CITY OF ALBUQUERQUE

F11/D13

October 26, 2004

Mr. Scott Steffen, P.E.
BOHANNAN-HUSTON, INC.
7500 Jefferson St. NE
Albuquerque, NM 87109

Re: RANCHO ENCANTADO CONDOMINIUMS
SE Corner of Milne Road and Quaker Heights Place
Approval of Permanent Certificate of Occupancy (C.O.)
Engineer's Stamp dated 11/25/2002 (F-11/D013)
Certification dated 10/13/2004

Dear Scott,

Based upon the information provided in your submittal received 10/26/2004, the above referenced certification is approved for release of Permanent Certificate of Occupancy by Hydrology

If you have any questions, you can contact me at 924-3982

Sincerely,

Arlene V. Portillo
Plan Checker, Planning Dept. - Hydrology
Development and Building Services

C: Phyllis Villanueva
File

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

CITY OF ALBUQUERQUE

(ADDENDUM – TO CORRECT PROJECT NAME AND ENG. STAMP DATE!!)

October 14, 2004

Mr. Scott J. Steffen, PE
BOHANNAN-HUSTON, INC.
7500 Jefferson St. NE
Albuquerque, NM 87109

RE: RANCHO ENCANTADO DEL SUR SUBDIVISION (F-11/D013)
Engineers Certification for Release of Financial Guaranty
Engineers Stamp dated 11/25/2002
Engineers Certification dated 10/13/2004

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Dear Scott:

Based upon the information provided in your Engineer's Certification Submittal dated 10/13/2004, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

If you have any questions, you can contact me at 924-3982

Sincerely,

Arlene V. Portillo
Plan Checker, Planning Dept.- Hydrology
Development and Building Services

C: Marilyn Maldonado, COA# 704481
File

CITY OF ALBUQUERQUE

October 14, 2004

Mr. Scott J. Steffen, PE
BOHANNAN-HUSTON, INC.
7500 Jefferson St. NE
Albuquerque, NM 87109

RE: RANCHO ENCANTADO CONDOMINIUMS (F-11/D013)
Engineers Certification for Release of Financial Guaranty
Engineers Stamp dated 01/25/2002
Engineers Certification dated 10/13/2004

Dear Scott:

Based upon the information provided in your Engineer's Certification Submittal dated 10/13/2004, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

If you have any questions, you can contact me at 924-3982

Sincerely,

Arlene V. Portillo
Plan Checker, Planning Dept.- Hydrology
Development and Building Services

C: Marilyn Maldonado, COA# 704481
File

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

Bohannan ▲ Huston INC.

Courtyard I
7500 Jefferson St. NE
Albuquerque, NM
87109-4335

www.bhinc.com

voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

October 26, 2004

Bradley Bingham, P.E.
Hydrology Division
City of Albuquerque
600 2nd Street NW
Albuquerque, NM 87102

Re: Drainage Certification – Certificate of Occupancy
Rancho Encantado Condominiums, COA Project No. 704381; DRB Case No. 1002384

Dear Mr. Bingham:

Enclosed for your review is the DRB approved grading plan for the above project, dated 11/25/02, with as-built elevations. A grading plan for the entire Rancho Encantado project was approved at DRB on 1/15/03. The as-built survey for the Condominium site was provided by SurvTek, Inc., and Community Sciences Corporation. After reviewing these as-built elevations, it is my belief that the site has been graded in substantial compliance with the approved grading plan.

Your review and approval is requested for certificate of occupancy for the Condominium site. The grading plan included in the DRB approved site plan for the Condominiums is the same as the DRB approved grading plan. I appreciate your time and consideration. If you have questions or require additional information, please contact me at 823-1000.

Sincerely,

Scott J. Steffen, P.E.
Project Manager, Community Development
and Planning Group

Enclosure

cc: R.P. Bohannan, DR Horton

RECEIVED
OCT 26 2004
HYDROLOGY SECTION

P:\020296\cdp\corres\013-condo_constr_plans\Letter to Brad CO.doc

F11/D13

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 31, 2002

Scott Steffen, PE
Bohannan Huston, Inc.
7500 Jefferson NE
Albuquerque, NM 87109

Re: Rancho Encantado Subdivision Drainage Report
Engineer's Stamp dated 11-25-02 (F11/D13)

Dear Mr. Steffen,

Based upon the information provided in your submittal dated 11-26-02, the above referenced report is approved for Site Development Plan for Subdivision, Site Developments Plan for Building Permit and Preliminary Plat action by the DRB.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Sr. Engineer, Planning Dept.
Development and Building Services

C: file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

DRAINAGE STUDY
FOR
RANCHO ENCANTADO SUBDIVISION

NOVEMBER 22, 2002

Prepared for:

D.R. HORTON
4400 ALAMEDA NE - SUITE B
ALBUQUERQUE, NM 87113

Prepared by:

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

RECEIVED
NOV 26 2002
HYDROLOGY SECTION

Prepared by:

SCOTT J. STEFFEN
NEW MEXICO
14664
REGISTERED PROFESSIONAL ENGINEER

Scott J. Steffen, P.E. — Date 11/25/02

I. INTRODUCTION

This drainage study establishes a drainage management plan for the Rancho Encantado Subdivision (Tracts 1 and 4 of Coors Village). The subject property is located south of Western Trail, between Atrisco Drive and Coors Boulevard (see vicinity map on the preliminary plat for location, **Plate 1**). Tracts 1 and 4 consist of approximately 35.6 acres of land. Rancho Encantado del Norte (Tract 1) is planned to consist of 81 single-family, residential dwellings on approximately 16.4 acres. Rancho Encantado del Sur (a portion of Tract 4) is planned to consist of 50 single-family, residential dwellings on approximately 10.8 acres. The remainder of Tract 4 will be broken into two separate Tracts, 4A and 4B. Tract 4A consists of approximately 1.8 acres of land that will be dedicated to the City of Albuquerque for a Neighborhood Park. Tract 4B is planned to be developed as the Rancho Encantado Condominiums, consisting of 83 multi-family, residential dwellings (28 buildings) on approximately 5.9 acres.

This study provides hydrologic and hydraulic analysis and provides a drainage management plan as necessary to support the planned development. More specifically, this report is submitted in conjunction with the preliminary plat application. Preliminary plat approval and grading plan approval is requested. Prior to final plat and building permit approvals of this project, the City of Albuquerque (COA) must approve final grading plans and work order construction plans.

II. METHODOLOGY

Existing and proposed site hydrological conditions were analyzed for the 100-year, 6-hour storm in accordance with the revised Section 22.2, Hydrology, of the Development Process Manual (DPM) for the City of Albuquerque, dated January 1993. Street capacities were analyzed using Manning's equation, consistent with the revised DPM Section 22.2. All data and calculations supporting this study are located in Appendix B. The new rational method hydrologic procedures identified within the revised DPM Section 22.2 are utilized to determine peak flow rates for design of the storm drainage improvements within the projects. The 100-year, 6-hour storm is used as the design event. The results are included in **Appendix A**.

The storm sewer system internal to the subdivision is analyzed using a hydraulic grade line analysis for pressure flow conditions. Inlet capacity computations, along with all hydraulic computations, are included in **Appendix B**.

In addition, the hydrologic analysis is based on two approved drainage reports: 1) *Drainage Master Plan for Coors Village Subdivision* dated February 2000, prepared by Thompson Engineering Consultants, Inc. and 2) *Master Drainage Plan for Altura West and Archdiocese of Santa Fe Properties near St. Pius High School* dated July, 1997, prepared by Bohannan Huston, Inc.

The Coors Village DMP outlines the drainage concept for the developed condition of Tract 1 through 4 of the Coors Village Subdivision. The drainage master plan was prepared to serve as a guide for future drainage plans submitted for the development of individual land parcels within the Coors Village Subdivision. The entire Coors Village Subdivision is allowed discharge of fully developed flows to Ladera Pond 16B as described in the DMP.

The Altura West drainage plan describes the existing and proposed drainage conditions for University of Albuquerque Urban Center Tracts X-1-A1 and X-1-A2, which are adjacent to the southern boundary of Coors Village Tract 4.

III. EXISTING CONDITIONS

A. Topography

Coors Village is currently undeveloped land with grades ranging from approximately 1% to 2%. The western third of the site slopes to the west, with the remainder of the site generally sloping from northwest to southeast. Soils at the site have an SCS soil classification of MWA (Madurez-Wink association). MWA soils consist of deep, well-drained loamy fine sands, with moderate permeability, slow runoff characteristics, and moderate to severe hazard for wind erosion. Vegetation is light consisting mostly of native grasses.

As designated on Panel 114 of 825 (Map number 35001C0114D) of the National Flood Insurance Program, Flood Insurance Rate Maps published by FEMA for Bernalillo County, New Mexico, effective date September 20, 1996, and revised September 18, 1998 to reflect the LOMR discussed in the Coors Village DMP, there is no flood hazard zone on the site. See the FEMA Floodplain exhibit, taken from the Coors Village DMP, provided at the end of the report text.

B. Existing Drainage Patterns

Onsite Flows

The approximate western third of Tracts 1 and 4 drain toward Ladera Pond 16B to the west of Atrisco Drive. The remainder of the site drains to a depression in the southeast corner of the site. For further discussion of the existing drainage conditions see excerpts of the Coors Village DMP included in **Appendix C**.

Offsite Flows

Tract 1 is higher than adjacent public roadways and Tracts 2 and 4 of Coors Village. Therefore, no offsite flows reach Tract 1. There are no offsite flows reaching Tract 4 from Atrisco Drive to the west. Flows within the paved area of Coors Boulevard are contained within the public roadway, although the area behind the curb slopes toward Tract 4. This area is approximately 0.06 acres, with a 100-year flow of 0.08 cfs. It is proposed to grade this area to drain to the roadway. This flow would be conveyed north in Coors Boulevard to a low point in the roadway adjacent to Tract 1, where curb cuts drain the water from the roadway to an earthen swale in the public right-of-way. The flow is conveyed north in the swale to a storm drain inlet at the southwest corner of Coors Boulevard and Western Trail.

University of Albuquerque Urban Center Tracts X-1-A1 and X-1-A2 are adjacent to the southern boundary of Coors Village Tract 4. These tracts are currently undeveloped. According to the Altura West drainage plan, the majority of Tract X-1-A1 drains in a southwesterly direction (described as Subbasin A1), away from Tract 4, in the undeveloped condition. The remainder of Tract X-1-A1 and the majority of Tract X-1-A2 (described as Subbasin A2 in the Altura West drainage plan) drain in a northeasterly direction to a low point in the northeast corner of the site. A retention pond in the northeast corner of

Tract X-1-A1 collects flows from the remainder of the Tract, preventing any flows from reaching Tract 4. Although the Altura West drainage report does not indicate that any flows from Tract X-1-A2 enter Tract 4 under the existing conditions, it appears that a portion of Subbasin A2 drains onto Tract 4 instead of the low point in the northeast corner of Tract X-1-A2. The proposed grading of Tract 4B (See **Plate B,** Rancho Encantado Condominiums) will redirect the undeveloped flows to the existing low point on Tract X-1-A2. Flows from the future development of Tract X-1 (Basin A in the Altura West drainage plan) will be collected by onsite detention ponds, and then discharged to the south through the Rio Grande storm drain. Since the Altura West drainage plan does not consider that any flows leave Tract X-1-A2 in the existing condition and the redirection of flows is an interim condition, the proposed grading of Tract 4 does not adversely affect Tract X-1-A2.

IV. PROPOSED CONDITIONS

The Rancho Encantado Subdivision is a proposed residential development containing both single-family and multi-family units. Rancho Encantado del Norte (Tract 1) is planned to consist of 81 single-family, residential dwellings on approximately 16.4 acres, producing a density of about 4.9 D.U.s per acre. Rancho Encantado del Sur (a portion of Tract 4) is planned to consist of 50 single-family, residential dwellings on approximately 10.8 acres, producing a density of about 4.6 D.U.s per acre. Tract 4B is planned to be developed as the Rancho Encantado Condominiums, consisting of 83 multi-family, residential dwellings (28 buildings) on approximately 5.9 acres, producing a density of approximately 14.1 D.U.s per acre. All developed runoff generated by the Rancho Encantado Subdivision will be conveyed in the internal streets, eventually being collected by a storm drain system that discharges to Ladera Pond 16B. Proposed street configurations are shown on the Preliminary Plat (See **Plate 1**). An AHYMO analysis was performed to determine the flows created by the proposed development.

The entire Rancho Encantado Subdivision is allowed discharge of fully developed flows to Ladera Pond 16B as described in the Coors Village DMP. For further discussion of the analysis showing that Ladera Pond 16B has capacity to accept flows from Rancho Encantado, see excerpts of the Coors Village DMP included in **Appendix C**.

Coors Village Tracts 1 through 4 are shown on the Proposed Basin Map (**Plate 3**). Basins were numbered to be consistent with the Coors Village DMP for ease of comparison. Some Basins, e.g., Basin 100, which represents Coors Village Tract 3, are identical to those in the DMP. Other basins, e.g., Basin 200, which represents Coors Village Tract 1 (Rancho Encantado del Norte), were divided into subbasins with designations 201, 202, etc. These subbasins were added in the AHYMO analysis and given a basin designation that is comparable to the same number basin in the DMP.

The percent impervious land treatment for the proposed conditions was determined from Table A-5 of the DPM, Section 22.2. The land treatment values used in the AHYMO analysis are slightly different than those used in the Coors Village DMP because of decreased density for the Rancho Encantado development. This results in slightly lower developed flows than shown in the DMP.

A. Rancho Encantado del Norte

The proposed development is divided into three (3) drainage basins as illustrated on the Proposed Basin Map, **Plate 3**. Basin 201 includes the middle third of Rancho Encantado del Norte. Runoff from Basin 201, 11.7 cfs, is conveyed west in Los Ritos Court to a low point in the western cul-de-sac terminus of the street, where it is collected by a public storm drain system. Basin 202 includes the southern third of Rancho Encantado del Norte. Runoff from Basin 202, 21.1 cfs, is conveyed to a low point in Los Valles Drive, south of Los Cerros Road, where it is collected by a public storm drain system. Basin 203 includes the northern third of Rancho Encantado del Norte. The flows, 22.4 cfs, from this basin are conveyed in the local streets to a low point in Los Valles Drive, north of Los Cerros Road, where it is collected by a public storm drain system. The combined runoff from Basins 201 through 203, 55.1 cfs, is conveyed by storm drain to Ladera Pond 16B. See **Appendix B** for the storm drain hydraulic grade line analysis.

Because a storm drain in a sump condition collects the runoff in Rancho Encantado del Norte, more rigorous design criteria is applied. The storm drain hydraulics were analyzed to show that the ponded water surface elevation resulting from two (2) times the 100-year storm is lower than the proposed pad elevations adjacent to the low point. The analysis is provided in **Appendix B**.

B. Rancho Encantado del Sur

The proposed development is divided into two (2) drainage basins as illustrated on the Proposed Basin Map, **Plate 3**. Basin 181 includes the northern half of Rancho Encantado del Sur. Runoff from Basin 181, 14.7 cfs, is conveyed east in Mesa Viento Road to a low point in the eastern stub terminus of the street, where it is collected by a public storm drain system. Basin 182 includes the southern half of Rancho Encantado del Sur. Runoff from Basin 182, 21.6 cfs, is conveyed to a low point in Mesa Rincon Drive, where it is collected by a public storm drain system. The combined runoff from Basins 181 and 182, 36.3 cfs, is conveyed by the Milne Road storm drain, which discharges to Ladera Pond 16B. See **Appendix B** for the storm drain hydraulic grade line analysis. The Milne Road storm drain conveys runoff from Coors Village Tracts 2 and 3, the Rancho Encantado Condominiums (Tract 4B), Quaker Heights Place, and Milne Road.

Because a storm drain in a sump condition collects the runoff in Rancho Encantado del Sur, more rigorous design criteria is applied. The storm drain hydraulics were analyzed to show that the ponded water surface elevation resulting from two (2) times the 100-year storm is lower than the proposed pad elevations adjacent to the low point. The analysis is provided in **Appendix B**.

In addition, an emergency overflow to the proposed neighborhood park (Tract 4A) is provided at the eastern end of Mesa Viento Road as a backup to the storm drain system in the event of a storm larger than the 100-year storm. This emergency overflow point is the lowest point in the Rancho Encantado del Sur roadway network. The emergency overflow will also serve the low point in Mesa Rincon Drive. The high point in Mesa Rincon that separates Basins 181 and 182 is 0.66 feet above the low point in Mesa Rincon. The overflow allows runoff to flow north to Mesa Viento, then east to the park. The street hydraulics were analyzed to show that the 100-year storm passes the high point in Mesa Rincon Drive and that the water surface is lower than the proposed pad elevations adjacent to the low point. The analysis is provided in **Appendix B**.

C. Rancho Encantado Condominiums (Tract 4B)

The proposed development is divided into one (1) drainage basin as illustrated on the Proposed Basin Map, **Plate 3**. Runoff from Basin 110, 21.4 cfs, is conveyed west in a private street, where it is collected by a private storm drain system. The runoff from Basin 110 is conveyed by the Milne Road storm drain, which discharges to Ladera Pond 16B. About 6.8 cfs of the Basin 110 runoff is not collected by the private storm drain system and flows into Quaker Heights Place, where it joins flows from Basin 130. The combined flow, 12.0 cfs, flows to a low point in Quaker Heights Place south of Milne Road.

D. Milne Road and Quaker Heights Place

The Milne Road/Quaker Heights Place road network is divided into three (3) drainage basins, as illustrated on the Proposed Basin Map, **Plate 3**. Basin 170 includes that portion of Milne Road across the Rancho Encantado del Norte and Sur frontage. Runoff from Basin 170, 4.1 cfs, flows to a low point in Milne Road about 560 feet east of Atrisco Drive. Basin 140 includes the northern half of Milne Road between Basins 120 and 170 and Quaker Heights Place north of Milne Road. Runoff from Basin 140, 6.0 cfs, flows to a low point in Quaker Heights Place about 160 feet north of the proposed traffic circle at the Milne Road/Quaker Heights Place intersection. Basin 130 includes the southern half of Milne Road between Basin 120 and 170, and Quaker Heights Place south of Milne Road. Runoff from Basin 130, 5.2 cfs, flows to a low point in Quaker Heights Place about 200 feet south of the proposed traffic circle at the Milne Road/Quaker Heights Place intersection. The location of the Basin 130, 140, and 170 low points are similar to those shown in the Coors Village DMP.

V. CONCLUSION

This report provides a detailed study of the developed runoff and street capacities for the proposed Rancho Encantado Subdivision. Included is the preliminary plat, proposed conditions basin map, grading plan, infrastructure list, and all necessary hydrologic and hydraulic analyses. This drainage plan maintains the overall drainage pattern of the area as proposed in the *Drainage Master Plan for Coors Village Subdivision*, and allows for safe management of storm runoff in the developed condition.

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =11/15/2002
INPUT FILE = M:\AHYMO\100YR IN.TXT USER NO.= AHYMO-S-9702c1BohanHu-AH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION	
*S RANCHO ENCANTADO											
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.200
*S****COORS VILLAGE CENTER TRACT 3 (COMMERCIAL)											
COMPUTE NM HYD	BASIN100	-	1	.02116	55.98	2.076	1.83975	1.500	4.134	PER IMP=	90.00
*S****COORS VILLAGE CENTER TRACT 4-C (RANCHO ENCANTADO CONDOS)											
COMPUTE NM HYD	BASIN110	-	5	.00927	21.42	.748	1.51376	1.500	3.611	PER IMP=	60.00
*S****COORS VILLAGE CENTER - MILNE ROAD BASINS											
COMPUTE NM HYD	BASIN120	-	10	.00051	1.34	.049	1.79002	1.500	4.108	PER IMP=	85.00
COMPUTE NM HYD	BASIN170	-	14	.00157	4.09	.150	1.79002	1.500	4.075	PER IMP=	85.00
*S****COORS VILLAGE CENTER - QUAKER HEIGHTS PL BASINS											
COMPUTE NM HYD	BASIN130	-	16	.00200	5.21	.191	1.79002	1.500	4.071	PER IMP=	85.00
COMPUTE NM HYD	BASIN140	-	18	.00227	6.02	.223	1.83975	1.500	4.143	PER IMP=	90.00
*S****COORS VILLAGE CENTER TRACT 2 (OFFICE)											
COMPUTE NM HYD	BASIN160	-	20	.00792	19.41	.702	1.66084	1.500	3.830	PER IMP=	75.00
*S****COORS VILLAGE CENTER TRACT 4-B (PARK)											
COMPUTE NM HYD	BASIN150	-	25	.00276	4.19	.123	.83687	1.500	2.370	PER IMP=	10.00
*S****COORS VILLAGE CENTER TRACT 4-A (RANCHO ENCANTADO SUR)											
COMPUTE NM HYD	BASIN181	-	30	.00684	14.74	.498	1.36593	1.500	3.367	PER IMP=	47.00
COMPUTE NM HYD	BASIN182	-	31	.01001	21.56	.729	1.36593	1.500	3.366	PER IMP=	47.00
*S****ADD BASINS FOR TRACT 4-A (RANCHO ENCANTADO SUR)											
ADD HYD	BASIN180	30&31	34	.01685	36.30	1.227	1.36589	1.500	3.366		
*S****COORS VILLAGE CENTER TRACT 1 (RANCHO ENCANTADO NORTE)											
COMPUTE NM HYD	BASIN201	-	40	.00533	11.68	.398	1.40004	1.500	3.424	PER IMP=	50.00
COMPUTE NM HYD	BASIN202	-	41	.00961	21.05	.718	1.40004	1.500	3.422	PER IMP=	50.00
COMPUTE NM HYD	BASIN203	-	42	.01021	22.36	.762	1.40004	1.500	3.422	PER IMP=	50.00
*S****ADD BASINS FOR TRACT 1 (RANCHO ENCANTADO NORTE)											
ADD HYD	BASIN200A	41&42	44	.01982	43.41	1.480	1.40001	1.500	3.422		
ADD HYD	BASIN200	40&44	46	.02515	55.09	1.878	1.40001	1.500	3.423		
*S****ADD BASINS MILNE ROAD STORM DRAIN											
ADD HYD	BASINMR1	1&18	50	.02343	62.00	2.299	1.83972	1.500	4.135		
ADD HYD	BASINMR2	5&16	52	.01127	26.64	.939	1.56273	1.500	3.693		
ADD HYD	BASINMR3	52&50	53	.03470	88.64	3.238	1.74976	1.500	3.991		
*S ROUTE BASINS 100, 110, 130, 140 THROUGH SD											
ROUTE	PIPE	53	54	.03470	87.71	3.238	1.74978	1.500	3.950		
ADD HYD	BASINMR4	54&20	55	.04262	107.13	3.940	1.73323	1.500	3.927		
ROUTE	PIPE	55	56	.04262	105.14	3.940	1.73325	1.500	3.854		
ADD HYD	BASINMR5	56&14	57	.04419	109.23	4.090	1.73524	1.500	3.862		
ROUTE	PIPE	57	58	.04419	108.03	4.090	1.73526	1.500	3.820		
ADD HYD	BASINMR6	58&34	59	.06104	144.33	5.317	1.63328	1.500	3.695		
ROUTE	PIPE	59	60	.06104	140.46	5.317	1.63330	1.550	3.595		
*S****COORS VILLAGE CENTER ATRISCO ROAD BASINS											
COMPUTE NM HYD	BASINAR-1	-	70	.00277	7.14	.262	1.77531	1.500	4.026	PER IMP=	85.00
COMPUTE NM HYD	BASINAR-2	-	72	.00041	1.07	.039	1.77531	1.500	4.075	PER IMP=	85.00
*S****OFFSITE BASIN											
COMPUTE NM HYD	BASINOS-1	-	80	.02945	25.99	.736	.46858	1.500	1.379	PER IMP=	.00
FINISH											

A-1

RANCHO ENCANTADO SUBDIVISION
Inlet & Street Capacity Calculations
November 22, 2002

1. Milne Road

Basin 120 (See AHYMO summary table or Basin Map)
S = 0.50%
Q = 1.3 cfs

At 0.50%, a road with standard curb can handle 48.7 cfs. Therefore, no inlets needed. See PC stream output. Water flows into Coors Boulevard.

