALYSIS				6107.21	6102.21

Hibiscus Trail
Inlet 1

GRATING CAPACITIES FOR TYPE DOUBLE "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

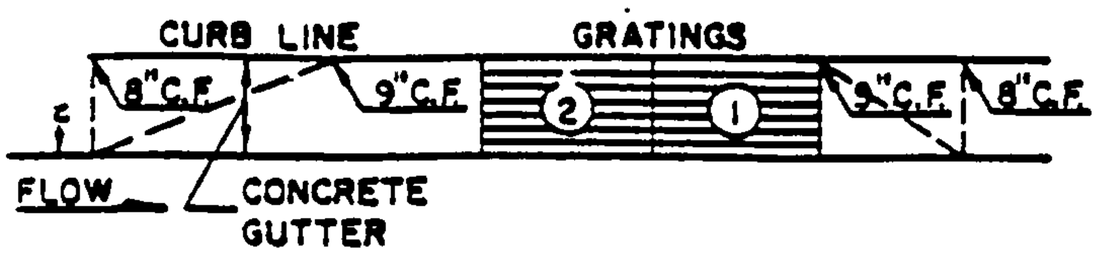
Roadway Grade: 4.00%
$Q_{100} = 9.33$ cfs
Depth = 0.32 ft.

Type "A" Double Grate
PLATE 22.3 D-6

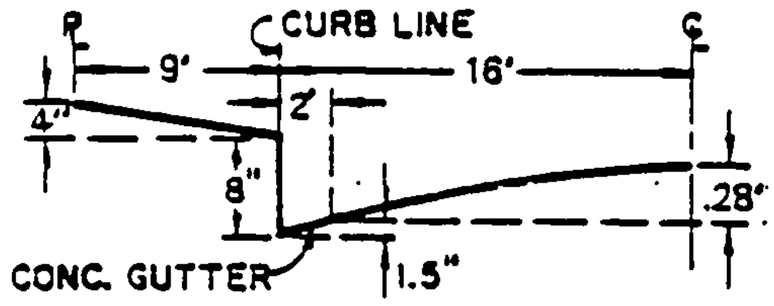
C-2

Cactus Canyon Trail
Inlet 2

GRATING CAPACITIES FOR TYPE DOUBLE "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

Roadway Grade: 0.74%

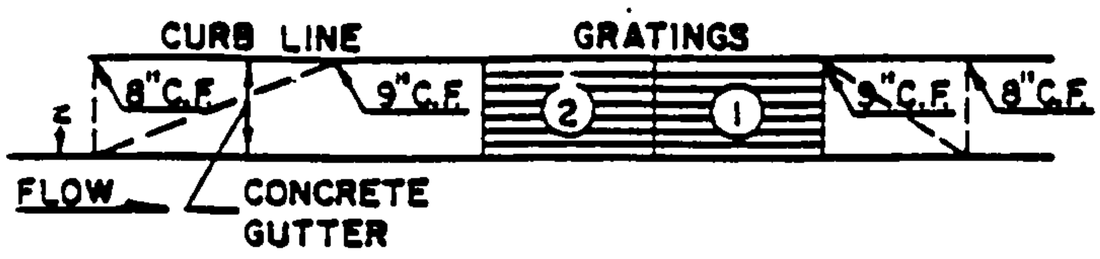
$Q_{100} = 9.29$ cfs

Depth = 0.47 ft.

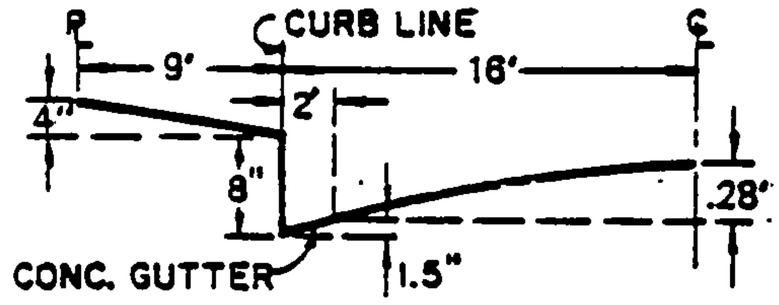
Type "A" Double Grate
PLATE 22.3 D-6

Bluemist Lane
Inlet 4

GRATING CAPACITIES FOR TYPE DOUBLE "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

Roadway Grade: 4.03%
Q_{100} = 12.00 cfs
Depth = 0.37 ft

Type 'A' Double Grate
PLATE 22.3 D-6

C-4

ANALYSIS OF AN INLET IN A SUMP CONDITION - **INLET 3 CACTUS CANYON TRAIL**

INLET TYPE: Double Grate Type "C"

WEIR: Q=C*L*H^1.5

Grate opeining

C=3.0

L(double grate)=[4(2.67')+2(1.8')]=14.28 ft

Q=3.0(14.28)H^1.5=42.84*H^1.5

ORIFICE:

Grate opening

C=0.6

C(double grate)=8.19 sf

Q=4.194*(64.4*H)^0.5

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR DOUBLE GRATE	Q (CFS) ORIFICE DOUBLE GRATE	TOTAL Q (CFS)	COMMENTS:
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	Flow at double "C" inlet at roadway low point
	0.10	0.10	1.35	12.47	1.35	Weir controls on grate analysis
	0.20	0.20	3.83	17.64	3.83	
	0.30	0.30	7.04	21.60	7.04	
	0.40	0.40	10.84	24.94	10.84	
	0.50	0.50	15.15	27.88	15.15	Q(100 yr) = 11.51 cfs is provided at this depth
	0.60	0.60	19.91	30.55	19.91	
TOP OF CURB	0.70	0.70	25.09	32.99	25.09	Q(2x100 yr) = 23.02 cfs is provided at this depth

NOTE: The total runoff intercepted by the inlet at the low point in the roadway is:

THE 100 YR STORM EVENT = 11.51 CFS at the sump condition
THE 2 x 100 YR STORM EVENT = 23.02 CFS at the sump condition

ANALYSIS OF AN INLET IN A SUMP CONDITION - **INLET 5 GREYLEAF TRAIL**

INLET TYPE: Double Grate Type "C"

WEIR: Q=C*L*H^1.5

Grate opeining

C=3.0

L(double grate)=[4(2.67')+2(1.8')]=14.28 ft

Q=3.0(14.28)H^1.5=42.84*H^1.5

ORIFICE:

Grate opening

C=0.6

C(double grate)=8.19 sf

Q=4.194*(64.4*H)^0.5

	WS ELEVATION	HEIGHT ABOVE INLET	Q (CFS) WEIR DOUBLE GRATE	Q (CFS) ORIFICE DOUBLE GRATE	TOTAL Q (CFS)	COMMENTS:
~FL @ INLET	0.00	0.00	0.00	0.00	0.00	Flow at double "C" inlet at roadway low point
	0.10	0.10	1.35	12.47	1.35	Weir controls on grate analysis
	0.20	0.20	3.83	17.64	3.83	
	0.30	0.30	7.04	21.60	7.04	
	0.40	0.40	10.84	24.94	10.84	Q(100 yr) = 8.34 cfs is provided at this depth
	0.50	0.50	15.15	27.88	15.15	
	0.60	0.60	19.91	30.55	19.91	Q(2x100 yr) = 16.68 cfs is provided at this depth
TOP OF CURB	0.70	0.70	25.09	32.99	25.09	

NOTE: The total runoff intercepted by the inlet at the low point in the roadway is:

THE 100 YR STORM EVENT = 8.34 CFS at the sump condition

THE 2 x 100 YR STORM EVENT = 16.68 CFS at the sump condition

ORIFICE ANALYSIS FOR THE PIPE ENTRANCE AT AN INLET
THE ENCLAVE AT HIGH DESERT

INLET 1 DEPTH=6.00' Q(100-yr)=4.70 cfs
INLET 2 DEPTH=5.50' Q(100-yr)=5.30 cfs
INLET 4 DEPTH=4.50' Q(100-yr)=6.60 cfs
INLET 5 DEPTH=5.00' Q(2x100-yr)=16.68 cfs

ORIFICE: **18" RCP**
Q = CA(2GH)^.5 AREA (SF): 1.77
C = 0.6

WS ELEVATION	HEIGHT ABOVE C.L. OF PIPE	Q (CFS) ORIFICE DOUBLE GRATE	COMMENTS
0.00	0.00	0.00	
1.50	0.75	7.38	100-yr water surface elev. at inlets 1, 2 & 4 is well below top of grate
1.70	0.95	8.31	
1.90	1.15	9.14	
2.10	1.35	9.90	
2.30	1.55	10.61	
2.50	1.75	11.27	
2.70	1.95	11.90	
2.90	2.15	12.50	
3.10	2.35	13.06	
3.30	2.55	13.61	
3.50	2.75	14.13	
3.70	2.95	14.64	
3.90	3.15	15.13	
4.10	3.35	15.60	
4.30	3.55	16.06	
4.50	3.75	16.50	
4.70	3.95	16.94	2x100-yr water surface elev. at inlet 5 is 0.42' below top of grate
4.90	4.15	17.36	
5.10	4.35	17.78	
5.30	4.55	18.18	
5.50	4.75	18.57	
5.70	4.95	18.96	
5.90	5.15	19.34	

ORIFICE ANALYSIS FOR THE PIPE ENTRANCE AT AN INLET
THE ENCLAVE AT HIGH DESERT

INLET 3 DEPTH=5.00' Q(2x100-yr)=23.02 cfs

ORIFICE: **24" RCP**
Q = CA(2GH)^.5 AREA (SF): 3.14
C = 0.6

WS ELEVATION	HEIGHT ABOVE C.L. OF PIPE	Q (CFS) ORIFICE DOUBLE GRATE	COMMENTS
0.00	0.00	0.00	
2.00	1.00	15.12	
2.20	1.20	16.56	
2.40	1.40	17.89	
2.60	1.60	19.12	
2.80	1.80	20.28	
3.00	2.00	21.38	
3.20	2.20	22.43	
3.40	2.40	23.42	2x100-yr water surface elev. at inlet 3 is 1.68' below top of grate
3.60	2.60	24.38	
3.80	2.80	25.30	
4.00	3.00	26.19	
4.20	3.20	27.05	
4.40	3.40	27.88	
4.60	3.60	28.69	
4.80	3.80	29.47	
5.00	4.00	30.24	

CULVERT ANALYSIS FOR GRAVITY FLOW AT THE ENCLAVE AT HIGH DESERT

PIPE NO.	PIPE LOCATION	SIZE/ TYPE	LENGTH (ft)	SLOPE (%)	PROPOSED Q (100-YR, CFS)	PIPE CAPACITY (100-YR, CFS)
1	INLET 1 TO MANHOLE 1 (Hibiscus Trail)	18" RCP	44.00	7.18	4.70	28.15
2	INLET 2 TO MANHOLE 1 (Cactus Canyon Trail)	18" RCP	28.00	8.43	5.30	30.50
3	MANHOLE 1 TO MANHOLE 2 (Cactus Canyon Trail)	24" RCP	160.00	0.99	10.00	22.51
4	INLET 3 TO MANHOLE 2 (Easementl)	24" RCP	13.00	24.77	11.51	112.59
5	MANHOLE 2 TO EXIST. MANHOLE (Easement)	24" RCP	117.00	4.68	21.51	48.94
6	INLET 4 TO MANHOLE 3 (Bluemist Lane)	18" RCP	27.00	9.67	6.60	32.66
7	MANHOLE 3 TO MANHOLE 4 (Greyleaf Trail)	18" RCP	123.00	1.90	6.60	14.48
8	INLET 5 TO MANHOLE 4 (Easement)	18" RCP	10.00	20.50	8.34	47.56
9	MANHOLE 4 TO EXIST. STUBOUT (Easement)	18" RCP	84.00	3.07	14.94	18.41

Pipe #1

INLET 1 TO MANHOLE 1 (Hibiscus Trail)

CULVERT RATING TABLE

18. INCH DIAMETER PIPE

N = 0.01300 INCREMENT = 1.00 SLOPE = 0.07180

FLOW DEPTH (IN)	FLOW AREA (SQ FT)	DISCHARGE (CFS)	VELOCITY (FPS)
1.00000	0.03862	0.16922	4.38158
2.00000	0.10733	0.73296	6.82900
3.00000	0.19359	1.69955	8.77904
4.00000	0.29241	3.04822	10.42465
5.00000	0.40056	4.74507	11.84611
6.00000	0.51564	6.74769	13.08611
7.00000	0.63565	9.00714	14.17007
8.00000	0.75883	11.46895	15.11399
9.00000	0.88357	14.07344	15.92789
10.00000	1.00831	16.75570	16.61753
11.00000	1.13150	19.44503	17.18519
12.00000	1.25151	22.06382	17.62980
13.00000	1.36659	24.52533	17.94643
14.00000	1.47474	26.72943	18.12485
15.00000	1.57355	28.55361	18.14595
16.00000	1.65981	29.83047	17.97217
17.00000	1.72852	30.26867	17.51129
18.00000	1.76715	28.14690	15.92789

$Q_{100} = 4.70$ cfs

Pipe #2

INLET 2 TO MANHOLE 1 (Cactus Canyon Trail)