2. Milne Road

Basin 170 (See AHYMO summary table or Basin Map)
S = 0.60%
Q = 4.1 cfs

At 0.60%, a road with standard curb can handle 49.1 cfs. Therefore, no inlets needed. See PC stream output. Water flows to low point in Milne Road.

Q in sump:

A single grate, type 'A' inlet in a sump can carry 6.0 cfs at a depth of 0.30'. The flow will be contained within the curb while entering the inlet. In the unlikely event that a storm produces twice the 100-year storm, the inlet can carry 8.5 cfs at a depth of 0.38 feet.

3. Quaker Heights Place

Basin 130 (See AHYMO summary table or Basin Map)
S = 0.60%
Q = 5.2 cfs

At 0.60%, a road with standard curb can handle 49.1 cfs. Therefore, no inlets needed. See PC stream output. Water flows to low point in Quaker Heights Place south of Milne Road. Bypass flow from Basin 110 joins runoff from Basin 130. Combined flow is 12.0 cfs.

Q in sump:

A single grate, type 'A' inlet in a sump can carry 7.0 cfs at a depth of 0.33'. Two inlets can (each side of the street) can carry 14.0 cfs > 12.0 cfs. The flow will be contained within the curb while entering the inlet. In the unlikely event that a storm produces twice the 100-year storm, the inlet can carry 13.0 cfs at a depth of 0.50 feet. Two inlets can (each side of the street) can carry 26.0 cfs > 24.0 cfs.

4. Quaker Heights Place

Basin 140 (See AHYMO summary table or Basin Map)
S = 0.69%
Q = 6.0 cfs

At 0.69%, a road with standard curb can handle 50.4 cfs. Therefore, no inlets needed. See PC stream output. Water flows to low point in Quaker Heights Place north of Milne Road.

Q in sump:

A single grate, type 'A' inlet in a sump can carry 7.2 cfs at a depth of 0.34'. The flow will be contained within the curb while entering the inlet. In the unlikely event that a storm produces twice the 100-year storm, the inlet can carry 10.0 cfs at a depth of 0.42 feet. Two inlets can (each side of the street) can carry 20 cfs > 12.0 cfs.

5. Los Valles Drive North of Los Cerros Road

Basin 203 (See AHYMO summary table or Basin Map)
S = 0.60%
Q = 22.4 cfs

There are 34 lots in Basin 203 (Q = 22.4 cfs). Runoff per lot is 0.66 cfs.

At 0.60%, a road with standard curb can handle 40.4 cfs. Therefore, no inlets needed. See PC stream output. Water flows to low point in Los Valles Drive north of Los Cerros Road.

Q in sump:

A single grate, type 'A' inlet in a sump can carry 13.6 cfs at a depth of 0.52'. The flow will be contained within the curb while entering the inlet. Two inlets can (each side of the street) can carry 27.2 cfs > 22.4 cfs. In the unlikely event that a storm produces twice the 100-year storm, the inlet can carry 22.5 cfs at a depth of 0.72 feet. Two inlets can (each side of the street) can carry 45 cfs > 44.8 cfs.

Check that the hydraulic grade line at the sump is less than the minimum pad elevation for two (2) times the 100-year storm. The hydraulic grade line elevation at the sump is 5107.13, which is less than the minimum pad elevation of 5107.45. See hydraulic grade line analysis (Inlets 1 and 2).

6. Los Valles Drive South of Los Cerros Road

Basin 202 (See AHYMO summary table or Basin Map)
S = 0.60%
Q = 21.1 cfs

There are 29 lots in Basin 202 (Q = 21.1 cfs). Runoff per lot is 0.73 cfs.

At 0.60%, a road with standard curb can handle 40.4 cfs. Therefore, no inlets needed. See PC stream output. Water flows to low point in Los Valles Drive south of Los Cerros Road.

Q in sump:

A single grate, type 'A' inlet in a sump can carry 13.4 cfs at a depth of 0.51'. Two inlets can (each side of the street) can carry 26.8 cfs > 21.1 cfs. The flow will be contained within the curb while entering the inlet. In the unlikely event that a storm produces twice the 100-year storm, the inlet can carry 21.5 cfs at a depth of 0.70 feet. Two inlets can (each side of the street) can carry 43.0 cfs > 42.2 cfs.

Check that the hydraulic grade line at the sump is less than the minimum pad elevation for two (2) times the 100-year storm. The hydraulic grade line elevation at the sump is 5107.03, which is less than the minimum pad elevation of 5107.97. See hydraulic grade line analysis (Inlets 4 and 5).

7. Los Riscos Road

Basin 203 (See AHYMO summary table or Basin Map)
S = 0.57%
Q = 17.8 cfs

At 0.57%, a road with standard curb can handle 40.7 cfs. Therefore, no inlets needed. See PC stream output. Water flows to Los Valles Drive.

8. Las Crestas Drive North of Los Ritos Court

Basin 203 (See AHYMO summary table or Basin Map)
S = 0.56%
Q = 2.6 cfs

At 0.56%, a road with roll curb can handle 4.7 cfs. Therefore, no inlets needed. See PC stream output. Water flows to Los Riscos Road.

9. Las Crestas Drive South of Los Ritos Court

Basin 202 (See AHYMO summary table or Basin Map)
S = 0.56%
Q = 2.9 cfs

At 0.56%, a road with roll curb can handle 4.7 cfs. Therefore, no inlets needed. See PC stream output. Water flows to Las Cadenas Road.

10. Los Ritos Court

Basin 201 (See AHYMO summary table or Basin Map)
S = 1.0%
Q = 11.7 cfs

There are 18 lots in Basin 201 (Q = 11.7 cfs). Runoff per lot is 0.65 cfs.

At 1.0%, a road with roll curb can handle 6.2 cfs and with standard curb, 39.9 cfs. Therefore, no inlets needed. Transition from roll curb to standard curb. See PC stream output. Water flows to low point at west end of Los Ritos Court cul-de-sac.

Q in sump:

A single grate, type 'A' inlet in a sump can carry 12.0 cfs at a depth of 0.47'. The flow will be contained within the curb while entering the inlet. In the unlikely event that a storm produces twice the 100-year storm, the inlet can carry 24.0 cfs at a depth of 0.77 feet.

Check that the hydraulic grade line at the sump is less than the minimum pad elevation for two (2) times the 100-year storm. The hydraulic grade line elevation at the sump is 5105.15, which is less than the minimum pad elevation of 5108.26. See hydraulic grade line analysis (Inlet 3).

11. Las Cadenas Road

Basin 202 (See AHYMO summary table or Basin Map)
S = 0.60%
Q = 18.2 cfs

At 0.60%, a road with standard curb can handle 40.4 cfs. Therefore, no inlets needed. See PC stream output. Water flows to Los Valles Drive.

12. Mesa Viento Road

Basin 181 (See AHYMO summary table or Basin Map)

There are 20 lots in Basin 181 (Q = 14.7 cfs). Runoff per lot is 0.74 cfs.

S = 0.50%
Q = 14.7 cfs

At 0.50%, a road with standard curb can handle 41.6 cfs. Therefore, no inlets needed. See PC stream output. Water flows to a low point at the east end of Mesa Viento Road.

Q in sump:

A single grate, type 'A' inlet in a sump can carry 15.0 cfs at a depth of 0.55'. The flow will be contained within the curb while entering the inlet. In the unlikely event that a storm produces twice the 100-year storm, the inlet can carry 29.0 cfs at a depth of 0.85 feet.

Check that the hydraulic grade line at the sump is less than the minimum pad elevation for two (2) times the 100-year storm. The hydraulic grade line elevation at the sump is 5107.56, which is less than the minimum pad elevation of 5107.59. See hydraulic grade line analysis (Inlet 10).

13. Mesa Dura Drive

Basin 181 (See AHYMO summary table or Basin Map)
S = 0.53%
Q = 4.4 cfs

There are 6 lots contributing flow to Mesa Dura Drive.

At 0.53%, a road with roll curb can handle 4.5 cfs. Therefore, no inlets needed. See PC stream output. Water flows to Mesa Viento Road.

14. Mesa Sombra Place

Basin 182 (See AHYMO summary table or Basin Map)
S = 0.60%
Q = 14.4 cfs

There are 30 lots in Basin 182 (Q = 21.6 cfs). Runoff per lot is 0.72 cfs.

At 0.60%, a road with roll curb can handle 4.8 cfs and with standard curb, 40.4 cfs. Therefore, no inlets needed. Transition from roll curb to standard curb. See PC stream output. Water flows to Mesa Rincon Drive.

15. Mesa Rincon Drive

Basin 181 (See AHYMO summary table or Basin Map)
S = 0.6%
Q = 21.6 cfs

At 0.6%, a road with standard curb can handle 40.4 cfs. Therefore, no inlets needed. See PC stream output. Water flows to low point in Mesa Rincon Drive.

Q in sump:

A single grate, type 'A' inlet in a sump can carry 13.2 cfs at a depth of 0.51'. Two inlets can (each side of the street) can carry 26.4 cfs > 21.6 cfs. The flow will be contained within the curb while entering the inlet. In the unlikely event that a storm produces twice the 100-year storm, the inlet can carry 22.0 cfs at a depth of 0.71 feet. Two inlets can (each side of the street) can carry 44.0 cfs > 43.2 cfs.

Check that the hydraulic grade line at the sump is less than the minimum pad elevation for two (2) times the 100-year storm. The hydraulic grade line elevation at the sump is 5106.81, which is less than the minimum pad elevation of 5107.73. See hydraulic grade line analysis (Inlets 8 and 9).

16. Emergency Overflow in Mesa Rincon Drive

Flowline elevation at low point in Mesa Rincon Drive is 5105.96. High point in Mesa Rincon is 5106.62. Minimum pad elevation is 5107.73. Using the weir equation, check that depth of water over the high point is less than the minimum pad elevation for the 100-year storm.

$$Q = CLH^{1.5}$$

Where Q is the flow in cfs, C is the weir coefficient, L is the length of the weir in feet, and H is the depth of flow in feet. Using C = 3.0, L = 46 feet (right-of-way width), and a depth of 1.11 feet (5107.73 - 5106.62), the street capacity is 161 cfs. The 100-year flow is 21.6 cfs. Solving for depth using the 100-year flow in the weir equation gives a water depth of 0.29 feet, which is less than 1.11 feet. Therefore, the emergency overflow can pass the 100-year storm without inundating the lowest pad.

MILNE ROAD
BASIN 120

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

MANNING'S N= .017 SLOPE= .005

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	12.00	0.13	9	46.17	0.67
2	9.20	0.67	6	28.00	0.45	10	46.80	0.67
3	9.83	0.67	7	44.00	0.13	11	56.00	0.85
4	10.00	0.00	8	46.00	0.00	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.01	0.01	0.00	0.0	0.33	0.17	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.28	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.36	0.94	0.00	0.03
0.04	0.04	0.03	0.0	1.32	0.44	1.25	0.00	0.04
0.05	0.05	0.04	0.0	1.64	0.51	1.56	0.00	0.05
0.06	0.06	0.06	0.0	1.97	0.58	1.88	0.01	0.07
0.07	0.07	0.08	0.0	2.30	0.64	2.19	0.01	0.08
0.08	0.08	0.10	0.1	2.63	0.70	2.50	0.01	0.09
0.09	0.09	0.13	0.1	2.96	0.76	2.81	0.01	0.10
0.10	0.10	0.16	0.1	3.29	0.81	3.13	0.01	0.11
0.11	0.11	0.19	0.2	3.62	0.86	3.44	0.01	0.12
0.12	0.12	0.23	0.2	3.95	0.92	3.75	0.01	0.13
0.13	0.13	0.26	0.3	4.28	0.97	4.07	0.01	0.14
0.14	0.14	0.31	0.3	5.30	0.93	5.07	0.01	0.15
0.15	0.15	0.37	0.3	6.32	0.92	6.08	0.01	0.16
0.16	0.16	0.43	0.4	7.34	0.93	7.08	0.01	0.17
0.17	0.17	0.51	0.5	8.36	0.95	8.09	0.01	0.18
0.18	0.18	0.59	0.6	9.38	0.98	9.09	0.01	0.19
0.19	0.19	0.69	0.7	10.40	1.01	10.10	0.02	0.21
0.20	0.20	0.80	0.8	11.42	1.05	11.10	0.02	0.22
0.21	0.21	0.91	1.0	12.44	1.08	12.11	0.02	0.23
0.22	0.22	1.04	1.2	13.46	1.12	13.11	0.02	0.24
0.23	0.23	1.17	1.4	14.49	1.16	14.12	0.02	0.25
0.24	0.24	1.32	1.6	15.51	1.20	15.12	0.02	0.26
0.25	0.25	1.48	1.8	16.53	1.23	16.13	0.02	0.27
0.26	0.26	1.64	2.1	17.55	1.27	17.13	0.03	0.29
0.27	0.27	1.82	2.4	18.57	1.31	18.14	0.03	0.30
0.28	0.28	2.00	2.7	19.59	1.35	19.14	0.03	0.31
0.29	0.29	2.20	3.1	20.61	1.39	20.15	0.03	0.32
0.30	0.30	2.41	3.4	21.63	1.43	21.15	0.03	0.33
0.31	0.31	2.62	3.9	22.65	1.47	22.16	0.03	0.34
0.32	0.32	2.85	4.3	23.67	1.51	23.16	0.04	0.36
0.33	0.33	3.09	4.8	24.69	1.55	24.17	0.04	0.37
0.34	0.34	3.33	5.3	25.71	1.58	25.17	0.04	0.38
0.35	0.35	3.59	5.8	26.74	1.62	26.18	0.04	0.39
0.36	0.36	3.86	6.4	27.76	1.66	27.18	0.04	0.40
0.37	0.37	4.13	7.0	28.78	1.70	28.19	0.04	0.41
0.38	0.38	4.42	7.7	29.80	1.73	29.19	0.05	0.43
0.39	0.39	4.72	8.3	30.82	1.77	30.20	0.05	0.44
0.40	0.40	5.03	9.1	31.84	1.81	31.20	0.05	0.45
0.41	0.41	5.34	9.8	32.86	1.84	32.21	0.05	0.46
0.42	0.42	5.67	10.6	33.88	1.88	33.21	0.05	0.47
0.43	0.43	6.01	11.5	34.90	1.91	34.22	0.06	0.49

Q_{100}

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.45	0.45	6.71	13.3	36.94	1.98	36.23	0.06	0.51
0.46	0.46	7.07	14.5	36.96	2.05	36.23	0.07	0.53
0.47	0.47	7.44	15.8	36.98	2.12	36.24	0.07	0.54
0.48	0.48	7.80	17.1	37.01	2.19	36.24	0.07	0.55
0.49	0.49	8.16	18.4	37.03	2.26	36.25	0.08	0.57
0.50	0.50	8.52	19.8	37.05	2.32	36.25	0.08	0.58
0.51	0.51	8.89	21.2	37.07	2.39	36.26	0.09	0.60
0.52	0.52	9.25	22.6	37.09	2.45	36.26	0.09	0.61
0.53	0.53	9.61	24.1	37.11	2.51	36.27	0.10	0.63
0.54	0.54	9.97	25.7	37.13	2.57	36.27	0.10	0.64
0.55	0.55	10.34	27.2	37.15	2.63	36.28	0.11	0.66
0.56	0.56	10.70	28.8	37.17	2.69	36.28	0.11	0.67
0.57	0.57	11.06	30.5	37.19	2.75	36.29	0.12	0.69
0.58	0.58	11.43	32.1	37.21	2.81	36.29	0.12	0.70
0.59	0.59	11.79	33.8	37.23	2.87	36.30	0.13	0.72
0.60	0.60	12.15	35.6	37.25	2.93	36.30	0.13	0.73
0.61	0.61	12.51	37.4	37.27	2.99	36.31	0.14	0.75
0.62	0.62	12.88	39.2	37.29	3.04	36.31	0.14	0.76
0.63	0.63	13.24	41.0	37.31	3.10	36.32	0.15	0.78
0.64	0.64	13.60	42.9	37.34	3.15	36.32	0.15	0.79
0.65	0.65	13.97	44.8	37.36	3.21	36.33	0.16	0.81
0.66	0.66	14.33	46.7	37.38	3.26	36.33	0.17	0.83
0.67	0.67	14.69	48.7	37.40	3.32	36.34	0.17	0.84
0.68	0.68	15.06	49.9	38.42	3.31	38.62	0.17	0.85
0.69	0.69	15.44	51.1	39.44	3.31	39.64	0.17	0.86
0.70	0.70	15.87	51.5	41.72	3.24	40.67	0.16	0.86
0.71	0.71	16.28	52.9	42.75	3.25	41.69	0.16	0.87
0.72	0.72	16.70	54.3	43.77	3.25	42.71	0.16	0.88
0.73	0.73	17.13	55.8	44.79	3.26	43.73	0.16	0.89
0.74	0.74	17.58	57.4	45.81	3.26	44.76	0.17	0.91
0.75	0.75	18.03	59.0	46.84	3.27	45.78	0.17	0.92
0.76	0.76	18.49	60.6	47.86	3.28	46.80	0.17	0.93
0.77	0.77	18.96	62.4	48.88	3.29	47.82	0.17	0.94
0.78	0.78	19.45	64.1	49.90	3.30	48.84	0.17	0.95
0.79	0.79	19.94	66.0	50.93	3.31	49.87	0.17	0.96
0.80	0.80	20.45	67.9	51.95	3.32	50.89	0.17	0.97
0.81	0.81	20.96	69.8	52.97	3.33	51.91	0.17	0.98
0.82	0.82	21.48	71.8	53.99	3.34	52.93	0.17	0.99
0.83	0.83	22.02	73.9	55.02	3.36	53.96	0.17	1.00
0.84	0.84	22.56	76.0	56.04	3.37	54.98	0.18	1.02
0.85	0.85	23.12	78.2	57.06	3.38	56.00	0.18	1.03

STD CURB LIMIT

MILNE ROAD
BASIN 170

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

MANNING'S N= .017 SLOPE= .006

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	12.00	0.13	9	46.17	0.67
2	9.20	0.67	6	28.00	0.45	10	46.80	0.67
3	9.83	0.67	7	44.00	0.13	11	56.00	0.85
4	10.00	0.00	8	46.00	0.00	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.01	0.01	0.00	0.0	0.33	0.19	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.30	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.40	0.94	0.00	0.03
0.04	0.04	0.03	0.0	1.32	0.48	1.25	0.00	0.04
0.05	0.05	0.04	0.0	1.64	0.56	1.56	0.00	0.05
0.06	0.06	0.06	0.0	1.97	0.63	1.88	0.01	0.07
0.07	0.07	0.08	0.1	2.30	0.70	2.19	0.01	0.08
0.08	0.08	0.10	0.1	2.63	0.77	2.50	0.01	0.09
0.09	0.09	0.13	0.1	2.96	0.83	2.81	0.01	0.10
0.10	0.10	0.16	0.1	3.29	0.89	3.13	0.01	0.11
0.11	0.11	0.19	0.2	3.62	0.95	3.44	0.01	0.12
0.12	0.12	0.23	0.2	3.95	1.00	3.75	0.02	0.14
0.13	0.13	0.26	0.3	4.28	1.06	4.07	0.02	0.15
0.14	0.14	0.31	0.3	5.30	1.02	5.07	0.02	0.16
0.15	0.15	0.37	0.4	6.32	1.01	6.08	0.02	0.17
0.16	0.16	0.43	0.4	7.34	1.02	7.08	0.02	0.18
0.17	0.17	0.51	0.5	8.36	1.05	8.09	0.02	0.19
0.18	0.18	0.59	0.6	9.38	1.07	9.09	0.02	0.20
0.19	0.19	0.69	0.8	10.40	1.11	10.10	0.02	0.21
0.20	0.20	0.80	0.9	11.42	1.15	11.10	0.02	0.22
0.21	0.21	0.91	1.1	12.44	1.19	12.11	0.02	0.23
0.22	0.22	1.04	1.3	13.46	1.23	13.11	0.02	0.24
0.23	0.23	1.17	1.5	14.49	1.27	14.12	0.02	0.25
0.24	0.24	1.32	1.7	15.51	1.31	15.12	0.03	0.27
0.25	0.25	1.48	2.0	16.53	1.35	16.13	0.03	0.28
0.26	0.26	1.64	2.3	17.55	1.40	17.13	0.03	0.29
0.27	0.27	1.82	2.6	18.57	1.44	18.14	0.03	0.30
0.28	0.28	2.00	3.0	19.59	1.48	19.14	0.03	0.31
0.29	0.29	2.20	3.4	20.61	1.52	20.15	0.04	0.33
0.30	0.30	2.41	3.8	21.63	1.57	21.15	0.04	0.34
0.31	0.31	2.62	4.2	22.65	1.61	22.16	0.04	0.35
0.32	0.32	2.85	4.7	23.67	1.65	23.16	0.04	0.36
0.33	0.33	3.09	5.2	24.69	1.69	24.17	0.04	0.37
0.34	0.34	3.33	5.8	25.71	1.73	25.17	0.05	0.39
0.35	0.35	3.59	6.4	26.74	1.78	26.18	0.05	0.40
0.36	0.36	3.86	7.0	27.76	1.82	27.18	0.05	0.41
0.37	0.37	4.13	7.7	28.78	1.86	28.19	0.05	0.42
0.38	0.38	4.42	8.4	29.80	1.90	29.19	0.06	0.44
0.39	0.39	4.72	9.1	30.82	1.94	30.20	0.06	0.45
0.40	0.40	5.03	9.9	31.84	1.98	31.20	0.06	0.46
0.41	0.41	5.34	10.8	32.86	2.02	32.21	0.06	0.47
0.42	0.42	5.67	11.7	33.88	2.06	33.21	0.07	0.49
0.43	0.43	6.01	12.6	34.90	2.09	34.22	0.07	0.50