CULVERT RATING TABLE

18. INCH DIAMETER PIPE

N = 0.01300 INCREMENT = 1.00 SLOPE = 0.08430

FLOW DEPTH (IN)	FLOW AREA (SQ FT)	DISCHARGE (CFS)	VELOCITY (FPS)
1.00000	0.03862	0.18336	4.74769
2.00000	0.10733	0.79420	7.39960
3.00000	0.19359	1.84156	9.51259
4.00000	0.29241	3.30292	11.29570
5.00000	0.40056	5.14155	12.83593
6.00000	0.51564	7.31150	14.17954
7.00000	0.63565	9.75975	15.35407
8.00000	0.75883	12.42725	16.37687
9.00000	0.88357	15.24937	17.25877
10.00000	1.00831	18.15574	18.00603
11.00000	1.13150	21.06979	18.62113
12.00000	1.25151	23.90740	19.10289
13.00000	1.36659	26.57458	19.44597
14.00000	1.47474	28.96284	19.63930
15.00000	1.57355	30.93945	19.66217
16.00000	1.65981	32.32301	19.47387
17.00000	1.72852	32.79782	18.97448
18.00000	1.76715	30.49876	17.25877

$Q_{100} = 5.30$ cfs

Pipe #3

MANHOLE 1 TO MANHOLE 2 (Cactus Canyon Trail)

CULVERT RATING TABLE

24. INCH DIAMETER PIPE

N = 0.01300 INCREMENT = 1.00 SLOPE = 0.00990

FLOW DEPTH (IN)	FLOW AREA (SQ FT)	DISCHARGE (CFS)	VELOCITY (FPS)
1.00000	0.04479	0.07320	1.63427
2.00000	0.12504	0.32003	2.55937
3.00000	0.22665	0.74960	3.30722
4.00000	0.34416	1.35913	3.94907
5.00000	0.47417	2.14072	4.51471
6.00000	0.61418	3.08331	5.02018
7.00000	0.76224	4.17351	5.47529
8.00000	0.91669	5.39610	5.88652
9.00000	1.07605	6.73432	6.25835
10.00000	1.23901	8.16999	6.59396
11.00000	1.40432	9.68364	6.89560
12.00000	1.57079	11.25448	7.16483
13.00000	1.73727	12.86040	7.40266
14.00000	1.90258	14.47783	7.60958
15.00000	2.06554	16.08155	7.78565
16.00000	2.22490	17.64437	7.93040
17.00000	2.37935	19.13666	8.04282
18.00000	2.52741	20.52544	8.12115
19.00000	2.66742	21.77301	8.16256
20.00000	2.79743	22.83423	8.16258
21.00000	2.91494	23.65090	8.11369
22.00000	3.01655	24.13757	8.00172
23.00000	3.09680	24.13082	7.79217
24.00000	3.14159	22.50899	7.16484

$Q_{100} = 10.00$ cfs

Pipe #4

INLET 3 TO MANHOLE 2 (Easement)

CULVERT RATING TABLE

24. INCH DIAMETER PIPE

N = 0.01300 INCREMENT = 1.00 SLOPE = 0.24770

FLOW DEPTH (IN)	FLOW AREA (SQ FT)	DISCHARGE (CFS)	VELOCITY (FPS)
1.00000	0.04479	0.36613	8.17466
2.00000	0.12504	1.60079	12.80204
3.00000	0.22665	3.74950	16.54280
4.00000	0.34416	6.79837	19.75334
5.00000	0.47417	10.70794	22.58269
6.00000	0.61418	15.42279	25.11105
7.00000	0.76224	20.87598	27.38750
8.00000	0.91669	26.99140	29.44447
9.00000	1.07605	33.68518	31.30438
10.00000	1.23901	40.86645	32.98312
11.00000	1.40432	48.43776	34.49193
12.00000	1.57079	56.29515	35.83864
13.00000	1.73727	64.32800	37.02824
14.00000	1.90258	72.41840	38.06329
15.00000	2.06554	80.44022	38.94398
16.00000	2.22490	88.25751	39.66805
17.00000	2.37935	95.72195	40.23037
18.00000	2.52741	102.66866	40.62214
19.00000	2.66742	108.90904	40.82929
20.00000	2.79743	114.21730	40.82941
21.00000	2.91494	118.30227	40.58486
22.00000	3.01655	120.73659	40.02475
23.00000	3.09680	120.70282	38.97660
24.00000	3.14159	112.59041	35.83865

$Q_{100} = 11.51$ cfs

Pipe #5

MANHOLE 2 TO EXIST. MANHOLE (Easement)

CULVERT RATING TABLE

24. INCH DIAMETER PIPE

N = 0.01300 INCREMENT = 1.00 SLOPE = 0.04680

FLOW DEPTH (IN)	FLOW AREA (SQ FT)	DISCHARGE (CFS)	VELOCITY (FPS)
1.00000	0.04479	0.15915	3.55328
2.00000	0.12504	0.69582	5.56467
3.00000	0.22665	1.62980	7.19066
4.00000	0.34416	2.95505	8.58619
5.00000	0.47417	4.65442	9.81602
6.00000	0.61418	6.70383	10.91502
7.00000	0.76224	9.07417	11.90453
8.00000	0.91669	11.73236	12.79863
9.00000	1.07605	14.64195	13.60709
10.00000	1.23901	17.76343	14.33678
11.00000	1.40432	21.05445	14.99262
12.00000	1.57079	24.46983	15.57799
13.00000	1.73727	27.96146	16.09507
14.00000	1.90258	31.47812	16.54498
15.00000	2.06554	34.96497	16.92779
16.00000	2.22490	38.36291	17.24252
17.00000	2.37935	41.60748	17.48694
18.00000	2.52741	44.62701	17.65723
19.00000	2.66742	47.33952	17.74728
20.00000	2.79743	49.64686	17.74733
21.00000	2.91494	51.42247	17.64103
22.00000	3.01655	52.48060	17.39756
23.00000	3.09680	52.46593	16.94197
24.00000	3.14159	48.93970	15.57800

$Q_{100} = 21.51$ cfs

Pipe #6

INLET 4 TO MANHOLE 3 (Bluemist Lane)

CULVERT RATING TABLE

18. INCH DIAMETER PIPE

N = 0.01300 INCREMENT = 1.00 SLOPE = 0.09670

FLOW DEPTH (IN)	FLOW AREA (SQ FT)	DISCHARGE (CFS)	VELOCITY (FPS)
1.00000	0.03862	0.19639	5.08489
2.00000	0.10733	0.85061	7.92516
3.00000	0.19359	1.97236	10.18822
4.00000	0.29241	3.53751	12.09797
5.00000	0.40056	5.50673	13.74760
6.00000	0.51564	7.83079	15.18663
7.00000	0:63565	10.45293	16.44459
8.00000	0.75883	13.30989	17.54003
9.00000	0.88357	16.33245	18.48457
10.00000	1.00831	19.44525	19.28491
11.00000	1.13150	22.56626	19.94369
12.00000	1.25151	25.60541	20.45966
13.00000	1.36659	28.46203	20.82711
14.00000	1.47474	31.01992	21.03417
15.00000	1.57355	33.13691	21.05866
16.00000	1.65981	34.61874	20.85699
17.00000	1.72852	35.12727	20.32213
18.00000	1.76715	32.66492	18.48457