Q_{100}

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.45	0.45	6.71	14.6	36.94	2.17	36.23	0.07	0.52
0.46	0.46	7.07	15.9	36.96	2.25	36.23	0.08	0.54
0.47	0.47	7.44	17.3	36.98	2.32	36.24	0.08	0.55
0.48	0.48	7.80	18.7	37.01	2.40	36.24	0.09	0.57
0.49	0.49	8.16	20.2	37.03	2.47	36.25	0.09	0.58
0.50	0.50	8.52	21.7	37.05	2.54	36.25	0.10	0.60
0.51	0.51	8.89	23.2	37.07	2.61	36.26	0.11	0.62
0.52	0.52	9.25	24.8	37.09	2.68	36.26	0.11	0.63
0.53	0.53	9.61	26.4	37.11	2.75	36.27	0.12	0.65
0.54	0.54	9.97	28.1	37.13	2.82	36.27	0.12	0.66
0.55	0.55	10.34	29.8	37.15	2.89	36.28	0.13	0.68
0.56	0.56	10.70	31.6	37.17	2.95	36.28	0.14	0.70
0.57	0.57	11.06	33.4	37.19	3.02	36.29	0.14	0.71
0.58	0.58	11.43	35.2	37.21	3.08	36.29	0.15	0.73
0.59	0.59	11.79	37.1	37.23	3.15	36.30	0.15	0.74
0.60	0.60	12.15	39.0	37.25	3.21	36.30	0.16	0.76
0.61	0.61	12.51	40.9	37.27	3.27	36.31	0.17	0.78
0.62	0.62	12.88	42.9	37.29	3.33	36.31	0.17	0.79
0.63	0.63	13.24	44.9	37.31	3.39	36.32	0.18	0.81
0.64	0.64	13.60	47.0	37.34	3.45	36.32	0.19	0.83
0.65	0.65	13.97	49.1	37.36	3.51	36.33	0.19	0.84
0.66	0.66	14.33	51.2	37.38	3.57	36.33	0.20	0.86
0.67	0.67	14.69	53.4	37.40	3.63	36.34	0.20	0.87
0.68	0.68	15.06	54.6	38.42	3.63	38.62	0.20	0.88
0.69	0.69	15.44	56.0	39.44	3.62	39.64	0.20	0.89
0.70	0.70	15.87	56.4	41.72	3.55	40.67	0.20	0.90
0.71	0.71	16.28	57.9	42.75	3.56	41.69	0.20	0.91
0.72	0.72	16.70	59.5	43.77	3.56	42.71	0.20	0.92
0.73	0.73	17.13	61.1	44.79	3.57	43.73	0.20	0.93
0.74	0.74	17.58	62.8	45.81	3.57	44.76	0.20	0.94
0.75	0.75	18.03	64.6	46.84	3.58	45.78	0.20	0.95
0.76	0.76	18.49	66.4	47.86	3.59	46.80	0.20	0.96
0.77	0.77	18.96	68.3	48.88	3.60	47.82	0.20	0.97
0.78	0.78	19.45	70.3	49.90	3.61	48.84	0.20	0.98
0.79	0.79	19.94	72.3	50.93	3.62	49.87	0.20	0.99
0.80	0.80	20.45	74.3	51.95	3.64	50.89	0.21	1.01
0.81	0.81	20.96	76.5	52.97	3.65	51.91	0.21	1.02
0.82	0.82	21.48	78.7	53.99	3.66	52.93	0.21	1.03
0.83	0.83	22.02	81.0	55.02	3.68	53.96	0.21	1.04
0.84	0.84	22.56	83.3	56.04	3.69	54.98	0.21	1.05
0.85	0.85	23.12	85.7	57.06	3.71	56.00	0.21	1.06

STD CURB LIMIT

60" WING 40"@ TC

18.5" | 18.5" | 35.5"

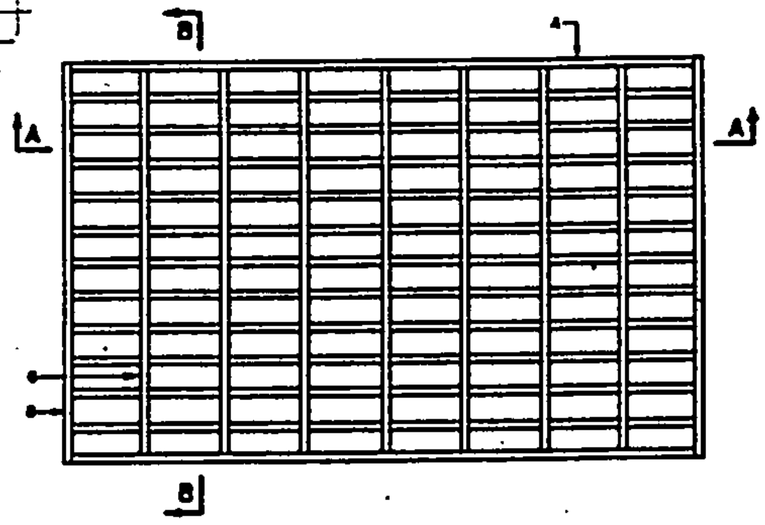
NET OPEN AREA

GRATE @ 10" (0.83') BELOW TC

EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6A\sqrt{2gh} + 3.3(5')h^{1.5}$

2) & 3) $Q = 3.3\,Ph^{1.5}$



GRATE CAPACITY (Q) IN CFS

TRIPLE GRATE

DOUBLE GRATE

SINGLE GRATE

TC 0.83'

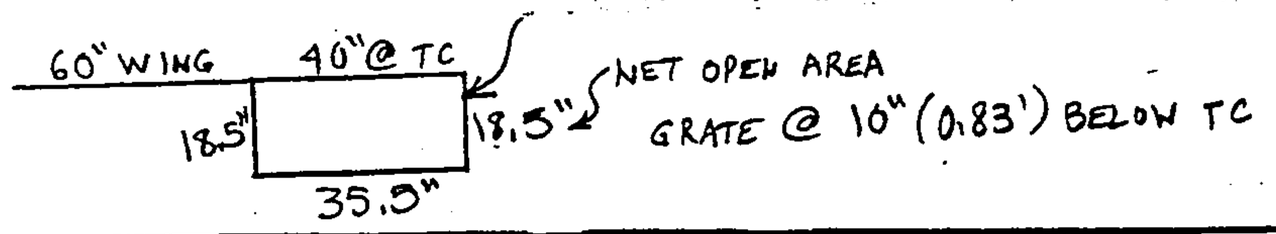
HEAD (h) IN FEET

BOHANNAN-HUSTON INC.

PROJECT NAME Milne Road Sump SHEET ____ OF ____

PROJECT NO. ____ BY JPK DATE 4/9/92

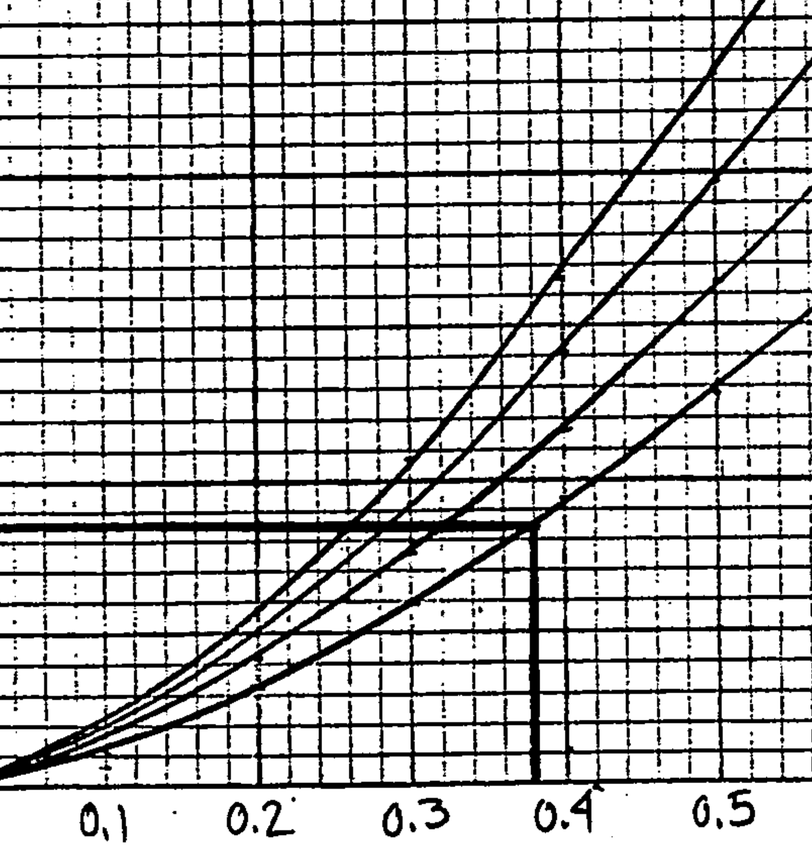
SUBJECT Rating Curve for Type A Inlets CH'D ____ DATE B-11



EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6\,A\sqrt{2gh} + 3.3(5')\,h^{1.5}$

2) & 3) $Q = 3.3\,P\,h^{1.5}$



BOHANNAN-HUSTON INC.

PROJECT NAME Milne Road Sump SHEET ____ OF ____

PROJECT NO. 2 x 100 YEAR BY JPK DATE 4/9/92

SUBJECT Rating Curve for Type A Inlets CH'D ____ DATE B-12

Quaker Heights Place
Basin 130

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

MANNING'S N= .017 SLOPE= .006

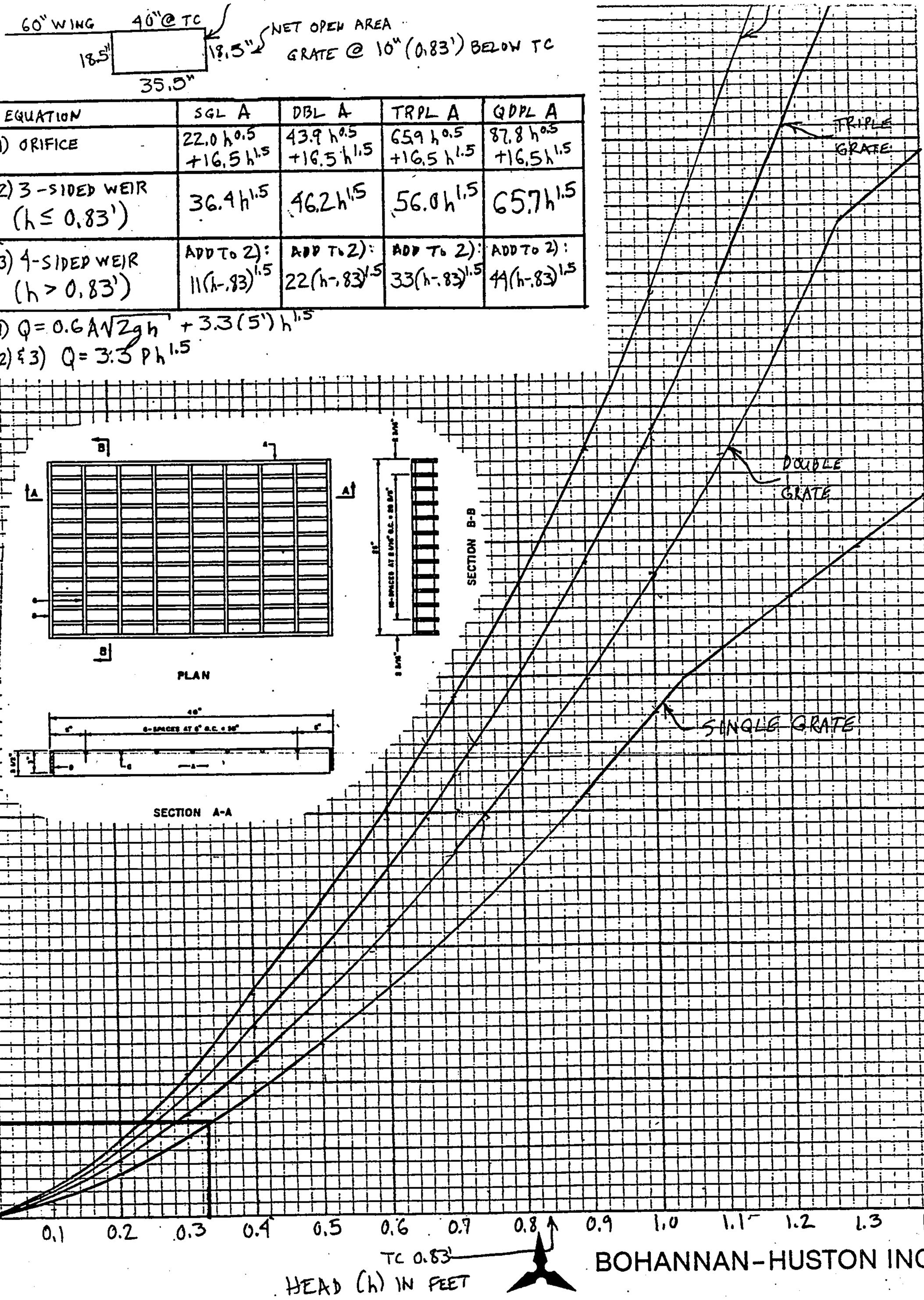
POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	12.00	0.13	9	46.17	0.67
2	9.20	0.67	6	28.00	0.45	10	46.80	0.67
3	9.83	0.67	7	44.00	0.13	11	56.00	0.85
4	10.00	0.00	8	46.00	0.00	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.01	0.01	0.00	0.0	0.33	0.19	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.30	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.40	0.94	0.00	0.03
0.04	0.04	0.03	0.0	1.32	0.48	1.25	0.00	0.04
0.05	0.05	0.04	0.0	1.64	0.56	1.56	0.00	0.05
0.06	0.06	0.06	0.0	1.97	0.63	1.88	0.01	0.07
0.07	0.07	0.08	0.1	2.30	0.70	2.19	0.01	0.08
0.08	0.08	0.10	0.1	2.63	0.77	2.50	0.01	0.09
0.09	0.09	0.13	0.1	2.96	0.83	2.81	0.01	0.10
0.10	0.10	0.16	0.1	3.29	0.89	3.13	0.01	0.11
0.11	0.11	0.19	0.2	3.62	0.95	3.44	0.01	0.12
0.12	0.12	0.23	0.2	3.95	1.00	3.75	0.02	0.14
0.13	0.13	0.26	0.3	4.28	1.06	4.07	0.02	0.15
0.14	0.14	0.31	0.3	5.30	1.02	5.07	0.02	0.16
0.15	0.15	0.37	0.4	6.32	1.01	6.08	0.02	0.17
0.16	0.16	0.43	0.4	7.34	1.02	7.08	0.02	0.18
0.17	0.17	0.51	0.5	8.36	1.05	8.09	0.02	0.19
0.18	0.18	0.59	0.6	9.38	1.07	9.09	0.02	0.20
0.19	0.19	0.69	0.8	10.40	1.11	10.10	0.02	0.21
0.20	0.20	0.80	0.9	11.42	1.15	11.10	0.02	0.22
0.21	0.21	0.91	1.1	12.44	1.19	12.11	0.02	0.23
0.22	0.22	1.04	1.3	13.46	1.23	13.11	0.02	0.24
0.23	0.23	1.17	1.5	14.49	1.27	14.12	0.02	0.25
0.24	0.24	1.32	1.7	15.51	1.31	15.12	0.03	0.27
0.25	0.25	1.48	2.0	16.53	1.35	16.13	0.03	0.28
0.26	0.26	1.64	2.3	17.55	1.40	17.13	0.03	0.29
0.27	0.27	1.82	2.6	18.57	1.44	18.14	0.03	0.30
0.28	0.28	2.00	3.0	19.59	1.48	19.14	0.03	0.31
0.29	0.29	2.20	3.4	20.61	1.52	20.15	0.04	0.33
0.30	0.30	2.41	3.8	21.63	1.57	21.15	0.04	0.34
0.31	0.31	2.62	4.2	22.65	1.61	22.16	0.04	0.35
0.32	0.32	2.85	4.7	23.67	1.65	23.16	0.04	0.36
0.33	0.33	3.09	5.2	24.69	1.69	24.17	0.04	0.37
0.34	0.34	3.33	5.8	25.71	1.73	25.17	0.05	0.39
0.35	0.35	3.59	6.4	26.74	1.78	26.18	0.05	0.40
0.36	0.36	3.86	7.0	27.76	1.82	27.18	0.05	0.41
0.37	0.37	4.13	7.7	28.78	1.86	28.19	0.05	0.42
0.38	0.38	4.42	8.4	29.80	1.90	29.19	0.06	0.44
0.39	0.39	4.72	9.1	30.82	1.94	30.20	0.06	0.45
0.40	0.40	5.03	9.9	31.84	1.98	31.20	0.06	0.46
0.41	0.41	5.34	10.8	32.86	2.02	32.21	0.06	0.47
0.42	0.42	5.67	11.7	33.88	2.06	33.21	0.07	0.49
0.43	0.43	6.01	12.6	34.90	2.09	34.22	0.07	0.50

Q_{100}

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.45	0.45	6.71	14.6	36.94	2.17	36.23	0.07	0.52
0.46	0.46	7.07	15.9	36.96	2.25	36.23	0.08	0.54
0.47	0.47	7.44	17.3	36.98	2.32	36.24	0.08	0.55
0.48	0.48	7.80	18.7	37.01	2.40	36.24	0.09	0.57
0.49	0.49	8.16	20.2	37.03	2.47	36.25	0.09	0.58
0.50	0.50	8.52	21.7	37.05	2.54	36.25	0.10	0.60
0.51	0.51	8.89	23.2	37.07	2.61	36.26	0.11	0.62
0.52	0.52	9.25	24.8	37.09	2.68	36.26	0.11	0.63
0.53	0.53	9.61	26.4	37.11	2.75	36.27	0.12	0.65
0.54	0.54	9.97	28.1	37.13	2.82	36.27	0.12	0.66
0.55	0.55	10.34	29.8	37.15	2.89	36.28	0.13	0.68
0.56	0.56	10.70	31.6	37.17	2.95	36.28	0.14	0.70
0.57	0.57	11.06	33.4	37.19	3.02	36.29	0.14	0.71
0.58	0.58	11.43	35.2	37.21	3.08	36.29	0.15	0.73
0.59	0.59	11.79	37.1	37.23	3.15	36.30	0.15	0.74
0.60	0.60	12.15	39.0	37.25	3.21	36.30	0.16	0.76
0.61	0.61	12.51	40.9	37.27	3.27	36.31	0.17	0.78
0.62	0.62	12.88	42.9	37.29	3.33	36.31	0.17	0.79
0.63	0.63	13.24	44.9	37.31	3.39	36.32	0.18	0.81
0.64	0.64	13.60	47.0	37.34	3.45	36.32	0.19	0.83
0.65	0.65	13.97	49.1	37.36	3.51	36.33	0.19	0.84
0.66	0.66	14.33	51.2	37.38	3.57	36.33	0.20	0.86
0.67	0.67	14.69	53.4	37.40	3.63	36.34	0.20	0.87
0.68	0.68	15.06	54.6	38.42	3.63	38.62	0.20	0.88
0.69	0.69	15.44	56.0	39.44	3.62	39.64	0.20	0.89
0.70	0.70	15.87	56.4	41.72	3.55	40.67	0.20	0.90
0.71	0.71	16.28	57.9	42.75	3.56	41.69	0.20	0.91
0.72	0.72	16.70	59.5	43.77	3.56	42.71	0.20	0.92
0.73	0.73	17.13	61.1	44.79	3.57	43.73	0.20	0.93
0.74	0.74	17.58	62.8	45.81	3.57	44.76	0.20	0.94
0.75	0.75	18.03	64.6	46.84	3.58	45.78	0.20	0.95
0.76	0.76	18.49	66.4	47.86	3.59	46.80	0.20	0.96
0.77	0.77	18.96	68.3	48.88	3.60	47.82	0.20	0.97
0.78	0.78	19.45	70.3	49.90	3.61	48.84	0.20	0.98
0.79	0.79	19.94	72.3	50.93	3.62	49.87	0.20	0.99
0.80	0.80	20.45	74.3	51.95	3.64	50.89	0.21	1.01
0.81	0.81	20.96	76.5	52.97	3.65	51.91	0.21	1.02
0.82	0.82	21.48	78.7	53.99	3.66	52.93	0.21	1.03
0.83	0.83	22.02	81.0	55.02	3.68	53.96	0.21	1.04
0.84	0.84	22.56	83.3	56.04	3.69	54.98	0.21	1.05
0.85	0.85	23.12	85.7	57.06	3.71	56.00	0.21	1.06

STD CURB LIMIT



EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6A\sqrt{2gh} + 3.3(5')h^{1.5}$

2) & 3) $Q = 3.3\,Ph^{1.5}$

BOHANNAN-HUSTON INC.

PROJECT NAME Quaker Hts Place SHEET ____ OF ____

PROJECT NO. Basin 130 Sump BY JPK DATE 4/9/92

SUBJECT Rating Curve for Type A Inlets CH'D ____ DATE B-15

60" WING 40"@TC

18.5" × 35.5" 18.5"

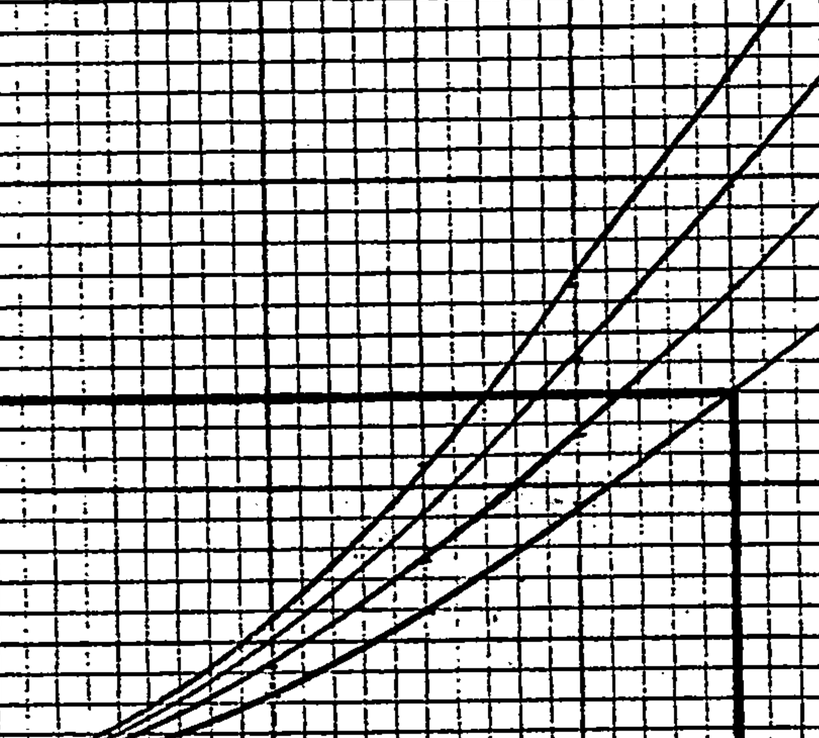
NET OPEN AREA

GRATE @ 10" (0.83') BELOW TC

EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6\,A\sqrt{2gh} + 3.3(5')\,h^{1.5}$

2) & 3) $Q = 3.3\,P\,h^{1.5}$



GRATE CAPACITY (Q) IN CFS

90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4

TRIPLE GRATE

DOUBLE GRATE

SINGLE GRATE

TC 0.83'

HEAD (h) IN FEET

BOHANNAN-HUSTON INC.

PROJECT NAME Quaker Hts Place SHEET ____ OF ____

PROJECT NO. Basin 130 2x100yr BY JPK DATE 4/9/92

SUBJECT Rating Curve for Type A Inlets CH'D ____ DATE B-16

QUAKER HEIGHTS PLACE
BASIN 140

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

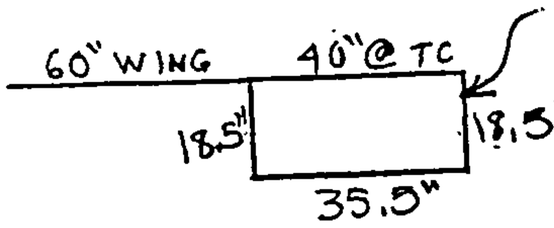
MANNING'S N= .017 SLOPE= .0069

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.85	5	12.00	0.13	9	46.17	0.67
2	9.20	0.67	6	28.00	0.45	10	46.80	0.67
3	9.83	0.67	7	44.00	0.13	11	56.00	0.85
4	10.00	0.00	8	46.00	0.00	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)	
0.01	0.01	0.00	0.0	0.33	0.21	0.31	0.00	0.01	
0.02	0.02	0.01	0.0	0.66	0.33	0.63	0.00	0.02	
0.03	0.03	0.01	0.0	0.99	0.43	0.94	0.00	0.03	
0.04	0.04	0.03	0.0	1.32	0.52	1.25	0.00	0.04	
0.05	0.05	0.04	0.0	1.64	0.60	1.56	0.01	0.06	
0.06	0.06	0.06	0.0	1.97	0.68	1.88	0.01	0.07	
0.07	0.07	0.08	0.1	2.30	0.75	2.19	0.01	0.08	
0.08	0.08	0.10	0.1	2.63	0.82	2.50	0.01	0.09	
0.09	0.09	0.13	0.1	2.96	0.89	2.81	0.01	0.10	
0.10	0.10	0.16	0.1	3.29	0.95	3.13	0.01	0.11	
0.11	0.11	0.19	0.2	3.62	1.02	3.44	0.02	0.13	
0.12	0.12	0.23	0.2	3.95	1.08	3.75	0.02	0.14	
0.13	0.13	0.26	0.3	4.28	1.13	4.07	0.02	0.15	
0.14	0.14	0.31	0.3	5.30	1.09	5.07	0.02	0.16	
0.15	0.15	0.37	0.4	6.32	1.09	6.08	0.02	0.17	
0.16	0.16	0.43	0.5	7.34	1.10	7.08	0.02	0.18	
0.17	0.17	0.51	0.6	8.36	1.12	8.09	0.02	0.19	
0.18	0.18	0.59	0.7	9.38	1.15	9.09	0.02	0.20	
0.19	0.19	0.69	0.8	10.40	1.19	10.10	0.02	0.21	
0.20	0.20	0.80	1.0	11.42	1.23	11.10	0.02	0.22	
0.21	0.21	0.91	1.2	12.44	1.27	12.11	0.03	0.24	
0.22	0.22	1.04	1.4	13.46	1.31	13.11	0.03	0.25	
0.23	0.23	1.17	1.6	14.49	1.36	14.12	0.03	0.26	
0.24	0.24	1.32	1.9	15.51	1.40	15.12	0.03	0.27	
0.25	0.25	1.48	2.1	16.53	1.45	16.13	0.03	0.28	
0.26	0.26	1.64	2.5	17.55	1.50	17.13	0.03	0.29	
0.27	0.27	1.82	2.8	18.57	1.54	18.14	0.04	0.31	
0.28	0.28	2.00	3.2	19.59	1.59	19.14	0.04	0.32	
0.29	0.29	2.20	3.6	20.61	1.63	20.15	0.04	0.33	
0.30	0.30	2.41	4.0	21.63	1.68	21.15	0.04	0.34	
0.31	0.31	2.62	4.5	22.65	1.73	22.16	0.05	0.36	
0.32	0.32	2.85	5.0	23.67	1.77	23.16	0.05	0.37	
0.33	0.33	3.09	5.6	24.69	1.82	24.17	0.05	0.38	
0.34	0.34	3.33	6.2	25.71	1.86	25.17	0.05	0.39	Q_{100}
0.35	0.35	3.59	6.8	26.74	1.90	26.18	0.06	0.41	
0.36	0.36	3.86	7.5	27.76	1.95	27.18	0.06	0.42	
0.37	0.37	4.13	8.2	28.78	1.99	28.19	0.06	0.43	
0.38	0.38	4.42	9.0	29.80	2.04	29.19	0.06	0.44	
0.39	0.39	4.72	9.8	30.82	2.08	30.20	0.07	0.46	
0.40	0.40	5.03	10.7	31.84	2.12	31.20	0.07	0.47	
0.41	0.41	5.34	11.6	32.86	2.16	32.21	0.07	0.48	
0.42	0.42	5.67	12.5	33.88	2.20	33.21	0.08	0.50	
0.43	0.43	6.01	13.5	34.90	2.25	34.22	0.08	0.51	

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.45	0.45	6.71	15.6	36.94	2.33	36.23	0.08	0.53
0.46	0.46	7.07	17.1	36.96	2.41	36.23	0.09	0.55
0.47	0.47	7.44	18.5	36.98	2.49	36.24	0.10	0.57
0.48	0.48	7.80	20.1	37.01	2.57	36.24	0.10	0.58
0.49	0.49	8.16	21.6	37.03	2.65	36.25	0.11	0.60
0.50	0.50	8.52	23.2	37.05	2.73	36.25	0.12	0.62
0.51	0.51	8.89	24.9	37.07	2.80	36.26	0.12	0.63
0.52	0.52	9.25	26.6	37.09	2.88	36.26	0.13	0.65
0.53	0.53	9.61	28.4	37.11	2.95	36.27	0.14	0.67
0.54	0.54	9.97	30.2	37.13	3.02	36.27	0.14	0.68
0.55	0.55	10.34	32.0	37.15	3.09	36.28	0.15	0.70
0.56	0.56	10.70	33.9	37.17	3.17	36.28	0.16	0.72
0.57	0.57	11.06	35.8	37.19	3.24	36.29	0.16	0.73
0.58	0.58	11.43	37.8	37.21	3.30	36.29	0.17	0.75
0.59	0.59	11.79	39.8	37.23	3.37	36.30	0.18	0.77
0.60	0.60	12.15	41.8	37.25	3.44	36.30	0.18	0.78
0.61	0.61	12.51	43.9	37.27	3.51	36.31	0.19	0.80
0.62	0.62	12.88	46.0	37.29	3.57	36.31	0.20	0.82
0.63	0.63	13.24	48.2	37.31	3.64	36.32	0.21	0.84
0.64	0.64	13.60	50.4	37.34	3.70	36.32	0.21	0.85
0.65	0.65	13.97	52.6	37.36	3.77	36.33	0.22	0.87
0.66	0.66	14.33	54.9	37.38	3.83	36.33	0.23	0.89
0.67	0.67	14.69	57.2	37.40	3.90	36.34	0.24	0.91
0.68	0.68	15.06	58.6	38.42	3.89	38.62	0.23	0.91
0.69	0.69	15.44	60.0	39.44	3.89	39.64	0.23	0.92
0.70	0.70	15.87	60.5	41.72	3.81	40.67	0.23	0.93
0.71	0.71	16.28	62.1	42.75	3.81	41.69	0.23	0.94
0.72	0.72	16.70	63.8	43.77	3.82	42.71	0.23	0.95
0.73	0.73	17.13	65.6	44.79	3.83	43.73	0.23	0.96
0.74	0.74	17.58	67.4	45.81	3.83	44.76	0.23	0.97
0.75	0.75	18.03	69.3	46.84	3.84	45.78	0.23	0.98
0.76	0.76	18.49	71.2	47.86	3.85	46.80	0.23	0.99
0.77	0.77	18.96	73.3	48.88	3.86	47.82	0.23	1.00
0.78	0.78	19.45	75.3	49.90	3.87	48.84	0.23	1.01
0.79	0.79	19.94	77.5	50.93	3.89	49.87	0.23	1.02
0.80	0.80	20.45	79.7	51.95	3.90	50.89	0.24	1.04
0.81	0.81	20.96	82.0	52.97	3.91	51.91	0.24	1.05
0.82	0.82	21.48	84.4	53.99	3.93	52.93	0.24	1.06
0.83	0.83	22.02	86.8	55.02	3.94	53.96	0.24	1.07
0.84	0.84	22.56	89.3	56.04	3.96	54.98	0.24	1.08
0.85	0.85	23.12	91.9	57.06	3.98	56.00	0.25	1.10

STD CURB LIMIT

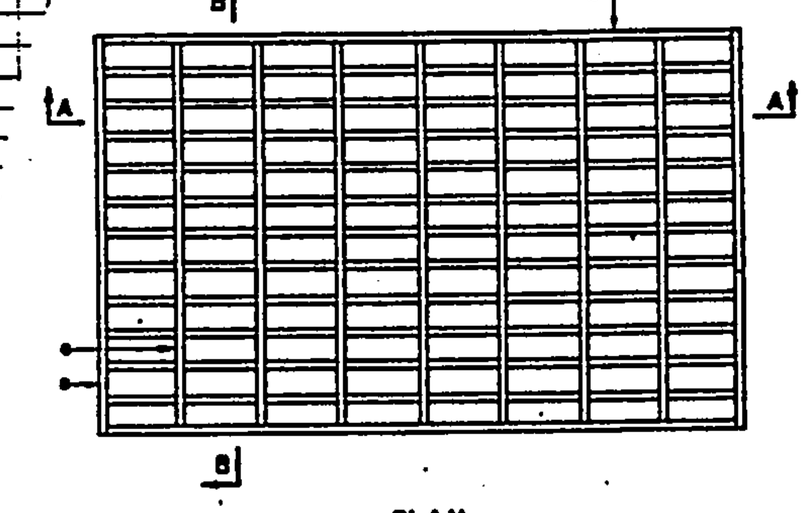


GRATE @ 10" (0.83') BELOW TC

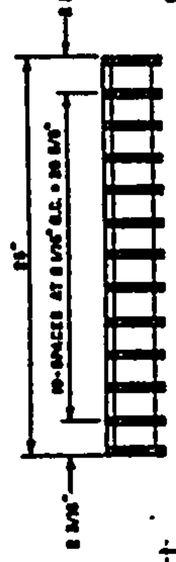
EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

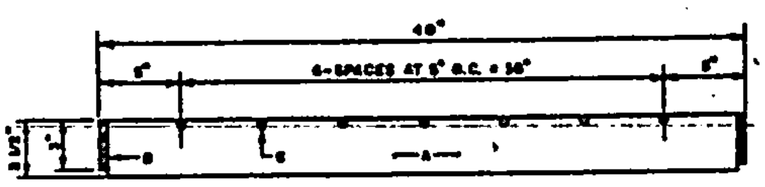
1) $Q = 0.6A\sqrt{2gh} + 3.3(5')h^{1.5}$

2) & 3) $Q = 3.3\,Ph^{1.5}$



PLAN





SECTION A-A

GRATE CAPACITY (Q) IN CFS

TRIPLE GRATE

DOUBLE GRATE

SINGLE GRATE

HEAD (h) IN FEET

TC 0.83'

BOHANNAN-HUSTON INC.

PROJECT NAME Quaker Hts Place SHEET ____ OF ____

PROJECT NO. Sump Basin 140 BY JPK DATE 4/9/92

SUBJECT Rating Curve for Type A Inlets CH'D ____ DATE 13-19

60" WING 40"@ TC

18.5" × 35.5"

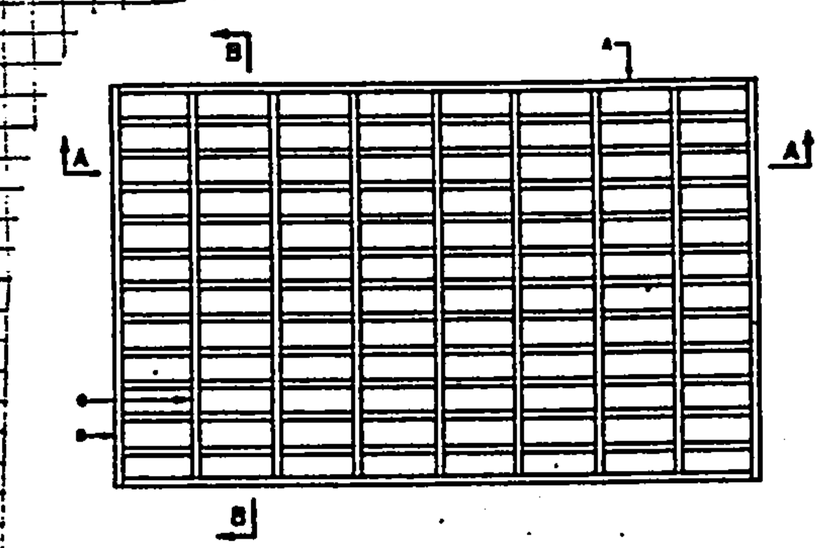
18.5" NET OPEN AREA

GRATE @ 10" (0.83') BELOW TC

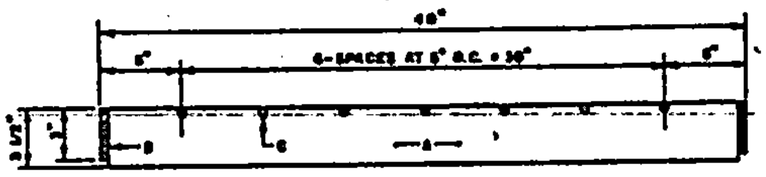
EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6A\sqrt{2gh} + 3.3(5')h^{1.5}$

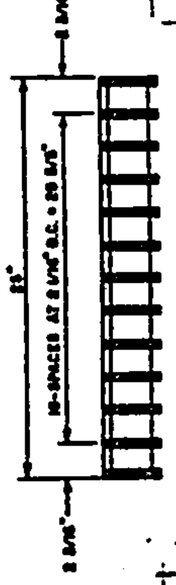
2) & 3) $Q = 3.3\,Ph^{1.5}$



PLAN



SECTION A-A



SECTION B-B

GRATE CAPACITY (Q) IN CFS

90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4

TRIPLE GRATE

DOUBLE GRATE

SINGLE GRATE

TC 0.83'

HEAD (h) IN FEET

BOHANNAN-HUSTON INC.

PROJECT NAME Quaker Hts Place SHEET ____ OF ____

PROJECT NO. Basin 140 2x100yr BY JPK DATE 4/9/92

SUBJECT Rating Curve for Type A Inlets CH'D ____ DATE B-20

LOS VALLES DR

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

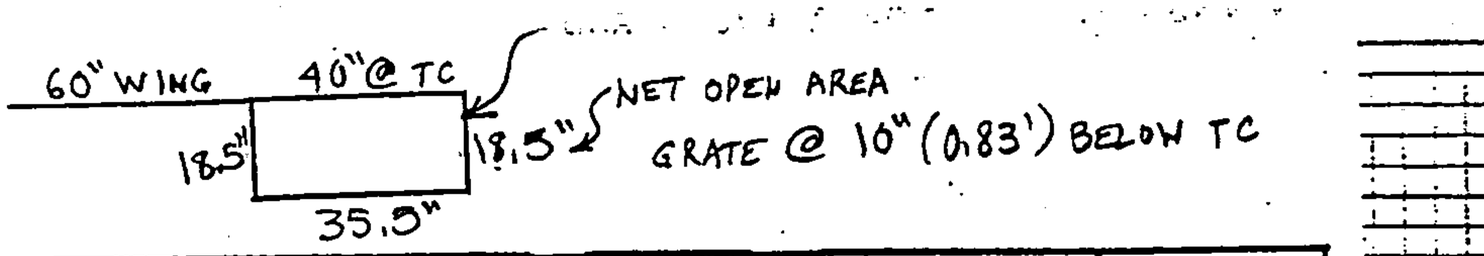
MANNING'S N= .017 SLOPE= .006

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.83	5	11.00	0.13	9	37.17	0.67
2	8.38	0.67	6	23.00	0.41	10	37.63	0.67
3	8.83	0.67	7	35.00	0.13	11	46.00	0.83
4	9.00	0.00	8	37.00	0.00	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.01	0.01	0.00	0.0	0.33	0.19	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.30	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.40	0.94	0.00	0.03
0.04	0.04	0.03	0.0	1.32	0.48	1.25	0.00	0.04
0.05	0.05	0.04	0.0	1.64	0.56	1.56	0.00	0.05
0.06	0.06	0.06	0.0	1.97	0.63	1.88	0.01	0.07
0.07	0.07	0.08	0.1	2.30	0.70	2.19	0.01	0.08
0.08	0.08	0.10	0.1	2.63	0.77	2.50	0.01	0.09
0.09	0.09	0.13	0.1	2.96	0.83	2.81	0.01	0.10
0.10	0.10	0.16	0.1	3.29	0.89	3.13	0.01	0.11
0.11	0.11	0.19	0.2	3.62	0.95	3.44	0.01	0.12
0.12	0.12	0.23	0.2	3.95	1.00	3.75	0.02	0.14
0.13	0.13	0.26	0.3	4.28	1.06	4.07	0.02	0.15
0.14	0.14	0.31	0.3	5.15	1.04	4.93	0.02	0.16
0.15	0.15	0.36	0.4	6.03	1.04	5.79	0.02	0.17
0.16	0.16	0.43	0.4	6.91	1.06	6.65	0.02	0.18
0.17	0.17	0.50	0.5	7.79	1.08	7.51	0.02	0.19
0.18	0.18	0.58	0.6	8.67	1.11	8.38	0.02	0.20
0.19	0.19	0.66	0.8	9.54	1.14	9.24	0.02	0.21
0.20	0.20	0.76	0.9	10.42	1.18	10.10	0.02	0.22
0.21	0.21	0.87	1.1	11.30	1.22	10.96	0.02	0.23
0.22	0.22	0.98	1.2	12.18	1.26	11.83	0.02	0.24
0.23	0.23	1.10	1.4	13.06	1.30	12.69	0.03	0.26
0.24	0.24	1.23	1.7	13.93	1.34	13.55	0.03	0.27
0.25	0.25	1.37	1.9	14.81	1.39	14.41	0.03	0.28
0.26	0.26	1.52	2.2	15.69	1.43	15.27	0.03	0.29
0.27	0.27	1.68	2.5	16.57	1.47	16.14	0.03	0.30
0.28	0.28	1.84	2.8	17.45	1.51	17.00	0.04	0.32
0.29	0.29	2.02	3.1	18.32	1.56	17.86	0.04	0.33
0.30	0.30	2.20	3.5	19.20	1.60	18.72	0.04	0.34
0.31	0.31	2.39	3.9	20.08	1.64	19.59	0.04	0.35
0.32	0.32	2.59	4.4	20.96	1.68	20.45	0.04	0.36
0.33	0.33	2.80	4.8	21.84	1.72	21.31	0.05	0.38
0.34	0.34	3.02	5.3	22.71	1.76	22.17	0.05	0.39
0.35	0.35	3.25	5.9	23.59	1.80	23.03	0.05	0.40
0.36	0.36	3.48	6.4	24.47	1.84	23.90	0.05	0.41
0.37	0.37	3.72	7.0	25.35	1.88	24.76	0.06	0.43
0.38	0.38	3.98	7.7	26.23	1.92	25.62	0.06	0.44
0.39	0.39	4.24	8.3	27.10	1.96	26.48	0.06	0.45
0.40	0.40	4.50	9.0	27.98	2.00	27.35	0.06	0.46
0.41	0.41	4.78	9.8	28.86	2.04	28.21	0.06	0.47
0.42	0.42	5.06	10.7	28.88	2.12	28.21	0.07	0.49
0.43	0.43	5.35	11.8	28.90	2.20	28.22	0.08	0.51