$Q_{100} = 6.60$ cfs

Pipe #7

MANHOLE 3 TO MANHOLE 4 (Greyleaf Trail)

CULVERT RATING TABLE

18. INCH DIAMETER PIPE

N = 0.01300 INCREMENT = 1.00 SLOPE = 0.01900

FLOW DEPTH (IN)	FLOW AREA (SQ FT)	DISCHARGE (CFS)	VELOCITY (FPS)
1.00000	0.03862	0.08705	2.25396
2.00000	0.10733	0.37704	3.51295
3.00000	0.19359	0.87428	4.51608
4.00000	0.29241	1.56805	5.36261
5.00000	0.40056	2.44094	6.09383
6.00000	0.51564	3.47112	6.73170
7.00000	0.63565	4.63342	7.28931
8.00000	0.75883	5.89981	7.77488
9.00000	0.88357	7.23960	8.19356
10.00000	1.00831	8.61940	8.54833
11.00000	1.13150	10.00284	8.84034
12.00000	1.25151	11.34999	9.06905
13.00000	1.36659	12.61623	9.23193
14.00000	1.47474	13.75005	9.32371
15.00000	1.57355	14.68844	9.33457
16.00000	1.65981	15.34528	9.24518
17.00000	1.72852	15.57069	9.00809
18.00000	1.76715	14.47922	8.19357

$Q_{100} = 6.60$ cfs

Pipe #8

INLET 5 TO MANHOLE 4 (Easement)

CULVERT RATING TABLE

18. INCH DIAMETER PIPE

N = 0.01300 INCREMENT = 1.00 SLOPE = 0.20500

FLOW DEPTH (IN)	FLOW AREA (SQ FT)	DISCHARGE (CFS)	VELOCITY (FPS)
1.00000	0.03862	0.28594	7.40364
2.00000	0.10733	1.23849	11.53909
3.00000	0.19359	2.87177	14.83412
4.00000	0.29241	5.15064	17.61474
5.00000	0.40056	8.01783	20.01661
6.00000	0.51564	11.40170	22.11186
7.00000	0.63565	15.21954	23.94345
8.00000	0.75883	19.37931	25.53841
9.00000	0.88357	23.78017	26.91367
10.00000	1.00831	28.31243	28.07897
11.00000	1.13150	32.85665	29.03816
12.00000	1.25151	37.28168	29.78943
13.00000	1.36659	41.44094	30.32444
14.00000	1.47474	45.16524	30.62591
15.00000	1.57355	48.24761	30.66158
16.00000	1.65981	50.40515	30.36794
17.00000	1.72852	51.14558	29.58918
18.00000	1.76715	47.56038	26.91368

$Q_{100} = 8.34$ cfs

Pipe #9

MANHOLE 4 TO EXIST. STUBOUT (Easement)

CULVERT RATING TABLE

18. INCH DIAMETER PIPE

N = 0.01300 INCREMENT = 1.00 SLOPE = 0.03070

FLOW DEPTH (IN)	FLOW AREA (SQ FT)	DISCHARGE (CFS)	VELOCITY (FPS)
1.00000	0.03862	0.11065	2.86509
2.00000	0.10733	0.47927	4.46544
3.00000	0.19359	1.11133	5.74056
4.00000	0.29241	1.99321	6.81661
5.00000	0.40056	3.10277	7.74610
6.00000	0.51564	4.41227	8.55692
7.00000	0.63565	5.88971	9.26572
8.00000	0.75883	7.49947	9.88294
9.00000	0.88357	9.20253	10.41514
10.00000	1.00831	10.95644	10.86609
11.00000	1.13150	12.71498	11.23729
12.00000	1.25151	14.42739	11.52801
13.00000	1.36659	16.03695	11.73505
14.00000	1.47474	17.47820	11.85172
15.00000	1.57355	18.67102	11.86552
16.00000	1.65981	19.50595	11.75189
17.00000	1.72852	19.79249	11.45052
18.00000	1.76715	18.40508	10.41515

$Q_{100} = 14.94$ cfs

THE ENCLAVE AT HIGH DESERT - IMPERATA STREET 1 (EAST)

MANNING'S N = .0170 SLOPE = .0100

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	24.00	4.43	5	30.00	5.22
2	22.00	4.56	4	24.00	5.10			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.48	0.05	0.0	0.0	0.8	0.7	0.77
4.53	0.10	0.1	0.1	1.6	1.1	1.54
4.58	0.15	0.2	0.2	3.2	1.3	3.00
4.63	0.20	0.4	0.6	5.7	1.5	5.50
4.68	0.25	0.7	1.3	8.3	1.7	8.00
4.73	0.30	1.2	2.4	10.8	2.0	10.50
4.78	0.35	1.8	4.1	13.4	2.3	13.00
4.83	0.40	2.5	6.3	15.9	2.5	15.50
4.88	0.45	3.3	9.3	18.5	2.8	18.00
4.93	0.50	4.3	13.0	21.0	3.0	20.50
4.98	0.55	5.4	17.6	23.6	3.3	23.00
5.00	0.57	5.9	19.6	24.6	3.4	24.00

$Q_{100} = 13.74$ cfs

THE ENCLAVE AT HIGH DESERT - IMPERATA STREET 2 (EAST)

MANNING'S N = .0170 SLOPE = .0518

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	24.00	4.43	5	30.00	5.22
2	22.00	4.56	4	24.00	5.10			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.48	0.05	0.0	0.0	0.8	1.6	0.77
4.53	0.10	0.1	0.2	1.6	2.6	1.54
4.58	0.15	0.2	0.5	3.2	2.9	3.00
4.63	0.20	0.4	1.3	5.7	3.3	5.50
4.68	0.25	0.7	2.9	8.3	3.9	8.00
4.73	0.30	1.2	5.5	10.8	4.6	10.50
4.78	0.35	1.8	9.2	13.4	5.2	13.00
4.83	0.40	2.5	14.4	15.9	5.8	15.50
4.88	0.45	3.3	21.2	18.5	6.4	18.00
4.93	0.50	4.3	29.6	21.0	6.9	20.50
4.98	0.55	5.4	40.0	23.6	7.4	23.00
5.00	0.57	5.9	44.7	24.6	7.6	24.00

$Q_{100} = 13.74$ cfs

THE ENCLAVE AT HIGH DESERT - IMPERATA STREET 3 (EAST)

MANNING'S N = .0170 SLOPE = .0120

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	24.00	4.43	5	30.00	5.22
2	22.00	4.56	4	24.00	5.10			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.48	0.05	0.0	0.0	0.8	0.8	0.77
4.53	0.10	0.1	0.1	1.6	1.2	1.54
4.58	0.15	0.2	0.3	3.2	1.4	3.00
4.63	0.20	0.4	0.6	5.7	1.6	5.50
4.68	0.25	0.7	1.4	8.3	1.9	8.00
4.73	0.30	1.2	2.6	10.8	2.2	10.50
4.78	0.35	1.8	4.4	13.4	2.5	13.00
4.83	0.40	2.5	6.9	15.9	2.8	15.50
4.88	0.45	3.3	10.2	18.5	3.1	18.00
4.93	0.50	4.3	14.3	21.0	3.3	20.50
4.98	0.55	5.4	19.2	23.6	3.6	23.00
5.00	0.57	5.9	21.5	24.6	3.7	24.00

$Q_{100} = 13.74$ cfs

THE ENCLAVE AT HIGH DESERT - IMPERATA STREET 4 (EAST)

MANNING'S N = .0170 SLOPE = .0350

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	24.00	4.43	5	30.00	5.22
2	22.00	4.56	4	24.00	5.10			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.48	0.05	0.0	0.0	0.8	1.3	0.77
4.53	0.10	0.1	0.2	1.6	2.1	1.54
4.58	0.15	0.2	0.4	3.2	2.4	3.00
4.63	0.20	0.4	1.1	5.7	2.7	5.50
4.68	0.25	0.7	2.4	8.3	3.2	8.00
4.73	0.30	1.2	4.5	10.8	3.8	10.50
4.78	0.35	1.8	7.6	13.4	4.3	13.00
4.83	0.40	2.5	11.8	15.9	4.8	15.50
4.88	0.45	3.3	17.4	18.5	5.2	18.00
4.93	0.50	4.3	24.4	21.0	5.7	20.50
4.98	0.55	5.4	32.9	23.6	6.1	23.00
5.00	0.57	5.9	36.7	24.6	6.3	24.00

$Q_{100} = 13.74$ cfs

THE ENCLAVE AT HIGH DESERT - IMPERATA STREET 5 (EAST)

MANNING'S N = .0170 SLOPE = .0488

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	24.00	4.43	5	30.00	5.22
2	22.00	4.56	4	24.00	5.10			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.48	0.05	0.0	0.0	0.8	1.6	0.77
4.53	0.10	0.1	0.2	1.6	2.5	1.54
4.58	0.15	0.2	0.5	3.2	2.9	3.00
4.63	0.20	0.4	1.3	5.7	3.2	5.50
4.68	0.25	0.7	2.8	8.3	3.8	8.00
4.73	0.30	1.2	5.3	10.8	4.4	10.50
4.78	0.35	1.8	9.0	13.4	5.0	13.00
4.83	0.40	2.5	14.0	15.9	5.6	15.50
4.88	0.45	3.3	20.5	18.5	6.2	18.00
4.93	0.50	4.3	28.7	21.0	6.7	20.50
4.98	0.55	5.4	38.8	23.6	7.2	23.00
5.00	0.57	5.9	43.4	24.6	7.4	24.00

$Q_{100} = 13.74$ cfs

THE ENCLAVE AT HIGH DESERT - IMPERATA STREET 1 (WEST)

MANNING'S N = .0170 SLOPE = .0100

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	24.00	4.50	5	41.00	5.17
2	22.00	4.56	4	24.00	4.83			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.55	0.05	0.0	0.0	1.7	0.7	1.67
4.60	0.10	0.2	0.2	4.1	1.1	4.00
4.65	0.15	0.4	0.6	6.7	1.4	6.50
4.70	0.20	0.8	1.5	9.2	1.8	9.00
4.75	0.25	1.3	2.8	11.8	2.1	11.50
4.80	0.30	2.0	4.6	14.3	2.3	14.00
4.85	0.35	2.8	6.9	17.9	2.5	17.50
4.90	0.40	3.8	9.8	22.9	2.6	22.50
4.95	0.45	5.0	13.9	28.0	2.8	27.50
5.00	0.50	6.5	19.2	33.0	3.0	32.50

$Q_{100} = 4.21$ cfs

THE ENCLAVE AT HIGH DESERT - IMPERATA STREET 2 (WEST)

MANNING'S N = .0170 SLOPE = .0518

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	24.00	4.50	5	41.00	5.17
2	22.00	4.56	4	24.00	4.83			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.55	0.05	0.0	0.1	1.7	1.7	1.67
4.60	0.10	0.2	0.4	4.1	2.5	4.00
4.65	0.15	0.4	1.4	6.7	3.3	6.50
4.70	0.20	0.8	3.3	9.2	4.0	9.00
4.75	0.25	1.3	6.3	11.8	4.7	11.50
4.80	0.30	2.0	10.5	14.3	5.3	14.00
4.85	0.35	2.8	15.7	17.9	5.7	17.50
4.90	0.40	3.8	22.4	22.9	6.0	22.50
4.95	0.45	5.0	31.6	28.0	6.3	27.50
5.00	0.50	6.5	43.8	33.0	6.7	32.50

$Q_{100} = 4.21$ cfs

THE ENCLAVE AT HIGH DESERT - IMPERATA STREET 3 (WEST)

MANNING'S N = .0170 SLOPE = .0120

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	24.00	4.50	5	41.00	5.17
2	22.00	4.56	4	24.00	4.83			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.55	0.05	0.0	0.0	1.7	0.8	1.67
4.60	0.10	0.2	0.2	4.1	1.2	4.00
4.65	0.15	0.4	0.7	6.7	1.6	6.50
4.70	0.20	0.8	1.6	9.2	1.9	9.00
4.75	0.25	1.3	3.0	11.8	2.3	11.50
4.80	0.30	2.0	5.1	14.3	2.6	14.00
4.85	0.35	2.8	7.6	17.9	2.8	17.50
4.90	0.40	3.8	10.8	22.9	2.9	22.50
4.95	0.45	5.0	15.2	28.0	3.0	27.50
5.00	0.50	6.5	21.1	33.0	3.2	32.50

$Q_{100} = 4.21$ cfs

THE ENCLAVE AT HIGH DESERT - IMPERATA STREET 4 (WEST)

MANNING'S N = .0170 SLOPE = .0350

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	24.00	4.50	5	41.00	5.17
2	22.00	4.56	4	24.00	4.83			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.55	0.05	0.0	0.1	1.7	1.4	1.67
4.60	0.10	0.2	0.4	4.1	2.0	4.00
4.65	0.15	0.4	1.2	6.7	2.7	6.50
4.70	0.20	0.8	2.7	9.2	3.3	9.00
4.75	0.25	1.3	5.2	11.8	3.8	11.50
4.80	0.30	2.0	8.7	14.3	4.4	14.00
4.85	0.35	2.8	12.9	17.9	4.7	17.50
4.90	0.40	3.8	18.4	22.9	4.9	22.50
4.95	0.45	5.0	26.0	28.0	5.2	27.50
5.00	0.50	6.5	36.0	33.0	5.5	32.50