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.45	0.45	5.91	13.9	28.94	2.35	28.23	0.09	0.54
0.46	0.46	6.19	15.0	28.96	2.42	28.23	0.09	0.55
0.47	0.47	6.48	16.1	28.98	2.49	28.24	0.10	0.57
0.48	0.48	6.76	17.3	29.01	2.56	28.24	0.10	0.58
0.49	0.49	7.04	18.5	29.03	2.63	28.25	0.11	0.60
0.50	0.50	7.32	19.8	29.05	2.70	28.25	0.11	0.61
0.51	0.51	7.61	21.1	29.07	2.77	28.26	0.12	0.63
0.52	0.52	7.89	22.4	29.09	2.84	28.26	0.12	0.64
0.53	0.53	8.17	23.7	29.11	2.90	28.27	0.13	0.66
0.54	0.54	8.45	25.1	29.13	2.97	28.27	0.14	0.68
0.55	0.55	8.74	26.5	29.15	3.03	28.28	0.14	0.69
0.56	0.56	9.02	27.9	29.17	3.10	28.28	0.15	0.71
0.57	0.57	9.30	29.4	29.19	3.16	28.29	0.15	0.72
0.58	0.58	9.59	30.9	29.21	3.22	28.29	0.16	0.74
0.59	0.59	9.87	32.4	29.23	3.28	28.30	0.17	0.76
0.60	0.60	10.15	33.9	29.25	3.34	28.30	0.17	0.77
0.61	0.61	10.43	35.5	29.27	3.40	28.31	0.18	0.79
0.62	0.62	10.72	37.1	29.29	3.46	28.31	0.19	0.81
0.63	0.63	11.00	38.8	29.31	3.52	28.32	0.19	0.82
0.64	0.64	11.28	40.4	29.34	3.58	28.32	0.20	0.84
0.65	0.65	11.57	42.1	29.36	3.64	28.33	0.21	0.86
0.66	0.66	11.85	43.8	29.38	3.70	28.33	0.21	0.87
0.67	0.67	12.13	45.5	29.40	3.75	28.34	0.22	0.89
0.68	0.68	12.42	46.3	30.44	3.72	30.30	0.22	0.90
0.69	0.69	12.72	47.1	31.49	3.70	31.34	0.21	0.90
0.70	0.70	13.06	47.2	33.45	3.62	32.39	0.20	0.90
0.71	0.71	13.39	48.2	34.50	3.60	33.44	0.20	0.91
0.72	0.72	13.73	49.3	35.54	3.59	34.48	0.20	0.92
0.73	0.73	14.08	50.4	36.59	3.58	35.53	0.20	0.93
0.74	0.74	14.44	51.6	37.64	3.57	36.58	0.20	0.94
0.75	0.75	14.81	52.9	38.68	3.57	37.62	0.20	0.95
0.76	0.76	15.19	54.2	39.73	3.57	38.67	0.20	0.96
0.77	0.77	15.58	55.6	40.78	3.57	39.72	0.20	0.97
0.78	0.78	15.98	57.0	41.83	3.57	40.77	0.20	0.98
0.79	0.79	16.40	58.5	42.87	3.57	41.81	0.20	0.99
0.80	0.80	16.82	60.1	43.92	3.57	42.86	0.20	1.00
0.81	0.81	17.25	61.7	44.97	3.58	43.91	0.20	1.01
0.82	0.82	17.70	63.4	46.01	3.58	44.95	0.20	1.02
0.83	0.83	18.15	65.1	47.06	3.59	46.00	0.20	1.03

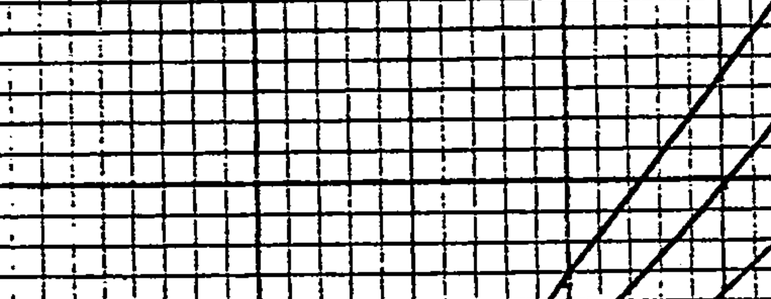
STD CURB LIMIT



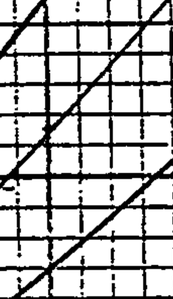
EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

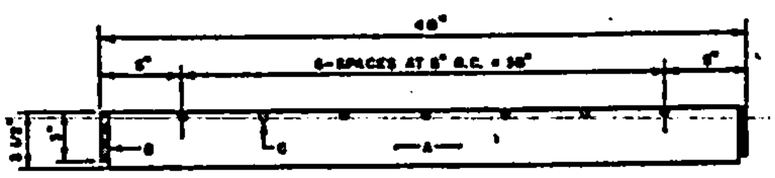
1) $Q = 0.6A\sqrt{2gh} + 3.3(5')h^{1.5}$

2) & 3) $Q = 3.3\,Ph^{1.5}$



PLAN





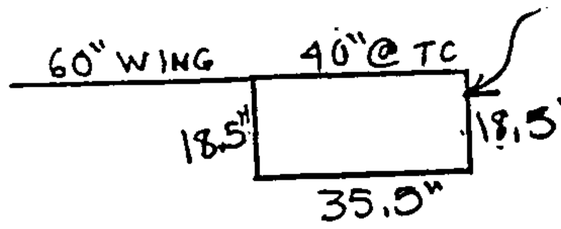
SECTION A-A

BOHANNAN-HUSTON INC.

PROJECT NAME Los Valles Dr Sump SHEET ____ OF ____

PROJECT NO. North of Los Cerros BY JPK DATE 4/9/92

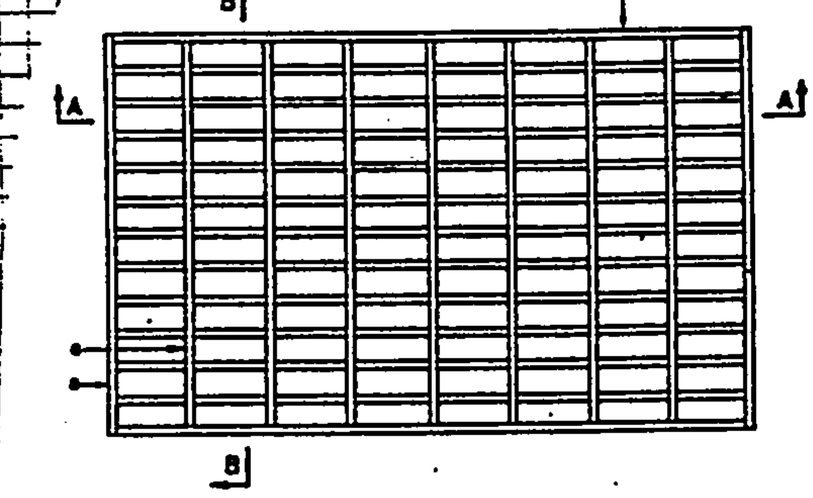
SUBJECT Rating Curve for Type A Inlets CH'D ____ DATE B.23

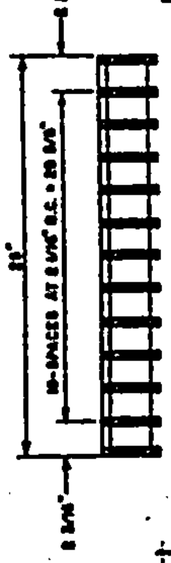


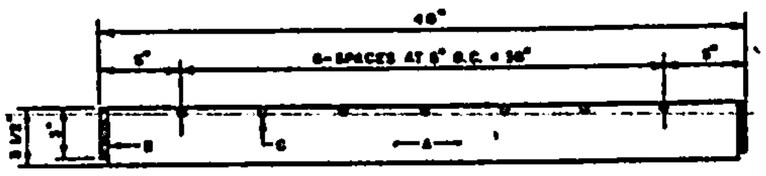
EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6\,A\sqrt{2gh} + 3.3(5')\,h^{1.5}$

2) & 3) $Q = 3.3\,P\,h^{1.5}$







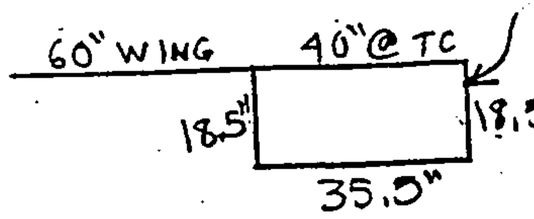
BOHANNAN-HUSTON INC.

PROJECT NAME Los Valles Dr Sump SHEET ____ OF ____

PROJECT NO. North of Los Cerros 2x100 YR BY JPK DATE 4/9/92

SUBJECT Rating Curve for Type A Inlets CH'D ____ DATE ____

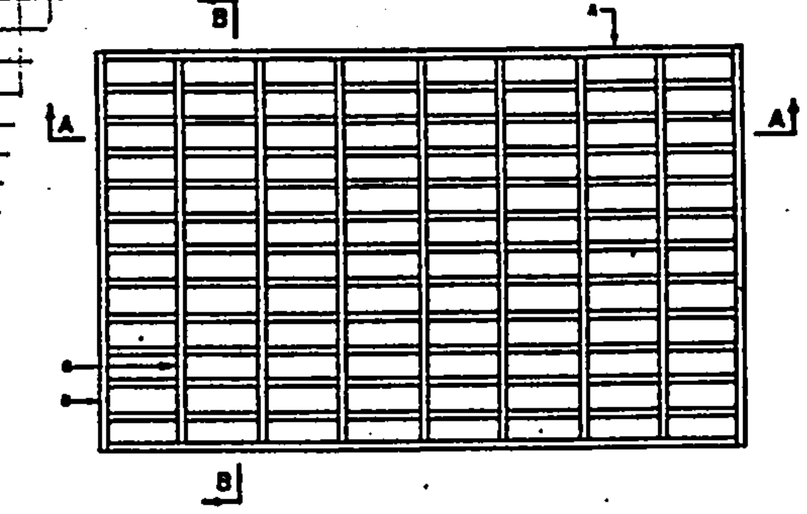
B-24



EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6A\sqrt{2gh} + 3.3(5')h^{1.5}$

2) & 3) $Q = 3.3\,Ph^{1.5}$

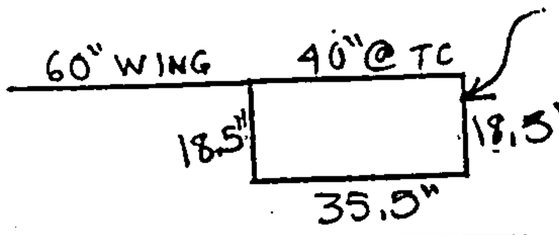


BOHANNAN-HUSTON INC.

PROJECT NAME Los Valles Dr Sump SHEET _____ OF _____

PROJECT NO. South of Los Cerros BY JPK DATE 4/9/92

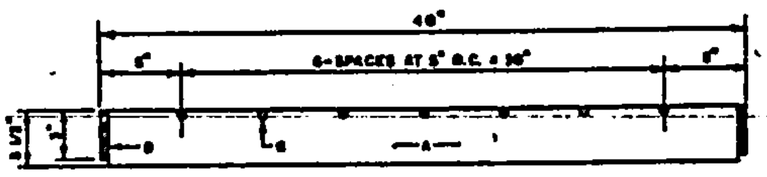
SUBJECT Rating Curve for Type A Inlets CH'D _____ DATE B-25

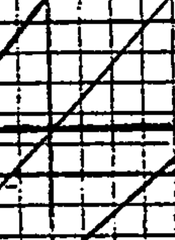


EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6A\sqrt{2gh} + 3.3(5')h^{1.5}$

2) & 3) $Q = 3.3\,Ph^{1.5}$





GRATE CAPACITY (Q) IN CFS

90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4

TC 0.83'

HEAD (h) IN FEET

TRIPLE GRATE

DOUBLE GRATE

SINGLE GRATE

BOHANNAN-HUSTON INC.

PROJECT NAME Los Valles Dr Sump 2x100YR SHEET ____ OF ____

PROJECT NO. South of Los Cerros BY JPK DATE 4/9/92

SUBJECT RATING CURVE FOR TYPE A INLETS CH'D ____ DATE B-26

Los Riscos Rd

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

MANNING'S N= .017 SLOPE= .0056

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.83	5	11.00	0.13	9	37.17	0.67
2	8.38	0.67	6	23.00	0.41	10	37.63	0.67
3	8.83	0.67	7	35.00	0.13	11	46.00	0.83
4	9.00	0.00	8	37.00	0.00	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.01	0.01	0.00	0.0	0.33	0.18	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.29	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.38	0.94	0.00	0.03
0.04	0.04	0.03	0.0	1.32	0.47	1.25	0.00	0.04
0.05	0.05	0.04	0.0	1.64	0.54	1.56	0.00	0.05
0.06	0.06	0.06	0.0	1.97	0.61	1.88	0.01	0.07
0.07	0.07	0.08	0.1	2.30	0.68	2.19	0.01	0.08
0.08	0.08	0.10	0.1	2.63	0.74	2.50	0.01	0.09
0.09	0.09	0.13	0.1	2.96	0.80	2.81	0.01	0.10
0.10	0.10	0.16	0.1	3.29	0.86	3.13	0.01	0.11
0.11	0.11	0.19	0.2	3.62	0.91	3.44	0.01	0.12
0.12	0.12	0.23	0.2	3.95	0.97	3.75	0.01	0.13
0.13	0.13	0.26	0.3	4.28	1.02	4.07	0.02	0.15
0.14	0.14	0.31	0.3	5.15	1.00	4.93	0.02	0.16
0.15	0.15	0.36	0.4	6.03	1.00	5.79	0.02	0.17
0.16	0.16	0.43	0.4	6.91	1.02	6.65	0.02	0.18
0.17	0.17	0.50	0.5	7.79	1.04	7.51	0.02	0.19
0.18	0.18	0.58	0.6	8.67	1.07	8.38	0.02	0.20
0.19	0.19	0.66	0.7	9.54	1.11	9.24	0.02	0.21
0.20	0.20	0.76	0.9	10.42	1.14	10.10	0.02	0.22
0.21	0.21	0.87	1.0	11.30	1.18	10.96	0.02	0.23
0.22	0.22	0.98	1.2	12.18	1.22	11.83	0.02	0.24
0.23	0.23	1.10	1.4	13.06	1.26	12.69	0.02	0.25
0.24	0.24	1.23	1.6	13.93	1.30	13.55	0.03	0.27
0.25	0.25	1.37	1.8	14.81	1.34	14.41	0.03	0.28
0.26	0.26	1.52	2.1	15.69	1.38	15.27	0.03	0.29
0.27	0.27	1.68	2.4	16.57	1.42	16.14	0.03	0.30
0.28	0.28	1.84	2.7	17.45	1.46	17.00	0.03	0.31
0.29	0.29	2.02	3.0	18.32	1.50	17.86	0.04	0.33
0.30	0.30	2.20	3.4	19.20	1.54	18.72	0.04	0.34
0.31	0.31	2.39	3.8	20.08	1.58	19.59	0.04	0.35
0.32	0.32	2.59	4.2	20.96	1.62	20.45	0.04	0.36
0.33	0.33	2.80	4.7	21.84	1.66	21.31	0.04	0.37
0.34	0.34	3.02	5.1	22.71	1.70	22.17	0.05	0.39
0.35	0.35	3.25	5.7	23.59	1.74	23.03	0.05	0.40
0.36	0.36	3.48	6.2	24.47	1.78	23.90	0.05	0.41
0.37	0.37	3.72	6.8	25.35	1.82	24.76	0.05	0.42
0.38	0.38	3.98	7.4	26.23	1.86	25.62	0.05	0.43
0.39	0.39	4.24	8.0	27.10	1.90	26.48	0.06	0.45
0.40	0.40	4.50	8.7	27.98	1.94	27.35	0.06	0.46
0.41	0.41	4.78	9.4	28.86	1.97	28.21	0.06	0.47
0.42	0.42	5.06	10.4	28.88	2.05	28.21	0.07	0.49
0.43	0.43	5.35	11.4	28.90	2.12	28.22	0.07	0.50

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)	
0.45	0.45	5.91	13.4	28.94	2.27	28.23	0.08	0.53	
0.46	0.46	6.19	14.5	28.96	2.34	28.23	0.08	0.54	
0.47	0.47	6.48	15.6	28.98	2.41	28.24	0.09	0.56	
0.48	0.48	6.76	16.7	29.01	2.48	28.24	0.10	0.58	
0.49	0.49	7.04	17.9	29.03	2.54	28.25	0.10	0.59	Q_{100}
0.50	0.50	7.32	19.1	29.05	2.61	28.25	0.11	0.61	
0.51	0.51	7.61	20.4	29.07	2.68	28.26	0.11	0.62	
0.52	0.52	7.89	21.6	29.09	2.74	28.26	0.12	0.64	
0.53	0.53	8.17	22.9	29.11	2.80	28.27	0.12	0.65	
0.54	0.54	8.45	24.2	29.13	2.87	28.27	0.13	0.67	
0.55	0.55	8.74	25.6	29.15	2.93	28.28	0.13	0.68	
0.56	0.56	9.02	27.0	29.17	2.99	28.28	0.14	0.70	
0.57	0.57	9.30	28.4	29.19	3.05	28.29	0.14	0.71	
0.58	0.58	9.59	29.8	29.21	3.11	28.29	0.15	0.73	
0.59	0.59	9.87	31.3	29.23	3.17	28.30	0.16	0.75	
0.60	0.60	10.15	32.8	29.25	3.23	28.30	0.16	0.76	
0.61	0.61	10.43	34.3	29.27	3.29	28.31	0.17	0.78	
0.62	0.62	10.72	35.9	29.29	3.35	28.31	0.17	0.79	
0.63	0.63	11.00	37.4	29.31	3.40	28.32	0.18	0.81	
0.64	0.64	11.28	39.0	29.34	3.46	28.32	0.19	0.83	
0.65	0.65	11.57	40.7	29.36	3.52	28.33	0.19	0.84	STD CURB LIMIT
0.66	0.66	11.85	42.3	29.38	3.57	28.33	0.20	0.86	
0.67	0.67	12.13	44.0	29.40	3.63	28.34	0.20	0.87	
0.68	0.68	12.42	44.7	30.44	3.60	30.30	0.20	0.88	
0.69	0.69	12.72	45.5	31.49	3.57	31.34	0.20	0.89	
0.70	0.70	13.06	45.6	33.45	3.49	32.39	0.19	0.89	
0.71	0.71	13.39	46.6	34.50	3.48	33.44	0.19	0.90	
0.72	0.72	13.73	47.6	35.54	3.47	34.48	0.19	0.91	
0.73	0.73	14.08	48.7	36.59	3.46	35.53	0.19	0.92	
0.74	0.74	14.44	49.9	37.64	3.45	36.58	0.19	0.93	
0.75	0.75	14.81	51.1	38.68	3.45	37.62	0.18	0.93	
0.76	0.76	15.19	52.3	39.73	3.45	38.67	0.18	0.94	
0.77	0.77	15.58	53.7	40.78	3.44	39.72	0.18	0.95	
0.78	0.78	15.98	55.1	41.83	3.44	40.77	0.18	0.96	
0.79	0.79	16.40	56.5	42.87	3.45	41.81	0.18	0.97	
0.80	0.80	16.82	58.0	43.92	3.45	42.86	0.18	0.98	
0.81	0.81	17.25	59.6	44.97	3.45	43.91	0.19	1.00	
0.82	0.82	17.70	61.2	46.01	3.46	44.95	0.19	1.01	
0.83	0.83	18.15	62.9	47.06	3.47	46.00	0.19	1.02	

LAS CRESTAS DRIVE

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

MANNING'S N= .017 SLOPE= .0056

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.83	5	11.00	0.13	9	37.17	0.67
2	8.38	0.67	6	23.00	0.41	10	37.63	0.67
3	8.83	0.67	7	35.00	0.13	11	46.00	0.83
4	9.00	0.00	8	37.00	0.00	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)	
0.01	0.01	0.00	0.0	0.33	0,18	0.31	0.00	0.01	
0.02	0.02	0.01	0.0	0.66	0.29	0.63	0.00	0.02	
0.03	0.03	0.01	0.0	0.99	0.38	0.94	0.00	0.03	
0.04	0.04	0.03	0.0	1.32	0.47	1.25	0.00	0.04	
0.05	0.05	0.04	0.0	1.64	0.54	1.56	0.00	0.05	
0.06	0.06	0.06	0.0	1.97	0.61	1.88	0.01	0.07	
0.07	0.07	0.08	0.1	2.30	0.68	2.19	0.01	0.08	
0.08	0.08	0.10	0.1	2.63	0.74	2.50	0.01	0.09	
0.09	0.09	0.13	0.1	2.96	0.80	2.81	0.01	0.10	
0.10	0.10	0.16	0.1	3.29	0.86	3.13	0.01	0.11	
0.11	0.11	0.19	0.2	3.62	0.91	3.44	0.01	0.12	
0.12	0.12	0.23	0.2	3.95	0.97	3.75	0.01	0.13	
0.13	0.13	0.26	0.3	4.28	1.02	4.07	0.02	0.15	
0.14	0.14	0.31	0.3	5.15	1.00	4.93	0.02	0.16	
0.15	0.15	0.36	0.4	6.03	1.00	5.79	0.02	0.17	
0.16	0.16	0.43	0.4	6.91	1.02	6.65	0.02	0.18	
0.17	0.17	0.50	0.5	7.79	1.04	7.51	0.02	0.19	
0.18	0.18	0.58	0.6	8.67	1.07	8.38	0.02	0.20	
0.19	0.19	0.66	0.7	9.54	1.11	9.24	0.02	0.21	
0.20	0.20	0.76	0.9	10.42	1.14	10.10	0.02	0.22	
0.21	0.21	0.87	1.0	11.30	1.18	10.96	0.02	0.23	
0.22	0.22	0.98	1.2	12.18	1.22	11.83	0.02	0.24	
0.23	0.23	1.10	1.4	13.06	1.26	12.69	0.02	0.25	
0.24	0.24	1.23	1.6	13.93	1.30	13.55	0.03	0.27	
0.25	0.25	1.37	1.8	14.81	1.34	14.41	0.03	0.28	
0.26	0.26	1.52	2.1	15.69	1.38	15.27	0.03	0.29	
0.27	0.27	1.68	2.4	16.57	1.42	16.14	0.03	0.30	
0.28	0.28	1.84	2.7	17.45	1.46	17.00	0.03	0.31	Q_{100}
0.29	0.29	2.02	3.0	18.32	1.50	17.86	0.04	0.33	
0.30	0.30	2.20	3.4	19.20	1.54	18.72	0.04	0.34	
0.31	0.31	2.39	3.8	20.08	1.58	19.59	0.04	0.35	
0.32	0.32	2.59	4.2	20.96	1.62	20.45	0.04	0.36	
0.33	0.33	2.80	4.7	21.84	1.66	21.31	0.04	0.37	ROLL CURB LIMIT
0.34	0.34	3.02	5.1	22.71	1.70	22.17	0.05	0.39	
0.35	0.35	3.25	5.7	23.59	1.74	23.03	0.05	0.40	
0.36	0.36	3.48	6.2	24.47	1.78	23.90	0.05	0.41	
0.37	0.37	3.72	6.8	25.35	1.82	24.76	0.05	0.42	
0.38	0.38	3.98	7.4	26.23	1.86	25.62	0.05	0.43	
0.39	0.39	4.24	8.0	27.10	1.90	26.48	0.06	0.45	
0.40	0.40	4.50	8.7	27.98	1.94	27.35	0.06	0.46	
0.41	0.41	4.78	9.4	28.86	1.97	28.21	0.06	0.47	
0.42	0.42	5.06	10.4	28.88	2.05	28.21	0.07	0.49	
0.43	0.43	5.35	11.4	28.90	2.12	28.22	0.07	0.50	