$Q_{100} = 4.21$ cfs

THE ENCLAVE AT HIGH DESERT - IMPERATA STREET 5 (WEST)

MANNING'S N = .0170 SLOPE = .0488

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	24.00	4.50	5	41.00	5.17
2	22.00	4.56	4	24.00	4.83			

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.55	0.05	0.0	0.1	1.7	1.6	1.67
4.60	0.10	0.2	0.4	4.1	2.4	4.00
4.65	0.15	0.4	1.4	6.7	3.2	6.50
4.70	0.20	0.8	3.2	9.2	3.9	9.00
4.75	0.25	1.3	6.1	11.8	4.5	11.50
4.80	0.30	2.0	10.2	14.3	5.2	14.00
4.85	0.35	2.8	15.3	17.9	5.5	17.50
4.90	0.40	3.8	21.7	22.9	5.8	22.50
4.95	0.45	5.0	30.7	28.0	6.1	27.50
5.00	0.50	6.5	42.5	33.0	6.5	32.50

$Q_{100} = 4.21$ cfs

THE ENCLAVE AT HIGH DESERT - ENCLAVE LANE 1

MANNING'S N = .0170 SLOPE = .0591

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	2.00	4.46	5	26.00	3.96
2	0.00	4.33	4	24.00	4.02	6	26.00	4.29

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.01	0.05	0.0	0.1	1.7	1.8	1.67
4.06	0.10	0.2	0.5	4.1	2.6	4.00
4.11	0.15	0.4	1.5	6.7	3.5	6.50
4.16	0.20	0.8	3.5	9.2	4.3	9.00
4.21	0.25	1.3	6.7	11.8	5.0	11.50
4.26	0.30	2.0	11.3	14.3	5.7	14.00
4.29	0.33	2.4	14.7	15.8	6.1	15.50

$Q_{100} = 4.15$ cf

30
P=08.50

29
P=08.10

28
P=07.70

27
P=07.40

26
P=07.10

CACTU

Q_{100} = 9.39 cfs
Q_{inlet} = 5.30 cfs
Depth = 0.47'
$Q_{Residual}$ = 3.99 cfs

Inlet #2
Type 'A' Double Grate

Cactus Canyon Lane

Depth = 0.66'
Q_{100} = 11.51 cfs
$Q_{Residual}$ = 2.03 cfs

Inlet #3
Type 'C' Double Grate

21
P=17.30

$Q_{Residual}$ = 4.63 cfs
Depth = 0.32'

HIBISCUS TRAIL

Q_{inlet} = 4.70 cfs
Q_{100} = 9.33 cfs

Inlet #1
Type 'A' Double Grate

22
P=16.80

23
P=16.80

24
P=17.20

25
P=17.20

T1

G-1

CACTUS

30
P=08.50

Pipe #2
18" RCP
Prop. Q_{100} = 5.30 cfs
Pipe Cap. = 30.50 cfs

29
P=08.10

Inlet #2

Pipe #1
18" RCP
Prop. Q_{100} = 4.70 cfs
Pipe Cap. = 28.15 cfs

21
P=17.30

HIBISCUS TRAIL

Inlet #1

Manhole #1

22
P=16.80

Pipe #3
24" RCP
Prop. Q_{100} = 10.00 cfs
Pipe Cap. = 22.51 cfs

23
P=16.80

28
P=07.70

27
P=07.40

Pipe #4
24" RCP
Prop. Q_{100} = 11.51 cfs
Pipe Cap. = 112.59 cfs

Cactus Canyon Trail

24
P=17.20

25
P=17.20

26
P=07.10

Pipe #5
24" RCP
Prop. Q_{100} = 21.51 cfs
Pipe Cap. = 48.94 cfs

Inlet #3

Manhole #2

T1

G-2

THE ENCLAVE AT HIGH DESERT - CACTUS CANYON TRAIL 1

MANNING'S N = .0170 SLOPE = .0074

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	2.00	4.46	5	26.00	3.89
2	0.00	4.33	4	24.00	4.02	6	26.00	4.56

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
3.94	0.05	0.0	0.0	0.8	0.6	0.77
3.99	0.10	0.1	0.1	1.6	1.0	1.54
4.04	0.15	0.2	0.2	3.2	1.1	3.00
4.09	0.20	0.4	0.5	5.7	1.3	5.50
4.14	0.25	0.7	1.1	8.3	1.5	8.00
4.19	0.30	1.2	2.1	10.8	1.7	10.50
4.24	0.35	1.8	3.5	13.4	2.0	13.00
4.29	0.40	2.5	5.4	15.9	2.2	15.50
4.34	0.45	3.3	8.0	18.6	2.4	18.15
4.39	0.50	4.3	11.0	22.0	2.5	21.42
4.44	0.55	5.5	14.8	25.4	2.7	24.69
4.49	0.60	6.8	20.3	26.8	3.0	26.00
4.54	0.65	8.1	27.2	26.9	3.4	26.00
4.56	0.67	8.6	30.1	26.9	3.5	26.00

$Q_{100} = 11.51c$

CACTU

30
P=08.50

29
P=08.10

28
P=07.70

27
P=07.40

26
P=07.10

21
P=17.30

22
P=16.80

23
P=16.80

24
P=17.20

25
P=17.20

Q_{100} = 9.09 cfs Depth=0.47'
Q_{inlet} = 5.30 cfs
$Q_{Residual}$ = 3.79 cfs →

Inlet #2
Type 'A' Double Grate

$Q_{Residual}$ = 4.63 cfs Depth=0.32'

HIBISCUS TRAIL

Q_{inlet} = 4.70 cfs
← Q_{100} = 9.33 cfs

Inlet #1
Type 'A' Double Grate

Depth=0.66'

Q_{100} = 11.51 cfs
$Q_{Residual}$ = 3.02 cfs

Inlet #3
Type 'C' Double Grate

T1

I-H

CACTU

30
P=08.50

Pipe #2
18" RCP
Prop. Q_{100} = 5.30 cfs
Pipe Cap. = 30.50 cfs

29
P=08.10

Inlet #2

Pipe #1
18" RCP
Prop. Q_{100} = 4.70 cfs
Pipe Cap. = 28.15 cfs

21
P=17.30

HIBISCUS TRAIL

Inlet #1

Manhole #1

22
P=16.80

Pipe #3
24" RCP
Prop. Q_{100} = 10.00 cfs
Pipe Cap. = 22.51 cfs

23
P=16.80

28
P=07.70

Cactus Canyon Trail

24
P=17.20

25
P=17.20

27
P=07.40

Pipe #4
24" RCP
Prop. Q_{100} = 11.51 cfs
Pipe Cap. = 112.59 cfs

26
P=07.10

Pipe #5
24" RCP
Prop. Q_{100} = 21.51 cfs
Pipe Cap. = 48.94 cfs

Inlet #3

Manhole #2

T1

H-2

THE ENCLAVE AT HIGH DESERT - HIBISCUS TRAIL 1

MANNING'S N = .0170 SLOPE = .0400

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	2.00	4.46	5	26.00	4.11
2	0.00	4.33	4	24.00	4.24	6	26.00	4.78