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.45	0.45	5.91	13.4	28.94	2.27	28.23	0.08	0.53
0.46	0.46	6.19	14.5	28.96	2.34	28.23	0.08	0.54
0.47	0.47	6.48	15.6	28.98	2.41	28.24	0.09	0.56
0.48	0.48	6.76	16.7	29.01	2.48	28.24	0.10	0.58
0.49	0.49	7.04	17.9	29.03	2.54	28.25	0.10	0.59
0.50	0.50	7.32	19.1	29.05	2.61	28.25	0.11	0.61
0.51	0.51	7.61	20.4	29.07	2.68	28.26	0.11	0.62
0.52	0.52	7.89	21.6	29.09	2.74	28.26	0.12	0.64
0.53	0.53	8.17	22.9	29.11	2.80	28.27	0.12	0.65
0.54	0.54	8.45	24.2	29.13	2.87	28.27	0.13	0.67
0.55	0.55	8.74	25.6	29.15	2.93	28.28	0.13	0.68
0.56	0.56	9.02	27.0	29.17	2.99	28.28	0.14	0.70
0.57	0.57	9.30	28.4	29.19	3.05	28.29	0.14	0.71
0.58	0.58	9.59	29.8	29.21	3.11	28.29	0.15	0.73
0.59	0.59	9.87	31.3	29.23	3.17	28.30	0.16	0.75
0.60	0.60	10.15	32.8	29.25	3.23	28.30	0.16	0.76
0.61	0.61	10.43	34.3	29.27	3.29	28.31	0.17	0.78
0.62	0.62	10.72	35.9	29.29	3.35	28.31	0.17	0.79
0.63	0.63	11.00	37.4	29.31	3.40	28.32	0.18	0.81
0.64	0.64	11.28	39.0	29.34	3.46	28.32	0.19	0.83
0.65	0.65	11.57	40.7	29.36	3.52	28.33	0.19	0.84
0.66	0.66	11.85	42.3	29.38	3.57	28.33	0.20	0.86
0.67	0.67	12.13	44.0	29.40	3.63	28.34	0.20	0.87
0.68	0.68	12.42	44.7	30.44	3.60	30.30	0.20	0.88
0.69	0.69	12.72	45.5	31.49	3.57	31.34	0.20	0.89
0.70	0.70	13.06	45.6	33.45	3.49	32.39	0.19	0.89
0.71	0.71	13.39	46.6	34.50	3.48	33.44	0.19	0.90
0.72	0.72	13.73	47.6	35.54	3.47	34.48	0.19	0.91
0.73	0.73	14.08	48.7	36.59	3.46	35.53	0.19	0.92
0.74	0.74	14.44	49.9	37.64	3.45	36.58	0.19	0.93
0.75	0.75	14.81	51.1	38.68	3.45	37.62	0.18	0.93
0.76	0.76	15.19	52.3	39.73	3.45	38.67	0.18	0.94
0.77	0.77	15.58	53.7	40.78	3.44	39.72	0.18	0.95
0.78	0.78	15.98	55.1	41.83	3.44	40.77	0.18	0.96
0.79	0.79	16.40	56.5	42.87	3.45	41.81	0.18	0.97
0.80	0.80	16.82	58.0	43.92	3.45	42.86	0.18	0.98
0.81	0.81	17.25	59.6	44.97	3.45	43.91	0.19	1.00
0.82	0.82	17.70	61.2	46.01	3.46	44.95	0.19	1.01
0.83	0.83	18.15	62.9	47.06	3.47	46.00	0.19	1.02

Los Ritos Court

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

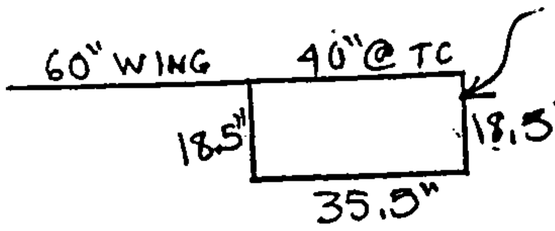
MANNING'S N= .017 SLOPE= .01

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.83	5	11.00	0.13	9	37.17	0.67
2	8.38	0.67	6	23.00	0.41	10	37.63	0.67
3	8.83	0.67	7	35.00	0.13	11	46.00	0.83
4	9.00	0.00	8	37.00	0.00	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)	
0.01	0.01	0.00	0.0	0.33	0.25	0.31	0.00	0.01	
0.02	0.02	0.01	0.0	0.66	0.39	0.63	0.00	0.02	
0.03	0.03	0.01	0.0	0.99	0.51	0.94	0.00	0.03	
0.04	0.04	0.03	0.0	1.32	0.62	1.25	0.01	0.05	
0.05	0.05	0.04	0.0	1.64	0.72	1.56	0.01	0.06	
0.06	0.06	0.06	0.0	1.97	0.82	1.88	0.01	0.07	
0.07	0.07	0.08	0.1	2.30	0.90	2.19	0.01	0.08	
0.08	0.08	0.10	0.1	2.63	0.99	2.50	0.02	0.10	
0.09	0.09	0.13	0.1	2.96	1.07	2.81	0.02	0.11	
0.10	0.10	0.16	0.2	3.29	1.15	3.13	0.02	0.12	
0.11	0.11	0.19	0.2	3.62	1.22	3.44	0.02	0.13	
0.12	0.12	0.23	0.3	3.95	1.30	3.75	0.03	0.15	
0.13	0.13	0.26	0.4	4.28	1.37	4.07	0.03	0.16	
0.14	0.14	0.31	0.4	5.15	1.34	4.93	0.03	0.17	
0.15	0.15	0.36	0.5	6.03	1.34	5.79	0.03	0.18	
0.16	0.16	0.43	0.6	6.91	1.36	6.65	0.03	0.19	
0.17	0.17	0.50	0.7	7.79	1.39	7.51	0.03	0.20	
0.18	0.18	0.58	0.8	8.67	1.43	8.38	0.03	0.21	
0.19	0.19	0.66	1.0	9.54	1.48	9.24	0.03	0.22	
0.20	0.20	0.76	1.2	10.42	1.53	10.10	0.04	0.24	
0.21	0.21	0.87	1.4	11.30	1.58	10.96	0.04	0.25	
0.22	0.22	0.98	1.6	12.18	1.63	11.83	0.04	0.26	
0.23	0.23	1.10	1.9	13.06	1.68	12.69	0.04	0.27	
0.24	0.24	1.23	2.1	13.93	1.74	13.55	0.05	0.29	
0.25	0.25	1.37	2.5	14.81	1.79	14.41	0.05	0.30	
0.26	0.26	1.52	2.8	15.69	1.84	15.27	0.05	0.31	
0.27	0.27	1.68	3.2	16.57	1.90	16.14	0.06	0.33	
0.28	0.28	1.84	3.6	17.45	1.95	17.00	0.06	0.34	
0.29	0.29	2.02	4.1	18.32	2.01	17.86	0.06	0.35	
0.30	0.30	2.20	4.5	19.20	2.06	18.72	0.07	0.37	
0.31	0.31	2.39	5.1	20.08	2.12	19.59	0.07	0.38	
0.32	0.32	2.59	5.6	20.96	2.17	20.45	0.07	0.39	
0.33	0.33	2.80	6.2	21.84	2.22	21.31	0.08	0.41	ROLL CURB LIMIT
0.34	0.34	3.02	6.9	22.71	2.28	22.17	0.08	0.42	
0.35	0.35	3.25	7.6	23.59	2.33	23.03	0.08	0.43	
0.36	0.36	3.48	8.3	24.47	2.38	23.90	0.09	0.45	
0.37	0.37	3.72	9.1	25.35	2.43	24.76	0.09	0.46	
0.38	0.38	3.98	9.9	26.23	2.48	25.62	0.10	0.48	
0.39	0.39	4.24	10.7	27.10	2.54	26.48	0.10	0.49	
0.40	0.40	4.50	11.7	27.98	2.59	27.35	0.10	0.50	Q_{100}
0.41	0.41	4.78	12.6	28.86	2.64	28.21	0.11	0.52	
0.42	0.42	5.06	13.9	28.88	2.74	28.21	0.12	0.54	
0.43	0.43	5.35	15.2	28.90	2.84	28.22	0.13	0.56	

☐ WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.45	0.45	5.91	17.9	28.94	3.03	28.23	0.14	0.59
0.46	0.46	6.19	19.4	28.96	3.13	28.23	0.15	0.61
0.47	0.47	6.48	20.8	28.98	3.22	28.24	0.16	0.63
0.48	0.48	6.76	22.4	29.01	3.31	28.24	0.17	0.65
0.49	0.49	7.04	23.9	29.03	3.40	28.25	0.18	0.67
0.50	0.50	7.32	25.5	29.05	3.49	28.25	0.19	0.69
0.51	0.51	7.61	27.2	29.07	3.58	28.26	0.20	0.71
0.52	0.52	7.89	28.9	29.09	3.66	28.26	0.21	0.73
0.53	0.53	8.17	30.6	29.11	3.75	28.27	0.22	0.75
0.54	0.54	8.45	32.4	29.13	3.83	28.27	0.23	0.77
0.55	0.55	8.74	34.2	29.15	3.91	28.28	0.24	0.79
0.56	0.56	9.02	36.1	29.17	4.00	28.28	0.25	0.81
0.57	0.57	9.30	37.9	29.19	4.08	28.29	0.26	0.83
0.58	0.58	9.59	39.9	29.21	4.16	28.29	0.27	0.85
0.59	0.59	9.87	41.8	29.23	4.24	28.30	0.28	0.87
0.60	0.60	10.15	43.8	29.25	4.32	28.30	0.29	0.89
0.61	0.61	10.43	45.9	29.27	4.39	28.31	0.30	0.91
0.62	0.62	10.72	47.9	29.29	4.47	28.31	0.31	0.93
0.63	0.63	11.00	50.0	29.31	4.55	28.32	0.32	0.95
0.64	0.64	11.28	52.2	29.34	4.62	28.32	0.33	0.97
0.65	0.65	11.57	54.3	29.36	4.70	28.33	0.34	0.99
0.66	0.66	11.85	56.6	29.38	4.77	28.33	0.35	1.01
0.67	0.67	12.13	58.8	29.40	4.85	28.34	0.36	1.03
0.68	0.68	12.42	59.7	30.44	4.81	30.30	0.36	1.04
0.69	0.69	12.72	60.8	31.49	4.78	31.34	0.35	1.04
0.70	0.70	13.06	61.0	33.45	4.67	32.39	0.34	1.04
0.71	0.71	13.39	62.3	34.50	4.65	33.44	0.34	1.05
0.72	0.72	13.73	63.6	35.54	4.64	34.48	0.33	1.05
0.73	0.73	14.08	65.1	36.59	4.62	35.53	0.33	1.06
0.74	0.74	14.44	66.6	37.64	4.61	36.58	0.33	1.07
0.75	0.75	14.81	68.2	38.68	4.61	37.62	0.33	1.08
0.76	0.76	15.19	69.9	39.73	4.60	38.67	0.33	1.09
0.77	0.77	15.58	71.7	40.78	4.60	39.72	0.33	1.10
0.78	0.78	15.98	73.6	41.83	4.60	40.77	0.33	1.11
0.79	0.79	16.40	75.5	42.87	4.61	41.81	0.33	1.12
0.80	0.80	16.82	77.5	43.92	4.61	42.86	0.33	1.13
0.81	0.81	17.25	79.6	44.97	4.62	43.91	0.33	1.14
0.82	0.82	17.70	81.8	46.01	4.62	44.95	0.33	1.15
0.83	0.83	18.15	84.1	47.06	4.63	46.00	0.33	1.16

STD CURB LIMIT

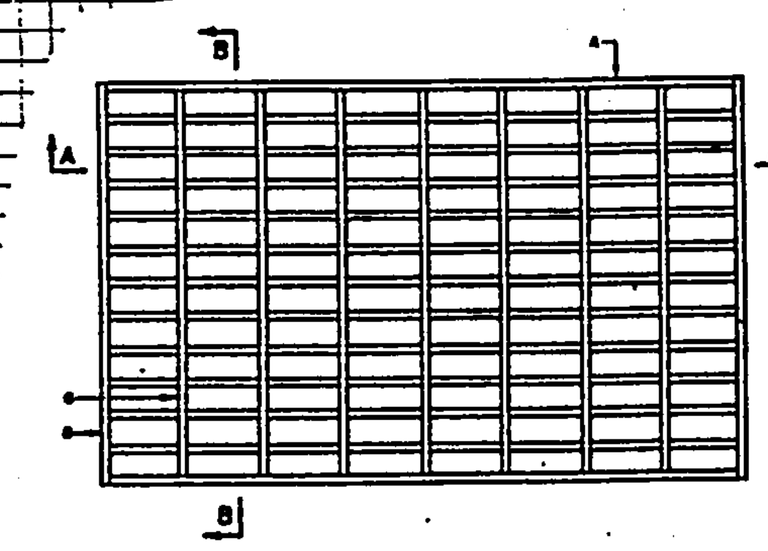


GRATE @ 10" (0.83') BELOW TC

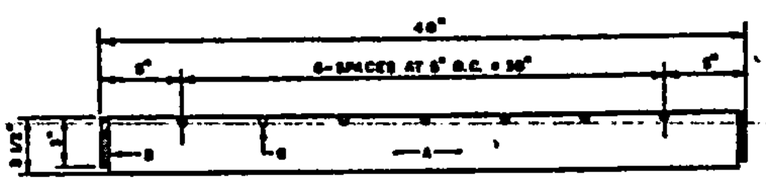
EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6A\sqrt{2gh} + 3.3(5')h^{1.5}$

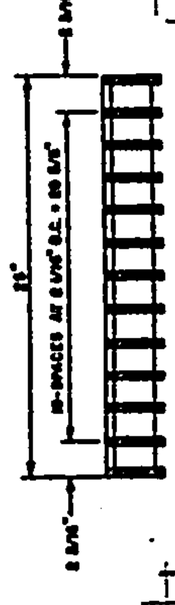
2) & 3) $Q = 3.3\,Ph^{1.5}$



PLAN



SECTION A-A



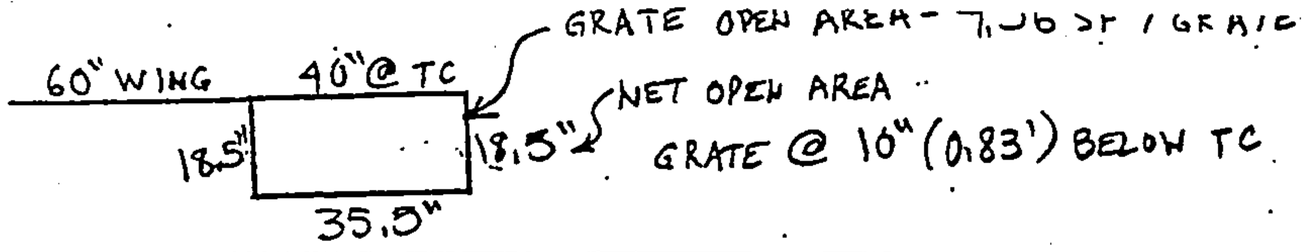
SECTION B-B

BOHANNAN-HUSTON INC.

PROJECT NAME Los Ritos Court SHEET ____ OF ____

PROJECT NO. SUMP BY JPK DATE 4/9/92

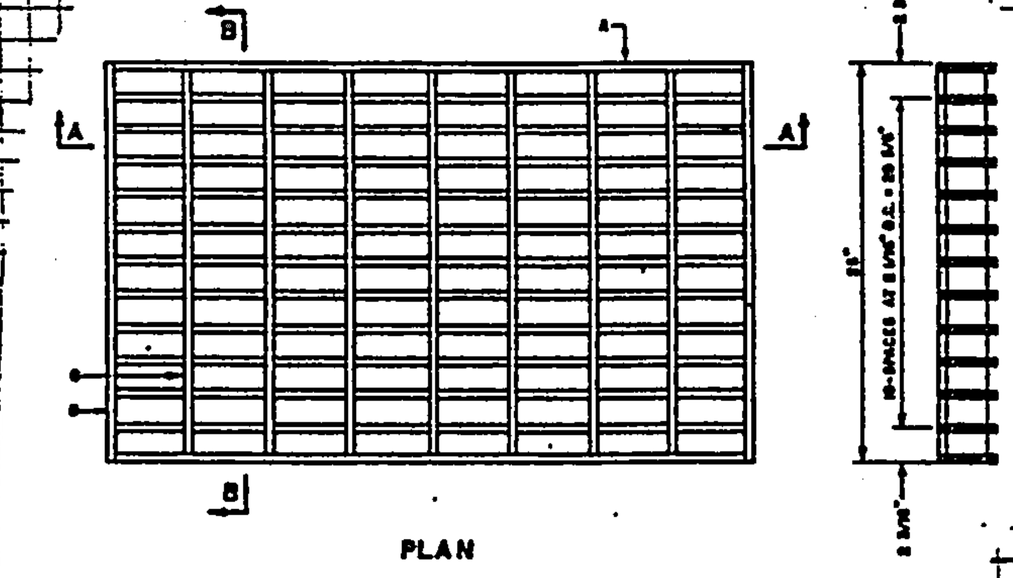
SUBJECT RATING CURVE FOR TYPE A INLETS CH'D ____ DATE B-33



EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6A\sqrt{2gh} + 3.3(5')h^{1.5}$

2) & 3) $Q = 3.3\,Ph^{1.5}$



BOHANNAN-HUSTON INC.

PROJECT NAME Los Ritos Court SHEET ____ OF ____

PROJECT NO. Sump 2x 100 YR BY JPK DATE 4/9/92

SUBJECT RATING CURVE FOR TYPE R INLETS CH'D DATE

LOS CADENAS ROAD

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

MANNING'S N= .017 SLOPE= .006

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.83	5	11.00	0.13	9	37.17	0.67
2	8.38	0.67	6	23.00	0.41	10	37.63	0.67
3	8.83	0.67	7	35.00	0.13	11	46.00	0.83
4	9.00	0.00	8	37.00	0.00	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.01	0.01	0.00	0.0	0.33	0.19	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.30	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.40	0.94	0.00	0.03
0.04	0.04	0.03	0.0	1.32	0.48	1.25	0.00	0.04
0.05	0.05	0.04	0.0	1.64	0.56	1.56	0.00	0.05
0.06	0.06	0.06	0.0	1.97	0.63	1.88	0.01	0.07
0.07	0.07	0.08	0.1	2.30	0.70	2.19	0.01	0.08
0.08	0.08	0.10	0.1	2.63	0.77	2.50	0.01	0.09
0.09	0.09	0.13	0.1	2.96	0.83	2.81	0.01	0.10
0.10	0.10	0.16	0.1	3.29	0.89	3.13	0.01	0.11
0.11	0.11	0.19	0.2	3.62	0.95	3.44	0.01	0.12
0.12	0.12	0.23	0.2	3.95	1.00	3.75	0.02	0.14
0.13	0.13	0.26	0.3	4.28	1.06	4.07	0.02	0.15
0.14	0.14	0.31	0.3	5.15	1.04	4.93	0.02	0.16
0.15	0.15	0.36	0.4	6.03	1.04	5.79	0.02	0.17
0.16	0.16	0.43	0.4	6.91	1.06	6.65	0.02	0.18
0.17	0.17	0.50	0.5	7.79	1.08	7.51	0.02	0.19
0.18	0.18	0.58	0.6	8.67	1.11	8.38	0.02	0.20
0.19	0.19	0.66	0.8	9.54	1.14	9.24	0.02	0.21
0.20	0.20	0.76	0.9	10.42	1.18	10.10	0.02	0.22
0.21	0.21	0.87	1.1	11.30	1.22	10.96	0.02	0.23
0.22	0.22	0.98	1.2	12.18	1.26	11.83	0.02	0.24
0.23	0.23	1.10	1.4	13.06	1.30	12.69	0.03	0.26
0.24	0.24	1.23	1.7	13.93	1.34	13.55	0.03	0.27
0.25	0.25	1.37	1.9	14.81	1.39	14.41	0.03	0.28
0.26	0.26	1.52	2.2	15.69	1.43	15.27	0.03	0.29
0.27	0.27	1.68	2.5	16.57	1.47	16.14	0.03	0.30
0.28	0.28	1.84	2.8	17.45	1.51	17.00	0.04	0.32
0.29	0.29	2.02	3.1	18.32	1.56	17.86	0.04	0.33
0.30	0.30	2.20	3.5	19.20	1.60	18.72	0.04	0.34
0.31	0.31	2.39	3.9	20.08	1.64	19.59	0.04	0.35
0.32	0.32	2.59	4.4	20.96	1.68	20.45	0.04	0.36
0.33	0.33	2.80	4.8	21.84	1.72	21.31	0.05	0.38
0.34	0.34	3.02	5.3	22.71	1.76	22.17	0.05	0.39
0.35	0.35	3.25	5.9	23.59	1.80	23.03	0.05	0.40
0.36	0.36	3.48	6.4	24.47	1.84	23.90	0.05	0.41
0.37	0.37	3.72	7.0	25.35	1.88	24.76	0.06	0.43
0.38	0.38	3.98	7.7	26.23	1.92	25.62	0.06	0.44
0.39	0.39	4.24	8.3	27.10	1.96	26.48	0.06	0.45
0.40	0.40	4.50	9.0	27.98	2.00	27.35	0.06	0.46
0.41	0.41	4.78	9.8	28.86	2.04	28.21	0.06	0.47
0.42	0.42	5.06	10.7	28.88	2.12	28.21	0.07	0.49
0.43	0.43	5.35	11.8	28.90	2.20	28.22	0.08	0.51

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)	
0.45	0.45	5.91	13.9	28.94	2.35	28.23	0.09	0.54	
0.46	0.46	6.19	15.0	28.96	2.42	28.23	0.09	0.55	
0.47	0.47	6.48	16.1	28.98	2.49	28.24	0.10	0.57	
0.48	0.48	6.76	17.3	29.01	2.56	28.24	0.10	0.58	
0.49	0.49	7.04	18.5	29.03	2.63	28.25	0.11	0.60	Q100
0.50	0.50	7.32	19.8	29.05	2.70	28.25	0.11	0.61	
0.51	0.51	7.61	21.1	29.07	2.77	28.26	0.12	0.63	
0.52	0.52	7.89	22.4	29.09	2.84	28.26	0.12	0.64	
0.53	0.53	8.17	23.7	29.11	2.90	28.27	0.13	0.66	
0.54	0.54	8.45	25.1	29.13	2.97	28.27	0.14	0.68	
0.55	0.55	8.74	26.5	29.15	3.03	28.28	0.14	0.69	
0.56	0.56	9.02	27.9	29.17	3.10	28.28	0.15	0.71	
0.57	0.57	9.30	29.4	29.19	3.16	28.29	0.15	0.72	
0.58	0.58	9.59	30.9	29.21	3.22	28.29	0.16	0.74	
0.59	0.59	9.87	32.4	29.23	3.28	28.30	0.17	0.76	
0.60	0.60	10.15	33.9	29.25	3.34	28.30	0.17	0.77	
0.61	0.61	10.43	35.5	29.27	3.40	28.31	0.18	0.79	
0.62	0.62	10.72	37.1	29.29	3.46	28.31	0.19	0.81	
0.63	0.63	11.00	38.8	29.31	3.52	28.32	0.19	0.82	
0.64	0.64	11.28	40.4	29.34	3.58	28.32	0.20	0.84	STD CURB LIMIT
0.65	0.65	11.57	42.1	29.36	3.64	28.33	0.21	0.86	
0.66	0.66	11.85	43.8	29.38	3.70	28.33	0.21	0.87	
0.67	0.67	12.13	45.5	29.40	3.75	28.34	0.22	0.89	
0.68	0.68	12.42	46.3	30.44	3.72	30.30	0.22	0.90	
0.69	0.69	12.72	47.1	31.49	3.70	31.34	0.21	0.90	
0.70	0.70	13.06	47.2	33.45	3.62	32.39	0.20	0.90	
0.71	0.71	13.39	48.2	34.50	3.60	33.44	0.20	0.91	
0.72	0.72	13.73	49.3	35.54	3.59	34.48	0.20	0.92	
0.73	0.73	14.08	50.4	36.59	3.58	35.53	0.20	0.93	
0.74	0.74	14.44	51.6	37.64	3.57	36.58	0.20	0.94	
0.75	0.75	14.81	52.9	38.68	3.57	37.62	0.20	0.95	
0.76	0.76	15.19	54.2	39.73	3.57	38.67	0.20	0.96	
0.77	0.77	15.58	55.6	40.78	3.57	39.72	0.20	0.97	
0.78	0.78	15.98	57.0	41.83	3.57	40.77	0.20	0.98	
0.79	0.79	16.40	58.5	42.87	3.57	41.81	0.20	0.99	
0.80	0.80	16.82	60.1	43.92	3.57	42.86	0.20	1.00	
0.81	0.81	17.25	61.7	44.97	3.58	43.91	0.20	1.01	
0.82	0.82	17.70	63.4	46.01	3.58	44.95	0.20	1.02	
0.83	0.83	18.15	65.1	47.06	3.59	46.00	0.20	1.03	

MESA VIENTO ROAD

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

MANNING'S N= .017 SLOPE= .005

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.83	5	11.00	0.13	9	37.17	0.67
2	8.38	0.67	6	23.00	0.41	10	37.63	0.67
3	8.83	0.67	7	35.00	0.13	11	46.00	0.83
4	9.00	0.00	8	37.00	0.00	12	0.00	0.00

WSEL	DEPTH INC	FLOW AREA	FLOW RATE	WETTED PER	FLOW VEL	TOPWID	VEL HEAD	ENERGY HEAD
(FT)	(FT)	SQ.FT.	(CFS)	(FT)	(FPS)	(FT)	(FT)	(FT)
0.01	0.01	0.00	0.0	0.33	0.17	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.28	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.36	0.94	0.00	0.03
0.04	0.04	0.03	0.0	1.32	0.44	1.25	0.00	0.04
0.05	0.05	0.04	0.0	1.64	0.51	1.56	0.00	0.05
0.06	0.06	0.06	0.0	1.97	0.58	1.88	0.01	0.07
0.07	0.07	0.08	0.0	2.30	0.64	2.19	0.01	0.08
0.08	0.08	0.10	0.1	2.63	0.70	2.50	0.01	0.09
0.09	0.09	0.13	0.1	2.96	0.76	2.81	0.01	0.10
0.10	0.10	0.16	0.1	3.29	0.81	3.13	0.01	0.11
0.11	0.11	0.19	0.2	3.62	0.86	3.44	0.01	0.12
0.12	0.12	0.23	0.2	3.95	0.92	3.75	0.01	0.13
0.13	0.13	0.26	0.3	4.28	0.97	4.07	0.01	0.14
0.14	0.14	0.31	0.3	5.15	0.95	4.93	0.01	0.15
0.15	0.15	0.36	0.3	6.03	0.95	5.79	0.01	0.16
0.16	0.16	0.43	0.4	6.91	0.96	6.65	0.01	0.17
0.17	0.17	0.50	0.5	7.79	0.99	7.51	0.02	0.19
0.18	0.18	0.58	0.6	8.67	1.01	8.38	0.02	0.20
0.19	0.19	0.66	0.7	9.54	1.04	9.24	0.02	0.21
0.20	0.20	0.76	0.8	10.42	1.08	10.10	0.02	0.22
0.21	0.21	0.87	1.0	11.30	1.11	10.96	0.02	0.23
0.22	0.22	0.98	1.1	12.18	1.15	11.83	0.02	0.24
0.23	0.23	1.10	1.3	13.06	1.19	12.69	0.02	0.25
0.24	0.24	1.23	1.5	13.93	1.23	13.55	0.02	0.26
0.25	0.25	1.37	1.7	14.81	1.27	14.41	0.02	0.27
0.26	0.26	1.52	2.0	15.69	1.30	15.27	0.03	0.29
0.27	0.27	1.68	2.3	16.57	1.34	16.14	0.03	0.30
0.28	0.28	1.84	2.5	17.45	1.38	17.00	0.03	0.31
0.29	0.29	2.02	2.9	18.32	1.42	17.86	0.03	0.32
0.30	0.30	2.20	3.2	19.20	1.46	18.72	0.03	0.33
0.31	0.31	2.39	3.6	20.08	1.50	19.59	0.03	0.34
0.32	0.32	2.59	4.0	20.96	1.53	20.45	0.04	0.36
0.33	0.33	2.80	4.4	21.84	1.57	21.31	0.04	0.37
0.34	0.34	3.02	4.9	22.71	1.61	22.17	0.04	0.38
0.35	0.35	3.25	5.3	23.59	1.65	23.03	0.04	0.39
0.36	0.36	3.48	5.9	24.47	1.68	23.90	0.04	0.40
0.37	0.37	3.72	6.4	25.35	1.72	24.76	0.05	0.42
0.38	0.38	3.98	7.0	26.23	1.76	25.62	0.05	0.43
0.39	0.39	4.24	7.6	27.10	1.79	26.48	0.05	0.44
0.40	0.40	4.50	8.2	27.98	1.83	27.35	0.05	0.45
0.41	0.41	4.78	8.9	28.86	1.86	28.21	0.05	0.46
0.42	0.42	5.06	9.8	28.88	1.94	28.21	0.06	0.48
0.43	0.43	5.35	10.7	28.90	2.01	28.22	0.06	0.49

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.45	0.45	5.91	12.7	28.94	2.14	28.23	0.07	0.52
0.46	0.46	6.19	13.7	28.96	2.21	28.23	0.08	0.54
0.47	0.47	6.48	14.7	28.98	2.28	28.24	0.08	0.55
0.48	0.48	6.76	15.8	29.01	2.34	28.24	0.09	0.57
0.49	0.49	7.04	16.9	29.03	2.40	28.25	0.09	0.58
0.50	0.50	7.32	18.1	29.05	2.47	28.25	0.09	0.59
0.51	0.51	7.61	19.2	29.07	2.53	28.26	0.10	0.61
0.52	0.52	7.89	20.4	29.09	2.59	28.26	0.10	0.62
0.53	0.53	8.17	21.7	29.11	2.65	28.27	0.11	0.64
0.54	0.54	8.45	22.9	29.13	2.71	28.27	0.11	0.65
0.55	0.55	8.74	24.2	29.15	2.77	28.28	0.12	0.67
0.56	0.56	9.02	25.5	29.17	2.83	28.28	0.12	0.68
0.57	0.57	9.30	26.8	29.19	2.88	28.29	0.13	0.70
0.58	0.58	9.59	28.2	29.21	2.94	28.29	0.13	0.71
0.59	0.59	9.87	29.6	29.23	3.00	28.30	0.14	0.73
0.60	0.60	10.15	31.0	29.25	3.05	28.30	0.14	0.74
0.61	0.61	10.43	32.4	29.27	3.11	28.31	0.15	0.76
0.62	0.62	10.72	33.9	29.29	3.16	28.31	0.16	0.78
0.63	0.63	11.00	35.4	29.31	3.22	28.32	0.16	0.79
0.64	0.64	11.28	36.9	29.34	3.27	28.32	0.17	0.81
0.65	0.65	11.57	38.4	29.36	3.32	28.33	0.17	0.82
0.66	0.66	11.85	40.0	29.38	3.37	28.33	0.18	0.84
0.67	0.67	12.13	41.6	29.40	3.43	28.34	0.18	0.85
0.68	0.68	12.42	42.2	30.44	3.40	30.30	0.18	0.86
0.69	0.69	12.72	43.0	31.49	3.38	31.34	0.18	0.87
0.70	0.70	13.06	43.1	33.45	3.30	32.39	0.17	0.87
0.71	0.71	13.39	44.0	34.50	3.29	33.44	0.17	0.88
0.72	0.72	13.73	45.0	35.54	3.28	34.48	0.17	0.89
0.73	0.73	14.08	46.0	36.59	3.27	35.53	0.17	0.90
0.74	0.74	14.44	47.1	37.64	3.26	36.58	0.17	0.91
0.75	0.75	14.81	48.3	38.68	3.26	37.62	0.16	0.91
0.76	0.76	15.19	49.5	39.73	3.26	38.67	0.16	0.92
0.77	0.77	15.58	50.7	40.78	3.25	39.72	0.16	0.93
0.78	0.78	15.98	52.0	41.83	3.26	40.77	0.16	0.94
0.79	0.79	16.40	53.4	42.87	3.26	41.81	0.16	0.95
0.80	0.80	16.82	54.8	43.92	3.26	42.86	0.17	0.97
0.81	0.81	17.25	56.3	44.97	3.26	43.91	0.17	0.98
0.82	0.82	17.70	57.9	46.01	3.27	44.95	0.17	0.99
0.83	0.83	18.15	59.5	47.06	3.28	46.00	0.17	1.00

STD CURB LIMIT

GRATE OPEN AREA - 7.06 SF / GRATE

60" WING | 40"@TC

18.5" | 18.5" ← NET OPEN AREA

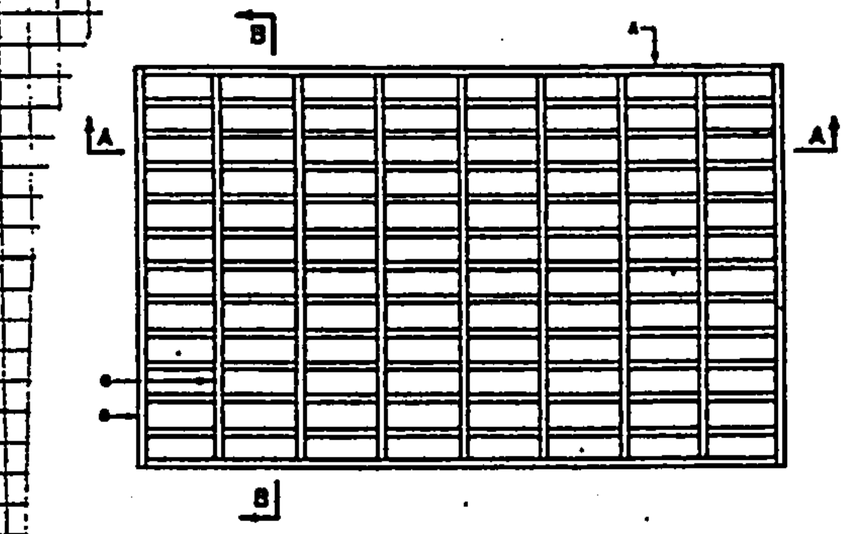
35.5"

GRATE @ 10" (0.83') BELOW TC

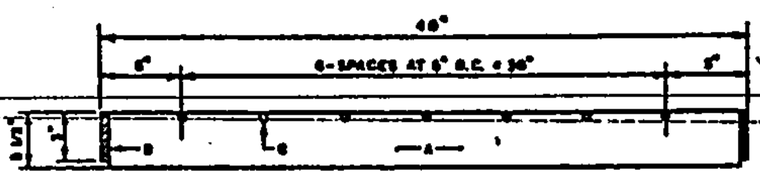
EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6\,A\sqrt{2gh} + 3.3(5')\,h^{1.5}$

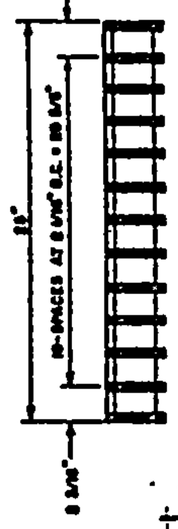
2) & 3) $Q = 3.3\,P\,h^{1.5}$



PLAN



SECTION A-A



SECTION B-B

BOHANNAN-HUSTON INC.

PROJECT NAME MESA VIENTO SUMP SHEET ____ OF ____

PROJECT NO. ____ BY JPK DATE 4/9/92

SUBJECT RATING CURVE FOR TYPE R INLETS CH'D ____ DATE B-39

GRATE OPEN AREA = 7.36 SF / GRATE

60" WING | 40"@TC

18.5" | 18.5" | 35.5"

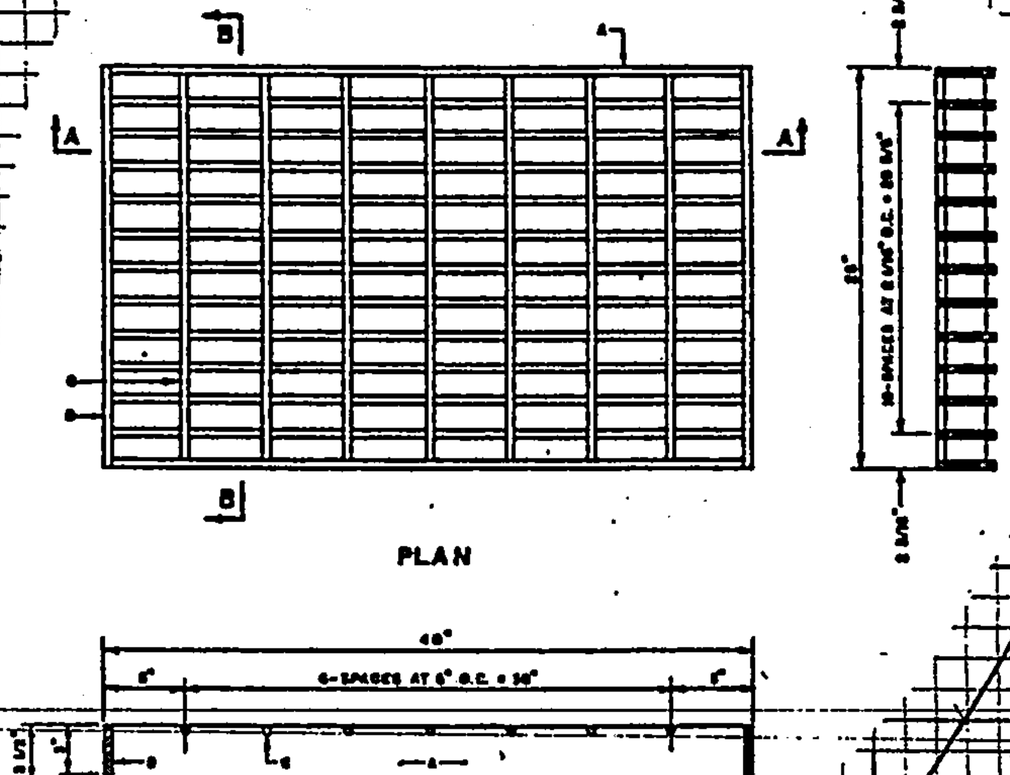
NET OPEN AREA

GRATE @ 10" (0.83') BELOW TC

EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6A\sqrt{2gh} + 3.3(5')h^{1.5}$

2) & 3) $Q = 3.3\,Ph^{1.5}$



GRATE CAPACITY (Q) IN CFS

90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4

TRIPLE GRATE

DOUBLE GRATE

SINGLE GRATE

TC 0.83'

HEAD (h) IN FEET

BOHANNAN-HUSTON INC.

PROJECT NAME Mesa Viento Sump SHEET ____ OF ____

PROJECT NO. 2 x 100 YR BY JPK DATE 4/9/92

SUBJECT RATING CURVE FOR TYPE K INLETS CH'D ____ DATE ____

B-40

MESA DURA DRIVE

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

MANNING'S N= .017 SLOPE= .0053

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.83	5	11.00	0.13	9	37.17	0.67
2	8.38	0.67	6	23.00	0.41	10	37.63	0.67
3	8.83	0.67	7	35.00	0.13	11	46.00	0.83
4	9.00	0.00	8	37.00	0.00	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.01	0.01	0.00	0.0	0.33	0.18	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.29	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.37	0.94	0.00	0.03
0.04	0.04	0.03	0.0	1.32	0.45	1.25	0.00	0.04
0.05	0.05	0.04	0.0	1.64	0.53	1.56	0.00	0.05
0.06	0.06	0.06	0.0	1.97	0.59	1.88	0.01	0.07
0.07	0.07	0.08	0.1	2.30	0.66	2.19	0.01	0.08
0.08	0.08	0.10	0.1	2.63	0.72	2.50	0.01	0.09
0.09	0.09	0.13	0.1	2.96	0.78	2.81	0.01	0.10
0.10	0.10	0.16	0.1	3.29	0.84	3.13	0.01	0.11
0.11	0.11	0.19	0.2	3.62	0.89	3.44	0.01	0.12
0.12	0.12	0.23	0.2	3.95	0.94	3.75	0.01	0.13
0.13	0.13	0.26	0.3	4.28	0.99	4.07	0.02	0.15
0.14	0.14	0.31	0.3	5.15	0.98	4.93	0.01	0.15
0.15	0.15	0.36	0.4	6.03	0.98	5.79	0.01	0.16
0.16	0.16	0.43	0.4	6.91	0.99	6.65	0.02	0.18
0.17	0.17	0.50	0.5	7.79	1.01	7.51	0.02	0.19
0.18	0.18	0.58	0.6	8.67	1.04	8.38	0.02	0.20
0.19	0.19	0.66	0.7	9.54	1.08	9.24	0.02	0.21
0.20	0.20	0.76	0.8	10.42	1.11	10.10	0.02	0.22
0.21	0.21	0.87	1.0	11.30	1.15	10.96	0.02	0.23
0.22	0.22	0.98	1.2	12.18	1.19	11.83	0.02	0.24
0.23	0.23	1.10	1.3	13.06	1.22	12.69	0.02	0.25
0.24	0.24	1.23	1.6	13.93	1.26	13.55	0.02	0.26
0.25	0.25	1.37	1.8	14.81	1.30	14.41	0.03	0.28
0.26	0.26	1.52	2.0	15.69	1.34	15.27	0.03	0.29
0.27	0.27	1.68	2.3	16.57	1.38	16.14	0.03	0.30
0.28	0.28	1.84	2.6	17.45	1.42	17.00	0.03	0.31
0.29	0.29	2.02	3.0	18.32	1.46	17.86	0.03	0.32
0.30	0.30	2.20	3.3	19.20	1.50	18.72	0.04	0.34
0.31	0.31	2.39	3.7	20.08	1.54	19.59	0.04	0.35
0.32	0.32	2.59	4.1	20.96	1.58	20.45	0.04	0.36
0.33	0.33	2.80	4.5	21.84	1.62	21.31	0.04	0.37
0.34	0.34	3.02	5.0	22.71	1.66	22.17	0.04	0.38
0.35	0.35	3.25	5.5	23.59	1.70	23.03	0.04	0.39
0.36	0.36	3.48	6.0	24.47	1.73	23.90	0.05	0.41
0.37	0.37	3.72	6.6	25.35	1.77	24.76	0.05	0.42
0.38	0.38	3.98	7.2	26.23	1.81	25.62	0.05	0.43
0.39	0.39	4.24	7.8	27.10	1.85	26.48	0.05	0.44
0.40	0.40	4.50	8.5	27.98	1.88	27.35	0.06	0.46
0.41	0.41	4.78	9.2	28.86	1.92	28.21	0.06	0.47
0.42	0.42	5.06	10.1	28.88	1.99	28.21	0.06	0.48
0.43	0.43	5.35	11.0	28.90	2.07	28.22	0.07	0.50

ROLL CURB LIMIT
Q_{100}

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.45	0.45	5.91	13.0	28.94	2.21	28.23	0.08	0.53
0.46	0.46	6.19	14.1	28.96	2.28	28.23	0.08	0.54
0.47	0.47	6.48	15.2	28.98	2.34	28.24	0.09	0.56
0.48	0.48	6.76	16.3	29.01	2.41	28.24	0.09	0.57
0.49	0.49	7.04	17.4	29.03	2.48	28.25	0.10	0.59
0.50	0.50	7.32	18.6	29.05	2.54	28.25	0.10	0.60
0.51	0.51	7.61	19.8	29.07	2.60	28.26	0.11	0.62
0.52	0.52	7.89	21.0	29.09	2.67	28.26	0.11	0.63
0.53	0.53	8.17	22.3	29.11	2.73	28.27	0.12	0.65
0.54	0.54	8.45	23.6	29.13	2.79	28.27	0.12	0.66
0.55	0.55	8.74	24.9	29.15	2.85	28.28	0.13	0.68
0.56	0.56	9.02	26.2	29.17	2.91	28.28	0.13	0.69
0.57	0.57	9.30	27.6	29.19	2.97	28.29	0.14	0.71
0.58	0.58	9.59	29.0	29.21	3.03	28.29	0.14	0.72
0.59	0.59	9.87	30.4	29.23	3.09	28.30	0.15	0.74
0.60	0.60	10.15	31.9	29.25	3.14	28.30	0.15	0.75
0.61	0.61	10.43	33.4	29.27	3.20	28.31	0.16	0.77
0.62	0.62	10.72	34.9	29.29	3.26	28.31	0.16	0.78
0.63	0.63	11.00	36.4	29.31	3.31	28.32	0.17	0.80
0.64	0.64	11.28	38.0	29.34	3.37	28.32	0.18	0.82
0.65	0.65	11.57	39.6	29.36	3.42	28.33	0.18	0.83
0.66	0.66	11.85	41.2	29.38	3.47	28.33	0.19	0.85
0.67	0.67	12.13	42.8	29.40	3.53	28.34	0.19	0.86
0.68	0.68	12.42	43.5	30.44	3.50	30.30	0.19	0.87
0.69	0.69	12.72	44.2	31.49	3.48	31.34	0.19	0.88
0.70	0.70	13.06	44.4	33.45	3.40	32.39	0.18	0.88
0.71	0.71	13.39	45.3	34.50	3.39	33.44	0.18	0.89
0.72	0.72	13.73	46.3	35.54	3.37	34.48	0.18	0.90
0.73	0.73	14.08	47.4	36.59	3.37	35.53	0.18	0.91
0.74	0.74	14.44	48.5	37.64	3.36	36.58	0.18	0.92
0.75	0.75	14.81	49.7	38.68	3.36	37.62	0.17	0.92
0.76	0.76	15.19	50.9	39.73	3.35	38.67	0.17	0.93
0.77	0.77	15.58	52.2	40.78	3.35	39.72	0.17	0.94
0.78	0.78	15.98	53.6	41.83	3.35	40.77	0.17	0.95
0.79	0.79	16.40	55.0	42.87	3.35	41.81	0.17	0.96
0.80	0.80	16.82	56.5	43.92	3.36	42.86	0.17	0.97
0.81	0.81	17.25	58.0	44.97	3.36	43.91	0.18	0.99
0.82	0.82	17.70	59.6	46.01	3.37	44.95	0.18	1.00
0.83	0.83	18.15	61.2	47.06	3.37	46.00	0.18	1.01