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.16	0.05	0.0	0.0	0.8	1.4	0.77
4.21	0.10	0.1	0.2	1.6	2.3	1.54
4.26	0.15	0.2	0.4	4.2	2.2	4.00
4.31	0.20	0.5	1.3	9.2	2.6	9.00
4.36	0.25	1.1	3.4	14.7	3.1	14.46
4.41	0.30	2.0	7.2	20.6	3.6	20.23
4.46	0.35	3.1	13.1	26.5	4.2	26.00
4.51	0.40	4.4	23.4	26.6	5.3	26.00
4.56	0.45	5.7	35.8	26.7	6.3	26.00
4.61	0.50	7.0	50.3	26.8	7.2	26.00
4.66	0.55	8.3	66.5	26.9	8.0	26.00
4.71	0.60	9.6	84.5	27.0	8.8	26.00
4.76	0.65	10.9	104.2	27.1	9.5	26.00
4.78	0.67	11.4	112.5	27.1	9.8	26.00

$Q_{100} = 9.33$ cf

THE ENCLAVE AT HIGH DESERT - HIBISCUS TRAIL 2

MANNING'S N = .0170 SLOPE = .0865

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	2.00	4.46	5	26.00	4.11
2	0.00	4.33	4	24.00	4.24	6	26.00	4.78

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.16	0.05	0.0	0.0	0.8	2.1	0.77
4.21	0.10	0.1	0.3	1.6	3.3	1.54
4.26	0.15	0.2	0.6	4.2	3.3	4.00
4.31	0.20	0.5	1.9	9.2	3.8	9.00
4.36	0.25	1.1	5.0	14.7	4.5	14.46
4.41	0.30	2.0	10.5	20.6	5.4	20.23
4.46	0.35	3.1	19.3	26.5	6.2	26.00
4.51	0.40	4.4	34.4	26.6	7.8	26.00
4.56	0.45	5.7	52.7	26.7	9.2	26.00
4.61	0.50	7.0	73.9	26.8	10.5	26.00
4.66	0.55	8.3	97.9	26.9	11.8	26.00
4.71	0.60	9.6	124.3	27.0	12.9	26.00
4.76	0.65	10.9	153.2	27.1	14.0	26.00
4.78	0.67	11.4	165.4	27.1	14.5	26.00

$Q_{100} = 9.33$ cf

THE ENCLAVE AT HIGH DESERT - SILVERLACE TRAIL 1

MANNING'S N = .0170 SLOPE = .0200

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	2.00	4.73	5	26.00	3.37
2	0.00	4.67	4	24.00	3.43	6	26.00	3.70

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
3.42	0.05	0.0	0.0	1.7	1.0	1.67
3.47	0.10	0.2	0.3	2.8	1.8	2.68
3.52	0.15	0.3	0.7	3.7	2.4	3.52
3.57	0.20	0.5	1.4	4.6	2.8	4.37
3.62	0.25	0.7	2.4	5.5	3.3	5.22
3.67	0.30	1.0	3.8	6.4	3.7	6.06
3.70	0.33	1.2	4.7	6.9	3.9	6.57

$Q_{100} = 1.57$ cfs

THE ENCLAVE AT HIGH DESERT - SILVERLACE TRAIL 2

MANNING'S N = .0170 SLOPE = .0240

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	2.00	4.73	5	26.00	3.35
2	0.00	4.67	4	24.00	3.48	6	26.00	4.02

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
3.40	0.05	0.0	0.0	0.8	1.1	0.77
3.45	0.10	0.1	0.1	1.6	1.8	1.54
3.50	0.15	0.2	0.4	2.5	2.3	2.35
3.55	0.20	0.3	0.9	3.4	2.7	3.23
3.60	0.25	0.5	1.6	4.4	3.2	4.11
3.65	0.30	0.7	2.6	5.3	3.6	4.99
3.70	0.35	1.0	4.0	6.2	4.0	5.87
3.75	0.40	1.3	5.7	7.2	4.4	6.75
3.80	0.45	1.7	7.9	8.1	4.7	7.63
3.85	0.50	2.1	10.5	9.0	5.1	8.51
3.90	0.55	2.5	13.7	10.0	5.4	9.39
3.95	0.60	3.0	17.3	10.9	5.8	10.27
4.00	0.65	3.5	21.6	11.8	6.1	11.15
4.02	0.67	3.8	23.4	12.2	6.2	11.50

$Q_{100} = 7.24$ cfs

THE ENCLAVE AT HIGH DESERT - ENCHANTMENT LANE 1

MANNING'S N = .0170 SLOPE = .0169

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	2.00	4.73	5	26.00	4.45
2	0.00	4.67	4	24.00	4.51	6	26.00	4.78

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.50	0.05	0.0	0.0	1.7	1.0	1.67
4.55	0.10	0.2	0.3	6.1	1.2	6.00
4.60	0.15	0.6	1.1	11.2	1.7	11.00
4.65	0.20	1.3	2.8	16.2	2.1	16.00
4.70	0.25	2.3	5.6	22.3	2.5	22.00
4.75	0.30	3.5	10.3	26.4	3.0	26.00
4.78	0.33	4.3	14.4	26.4	3.4	26.00

$Q_{100} = 1.81$ cf

Inlet #5
Type 'C' Double Grate

Depth=0.53'

Q_{100}=8.34cfs

Q_{axial}=16.68cfs

CREEKLEAF TRAIL

40
P=09.10

41
P=11.00

39
P=09.60

38
P=09.90

Inlet #4
Type 'A' Double Grate

Q_{inlet}=6.60cfs

Q_{100}=12.00cfs

$Q_{residual}$=5.40cfs

Depth=0.37'

S=4.00%

~~Hibiscus Trail~~
Bluemist Lane

K-1

Manhole #4

Pipe #9
18" RCP
Prop. Q_{100} = 14.94 cfs
Pipe Cap. = 18.41 cfs

Pipe #8
18" RCP
Prop. Q_{100} = 8.34 cfs
Pipe Cap = 47.56 cfs

Inlet #5

Pipe #7
18" RCP
Prop. Q_{100} = 6.60 cfs
Pipe Cap. = 14.48 cfs

40
P=09.10

41
P=11.00

CREYLEAF TRAIL

39
P=09.60

38
P=09.90

Inlet #4

~~Hibiscus Trail~~
Bluemist Lane

Pipe #6
18" RCP
Prop. Q_{100} = 6.60 cfs
~~Pipe Cap. = 32.66 cfs~~

Manhole #3

THE ENCLAVE AT HIGH DESERT - BLUEMIST LANE 1

MANNING'S N = .0170 SLOPE = .0403

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	2.00	4.46	5	26.00	4.00
2	0.00	4.33	4	24.00	4.13	6	26.00	4.67

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
4.05	0.05	0.0	0.0	0.8	1.4	0.77
4.10	0.10	0.1	0.2	1.6	2.3	1.54
4.15	0.15	0.2	0.5	3.5	2.5	3.33
4.20	0.20	0.4	1.2	6.9	2.8	6.67
4.25	0.25	0.8	2.8	10.3	3.3	10.00
4.30	0.30	1.4	5.6	13.6	3.9	13.33
4.35	0.35	2.2	9.6	17.4	4.4	16.97
4.40	0.40	3.1	15.2	21.6	4.9	21.08
4.45	0.45	4.3	22.8	25.8	5.3	25.18
4.50	0.50	5.6	34.6	26.7	6.2	26.00
4.55	0.55	6.9	48.9	26.8	7.1	26.00
4.60	0.60	8.2	65.1	26.9	7.9	26.00
4.65	0.65	9.5	83.0	27.0	8.7	26.00
4.67	0.67	10.0	90.6	27.0	9.1	26.00

$Q_{100} \approx 12.00$ cfs

Inlet #5
Type 'C' Double Grate

Depth=0.53'

Q_{100}=8.34cfs

Q_{extra}=16.68cfs

40
P=09.10

41
P=11.00

39
P=09.60

38
P=09.90

CREYLEA TRAIL

Inlet #4
Type 'A' Double Grate

Q_{inlet}=6.60cfs

Q_{100}=12.00cfs

$Q_{residual}$ 5.40cfs

Depth=0.37'

S=4.00%

~~Hibiscus Trail~~
Bluemist Lane

Manhole #4

Pipe #9
18" RCP
Prop. Q_{100} = 14.94 cfs
Pipe Cap. = 18.41 cfs

Pipe #8
18" RCP
Prop. Q_{100} = 8.34 cfs
Pipe Cap. = 47.56 cfs

Inlet #5

Pipe #7
18" RCP
Prop. Q_{100} = 6.60 cfs
Pipe Cap. = 14.48 cfs

40
P=09.10

41
P=11.00

CREYLE AVE

39
P=09.60

38
P=09.90

Inlet #4

~~Hibiscus Trail~~
Bluemist Lane

Manhole #3

Pipe #6
18" RCP
Prop. Q_{100} = 6.60 cfs
Pipe Cap. = ~~32.66 cfs~~

L-2

THE ENCLAVE AT HIGH DESERT - GREYLEAF TRAIL 1

MANNING'S N = .0170 SLOPE = .0100

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	2.00	4.46	5	26.00	3.89
2	0.00	4.33	4	24.00	4.02	6	26.00	4.56

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
3.94	0.05	0.0	0.0	0.8	0.7	0.77
3.99	0.10	0.1	0.1	1.6	1.1	1.54
4.04	0.15	0.2	0.2	3.2	1.3	3.00
4.09	0.20	0.4	0.6	5.7	1.5	5.50
4.14	0.25	0.7	1.3	8.3	1.7	8.00
4.19	0.30	1.2	2.4	10.8	2.0	10.50
4.24	0.35	1.8	4.1	13.4	2.3	13.00
4.29	0.40	2.5	6.3	15.9	2.5	15.50
4.34	0.45	3.3	9.2	18.6	2.8	18.15
4.39	0.50	4.3	12.8	22.0	3.0	21.42
4.44	0.55	5.5	17.2	25.4	3.1	24.69
4.49	0.60	6.8	23.6	26.8	3.5	26.00
4.54	0.65	8.1	31.6	26.9	3.9	26.00
4.56	0.67	8.6	35.0	26.9	4.1	26.00

$Q_{100} = 8.34$ cfs

THE ENCLAVE AT HIGH DESERT - CALLA LILY CIRCLE 1

MANNING'S N = .0170 SLOPE = .0139

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	2.00	4.73	5	26.00	3.55
2	0.00	4.67	4	24.00	3.68	6	26.00	4.22

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
3.60	0.05	0.0	0.0	0.8	0.8	0.77
3.65	0.10	0.1	0.1	1.6	1.3	1.54
3.70	0.15	0.2	0.3	2.6	1.7	2.42
3.75	0.20	0.3	0.7	3.7	2.0	3.47
3.80	0.25	0.5	1.2	4.8	2.4	4.51
3.85	0.30	0.8	2.1	5.9	2.7	5.56
3.90	0.35	1.1	3.2	7.0	3.0	6.61
3.95	0.40	1.4	4.7	8.1	3.3	7.66
4.00	0.45	1.8	6.5	9.2	3.5	8.70
4.05	0.50	2.3	8.8	10.3	3.8	9.75
4.10	0.55	2.8	11.5	11.4	4.1	10.80
4.15	0.60	3.4	14.6	12.5	4.3	11.85
4.20	0.65	4.0	18.3	13.6	4.6	12.90
4.22	0.67	4.3	19.9	14.0	4.7	13.31

$Q_{100} = 1.19$ cfs

THE ENCLAVE AT HIGH DESERT - CALLA LILY CIRCLE 2

MANNING'S N = .0170 SLOPE = .0717

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	5.00	3	2.00	4.73	5	26.00	3.58
2	0.00	4.67	4	24.00	3.71	6	26.00	4.25

WSEL (FT)	DEPTH INC	FLOW AREA (SQ FT)	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOP WID
3.63	0.05	0.0	0.0	0.8	1.9	0.77
3.68	0.10	0.1	0.2	1.6	3.0	1.54
3.73	0.15	0.2	0.7	2.6	3.9	2.43
3.78	0.20	0.3	1.5	3.7	4.6	3.51
3.83	0.25	0.5	2.8	4.8	5.3	4.59
3.88	0.30	0.8	4.7	6.0	6.0	5.67
3.93	0.35	1.1	7.3	7.1	6.7	6.75
3.98	0.40	1.5	10.7	8.2	7.4	7.82
4.03	0.45	1.9	15.0	9.4	8.0	8.90
4.08	0.50	2.3	20.2	10.5	8.6	9.98
4.13	0.55	2.9	26.5	11.6	9.2	11.06
4.18	0.60	3.5	33.8	12.8	9.8	12.14
4.23	0.65	4.1	42.3	13.9	10.4	13.22
4.25	0.67	4.4	46.1	14.3	10.6	13.65

$Q_{100} = 5.37$ cfs