MESA SOMBRA PLACE

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

MANNING'S N= .017 SLOPE= .006

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.83	5	11.00	0.13	9	37.17	0.67
2	8.38	0.67	6	23.00	0.41	10	37.63	0.67
3	8.83	0.67	7	35.00	0.13	11	46.00	0.83
4	9.00	0.00	8	37.00	0.00	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.01	0.01	0.00	0.0	0.33	0.19	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.30	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.40	0.94	0.00	0.03
0.04	0.04	0.03	0.0	1.32	0.48	1.25	0.00	0.04
0.05	0.05	0.04	0.0	1.64	0.56	1.56	0.00	0.05
0.06	0.06	0.06	0.0	1.97	0.63	1.88	0.01	0.07
0.07	0.07	0.08	0.1	2.30	0.70	2.19	0.01	0.08
0.08	0.08	0.10	0.1	2.63	0.77	2.50	0.01	0.09
0.09	0.09	0.13	0.1	2.96	0.83	2.81	0.01	0.10
0.10	0.10	0.16	0.1	3.29	0.89	3.13	0.01	0.11
0.11	0.11	0.19	0.2	3.62	0.95	3.44	0.01	0.12
0.12	0.12	0.23	0.2	3.95	1.00	3.75	0.02	0.14
0.13	0.13	0.26	0.3	4.28	1.06	4.07	0.02	0.15
0.14	0.14	0.31	0.3	5.15	1.04	4.93	0.02	0.16
0.15	0.15	0.36	0.4	6.03	1.04	5.79	0.02	0.17
0.16	0.16	0.43	0.4	6.91	1.06	6.65	0.02	0.18
0.17	0.17	0.50	0.5	7.79	1.08	7.51	0.02	0.19
0.18	0.18	0.58	0.6	8.67	1.11	8.38	0.02	0.20
0.19	0.19	0.66	0.8	9.54	1.14	9.24	0.02	0.21
0.20	0.20	0.76	0.9	10.42	1.18	10.10	0.02	0.22
0.21	0.21	0.87	1.1	11.30	1.22	10.96	0.02	0.23
0.22	0.22	0.98	1.2	12.18	1.26	11.83	0.02	0.24
0.23	0.23	1.10	1.4	13.06	1.30	12.69	0.03	0.26
0.24	0.24	1.23	1.7	13.93	1.34	13.55	0.03	0.27
0.25	0.25	1.37	1.9	14.81	1.39	14.41	0.03	0.28
0.26	0.26	1.52	2.2	15.69	1.43	15.27	0.03	0.29
0.27	0.27	1.68	2.5	16.57	1.47	16.14	0.03	0.30
0.28	0.28	1.84	2.8	17.45	1.51	17.00	0.04	0.32
0.29	0.29	2.02	3.1	18.32	1.56	17.86	0.04	0.33
0.30	0.30	2.20	3.5	19.20	1.60	18.72	0.04	0.34
0.31	0.31	2.39	3.9	20.08	1.64	19.59	0.04	0.35
0.32	0.32	2.59	4.4	20.96	1.68	20.45	0.04	0.36
0.33	0.33	2.80	4.8	21.84	1.72	21.31	0.05	0.38
0.34	0.34	3.02	5.3	22.71	1.76	22.17	0.05	0.39
0.35	0.35	3.25	5.9	23.59	1.80	23.03	0.05	0.40
0.36	0.36	3.48	6.4	24.47	1.84	23.90	0.05	0.41
0.37	0.37	3.72	7.0	25.35	1.88	24.76	0.06	0.43
0.38	0.38	3.98	7.7	26.23	1.92	25.62	0.06	0.44
0.39	0.39	4.24	8.3	27.10	1.96	26.48	0.06	0.45
0.40	0.40	4.50	9.0	27.98	2.00	27.35	0.06	0.46
0.41	0.41	4.78	9.8	28.86	2.04	28.21	0.06	0.47
0.42	0.42	5.06	10.7	28.88	2.12	28.21	0.07	0.49
0.43	0.43	5.35	11.8	28.90	2.20	28.22	0.08	0.51

ROLL CURB LIMIT

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.45	0.45	5.91	13.9	28.94	2.35	28.23	0.09	0.54
0.46	0.46	6.19	15.0	28.96	2.42	28.23	0.09	0.55
0.47	0.47	6.48	16.1	28.98	2.49	28.24	0.10	0.57
0.48	0.48	6.76	17.3	29.01	2.56	28.24	0.10	0.58
0.49	0.49	7.04	18.5	29.03	2.63	28.25	0.11	0.60
0.50	0.50	7.32	19.8	29.05	2.70	28.25	0.11	0.61
0.51	0.51	7.61	21.1	29.07	2.77	28.26	0.12	0.63
0.52	0.52	7.89	22.4	29.09	2.84	28.26	0.12	0.64
0.53	0.53	8.17	23.7	29.11	2.90	28.27	0.13	0.66
0.54	0.54	8.45	25.1	29.13	2.97	28.27	0.14	0.68
0.55	0.55	8.74	26.5	29.15	3.03	28.28	0.14	0.69
0.56	0.56	9.02	27.9	29.17	3.10	28.28	0.15	0.71
0.57	0.57	9.30	29.4	29.19	3.16	28.29	0.15	0.72
0.58	0.58	9.59	30.9	29.21	3.22	28.29	0.16	0.74
0.59	0.59	9.87	32.4	29.23	3.28	28.30	0.17	0.76
0.60	0.60	10.15	33.9	29.25	3.34	28.30	0.17	0.77
0.61	0.61	10.43	35.5	29.27	3.40	28.31	0.18	0.79
0.62	0.62	10.72	37.1	29.29	3.46	28.31	0.19	0.81
0.63	0.63	11.00	38.8	29.31	3.52	28.32	0.19	0.82
0.64	0.64	11.28	40.4	29.34	3.58	28.32	0.20	0.84
0.65	0.65	11.57	42.1	29.36	3.64	28.33	0.21	0.86
0.66	0.66	11.85	43.8	29.38	3.70	28.33	0.21	0.87
0.67	0.67	12.13	45.5	29.40	3.75	28.34	0.22	0.89
0.68	0.68	12.42	46.3	30.44	3.72	30.30	0.22	0.90
0.69	0.69	12.72	47.1	31.49	3.70	31.34	0.21	0.90
0.70	0.70	13.06	47.2	33.45	3.62	32.39	0.20	0.90
0.71	0.71	13.39	48.2	34.50	3.60	33.44	0.20	0.91
0.72	0.72	13.73	49.3	35.54	3.59	34.48	0.20	0.92
0.73	0.73	14.08	50.4	36.59	3.58	35.53	0.20	0.93
0.74	0.74	14.44	51.6	37.64	3.57	36.58	0.20	0.94
0.75	0.75	14.81	52.9	38.68	3.57	37.62	0.20	0.95
0.76	0.76	15.19	54.2	39.73	3.57	38.67	0.20	0.96
0.77	0.77	15.58	55.6	40.78	3.57	39.72	0.20	0.97
0.78	0.78	15.98	57.0	41.83	3.57	40.77	0.20	0.98
0.79	0.79	16.40	58.5	42.87	3.57	41.81	0.20	0.99
0.80	0.80	16.82	60.1	43.92	3.57	42.86	0.20	1.00
0.81	0.81	17.25	61.7	44.97	3.58	43.91	0.20	1.01
0.82	0.82	17.70	63.4	46.01	3.58	44.95	0.20	1.02
0.83	0.83	18.15	65.1	47.06	3.59	46.00	0.20	1.03

STD CURB LIMIT

MESA RINCON DRIVE

***** PC PROGRAM STREAM SEPTEMBER 1994 *****

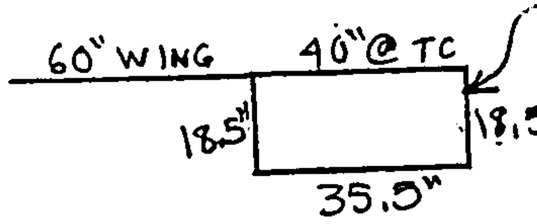
MANNING'S N= .017 SLOPE= .006

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.00	0.83	5	11.00	0.13	9	37.17	0.67
2	8.38	0.67	6	23.00	0.41	10	37.63	0.67
3	8.83	0.67	7	35.00	0.13	11	46.00	0.83
4	9.00	0.00	8	37.00	0.00	12	0.00	0.00

WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.01	0.01	0.00	0.0	0.33	0.19	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.30	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.40	0.94	0.00	0.03
0.04	0.04	0.03	0.0	1.32	0.48	1.25	0.00	0.04
0.05	0.05	0.04	0.0	1.64	0.56	1.56	0.00	0.05
0.06	0.06	0.06	0.0	1.97	0.63	1.88	0.01	0.07
0.07	0.07	0.08	0.1	2.30	0.70	2.19	0.01	0.08
0.08	0.08	0.10	0.1	2.63	0.77	2.50	0.01	0.09
0.09	0.09	0.13	0.1	2.96	0.83	2.81	0.01	0.10
0.10	0.10	0.16	0.1	3.29	0.89	3.13	0.01	0.11
0.11	0.11	0.19	0.2	3.62	0.95	3.44	0.01	0.12
0.12	0.12	0.23	0.2	3.95	1.00	3.75	0.02	0.14
0.13	0.13	0.26	0.3	4.28	1.06	4.07	0.02	0.15
0.14	0.14	0.31	0.3	5.15	1.04	4.93	0.02	0.16
0.15	0.15	0.36	0.4	6.03	1.04	5.79	0.02	0.17
0.16	0.16	0.43	0.4	6.91	1.06	6.65	0.02	0.18
0.17	0.17	0.50	0.5	7.79	1.08	7.51	0.02	0.19
0.18	0.18	0.58	0.6	8.67	1.11	8.38	0.02	0.20
0.19	0.19	0.66	0.8	9.54	1.14	9.24	0.02	0.21
0.20	0.20	0.76	0.9	10.42	1.18	10.10	0.02	0.22
0.21	0.21	0.87	1.1	11.30	1.22	10.96	0.02	0.23
0.22	0.22	0.98	1.2	12.18	1.26	11.83	0.02	0.24
0.23	0.23	1.10	1.4	13.06	1.30	12.69	0.03	0.26
0.24	0.24	1.23	1.7	13.93	1.34	13.55	0.03	0.27
0.25	0.25	1.37	1.9	14.81	1.39	14.41	0.03	0.28
0.26	0.26	1.52	2.2	15.69	1.43	15.27	0.03	0.29
0.27	0.27	1.68	2.5	16.57	1.47	16.14	0.03	0.30
0.28	0.28	1.84	2.8	17.45	1.51	17.00	0.04	0.32
0.29	0.29	2.02	3.1	18.32	1.56	17.86	0.04	0.33
0.30	0.30	2.20	3.5	19.20	1.60	18.72	0.04	0.34
0.31	0.31	2.39	3.9	20.08	1.64	19.59	0.04	0.35
0.32	0.32	2.59	4.4	20.96	1.68	20.45	0.04	0.36
0.33	0.33	2.80	4.8	21.84	1.72	21.31	0.05	0.38
0.34	0.34	3.02	5.3	22.71	1.76	22.17	0.05	0.39
0.35	0.35	3.25	5.9	23.59	1.80	23.03	0.05	0.40
0.36	0.36	3.48	6.4	24.47	1.84	23.90	0.05	0.41
0.37	0.37	3.72	7.0	25.35	1.88	24.76	0.06	0.43
0.38	0.38	3.98	7.7	26.23	1.92	25.62	0.06	0.44
0.39	0.39	4.24	8.3	27.10	1.96	26.48	0.06	0.45
0.40	0.40	4.50	9.0	27.98	2.00	27.35	0.06	0.46
0.41	0.41	4.78	9.8	28.86	2.04	28.21	0.06	0.47
0.42	0.42	5.06	10.7	28.88	2.12	28.21	0.07	0.49
0.43	0.43	5.35	11.8	28.90	2.20	28.22	0.08	0.51

ROLL CURB LIMIT

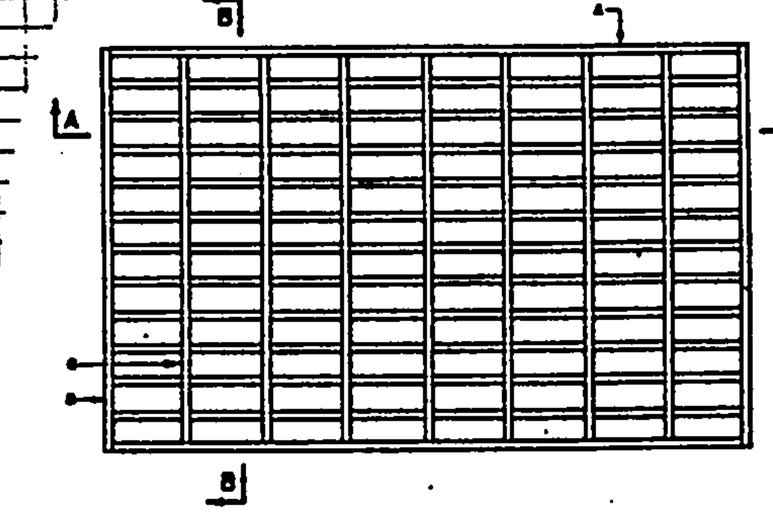
WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)	
0.45	0.45	5.91	13.9	28.94	2.35	28.23	0.09	0.54	
0.46	0.46	6.19	15.0	28.96	2.42	28.23	0.09	0.55	
0.47	0.47	6.48	16.1	28.98	2.49	28.24	0.10	0.57	
0.48	0.48	6.76	17.3	29.01	2.56	28.24	0.10	0.58	
0.49	0.49	7.04	18.5	29.03	2.63	28.25	0.11	0.60	
0.50	0.50	7.32	19.8	29.05	2.70	28.25	0.11	0.61	
0.51	0.51	7.61	21.1	29.07	2.77	28.26	0.12	0.63	Q 100
0.52	0.52	7.89	22.4	29.09	2.84	28.26	0.12	0.64	
0.53	0.53	8.17	23.7	29.11	2.90	28.27	0.13	0.66	
0.54	0.54	8.45	25.1	29.13	2.97	28.27	0.14	0.68	
0.55	0.55	8.74	26.5	29.15	3.03	28.28	0.14	0.69	
0.56	0.56	9.02	27.9	29.17	3.10	28.28	0.15	0.71	
0.57	0.57	9.30	29.4	29.19	3.16	28.29	0.15	0.72	
0.58	0.58	9.59	30.9	29.21	3.22	28.29	0.16	0.74	
0.59	0.59	9.87	32.4	29.23	3.28	28.30	0.17	0.76	
0.60	0.60	10.15	33.9	29.25	3.34	28.30	0.17	0.77	
0.61	0.61	10.43	35.5	29.27	3.40	28.31	0.18	0.79	
0.62	0.62	10.72	37.1	29.29	3.46	28.31	0.19	0.81	
0.63	0.63	11.00	38.8	29.31	3.52	28.32	0.19	0.82	
0.64	0.64	11.28	40.4	29.34	3.58	28.32	0.20	0.84	STD CURB LIMIT
0.65	0.65	11.57	42.1	29.36	3.64	28.33	0.21	0.86	
0.66	0.66	11.85	43.8	29.38	3.70	28.33	0.21	0.87	
0.67	0.67	12.13	45.5	29.40	3.75	28.34	0.22	0.89	
0.68	0.68	12.42	46.3	30.44	3.72	30.30	0.22	0.90	
0.69	0.69	12.72	47.1	31.49	3.70	31.34	0.21	0.90	
0.70	0.70	13.06	47.2	33.45	3.62	32.39	0.20	0.90	
0.71	0.71	13.39	48.2	34.50	3.60	33.44	0.20	0.91	
0.72	0.72	13.73	49.3	35.54	3.59	34.48	0.20	0.92	
0.73	0.73	14.08	50.4	36.59	3.58	35.53	0.20	0.93	
0.74	0.74	14.44	51.6	37.64	3.57	36.58	0.20	0.94	
0.75	0.75	14.81	52.9	38.68	3.57	37.62	0.20	0.95	
0.76	0.76	15.19	54.2	39.73	3.57	38.67	0.20	0.96	
0.77	0.77	15.58	55.6	40.78	3.57	39.72	0.20	0.97	
0.78	0.78	15.98	57.0	41.83	3.57	40.77	0.20	0.98	
0.79	0.79	16.40	58.5	42.87	3.57	41.81	0.20	0.99	
0.80	0.80	16.82	60.1	43.92	3.57	42.86	0.20	1.00	
0.81	0.81	17.25	61.7	44.97	3.58	43.91	0.20	1.01	
0.82	0.82	17.70	63.4	46.01	3.58	44.95	0.20	1.02	
0.83	0.83	18.15	65.1	47.06	3.59	46.00	0.20	1.03	

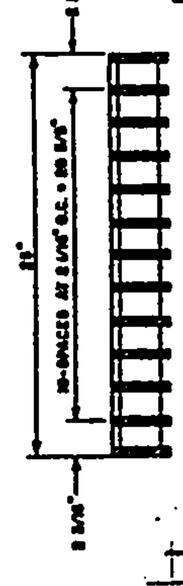


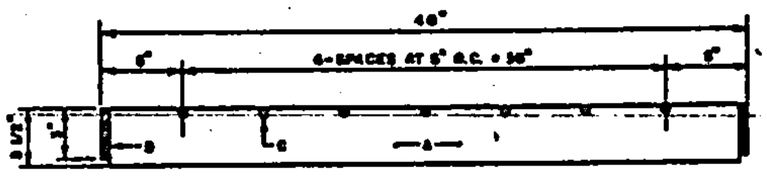
EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6A\sqrt{2gh} + 3.3(5')h^{1.5}$

2) & 3) $Q = 3.3\,Ph^{1.5}$





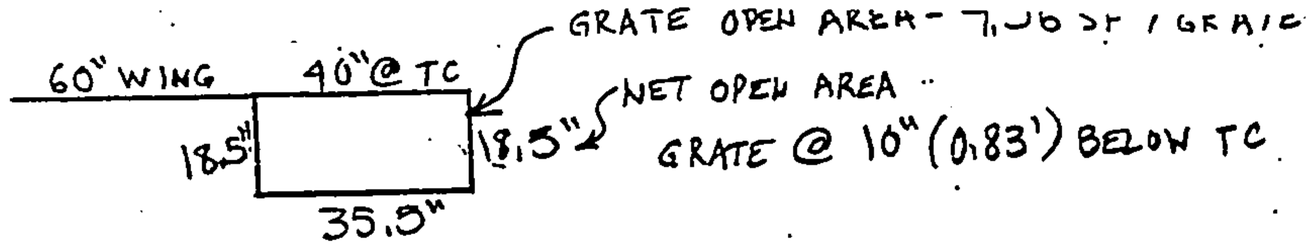


BOHANNAN-HUSTON INC.

PROJECT NAME MESA RINCON SUMP SHEET ____ OF ____

PROJECT NO. ____ BY JPK DATE 4/9/92

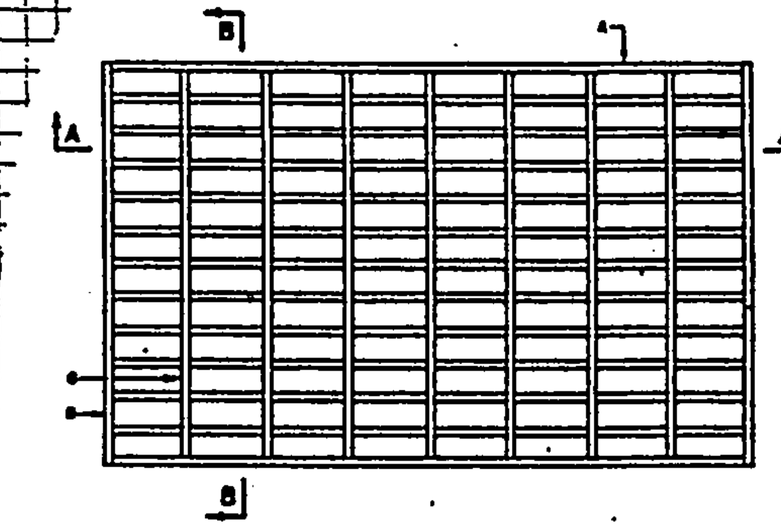
SUBJECT RATING CURVE FOR TYPE A INLETS CH'D ____ DATE 13-47

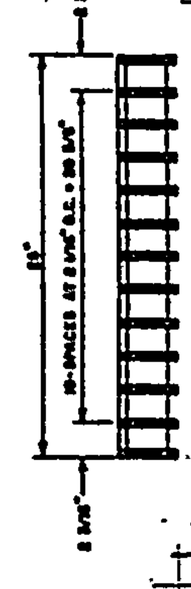


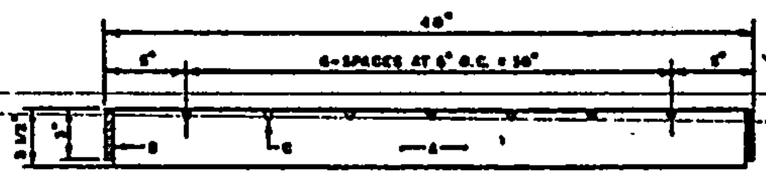
EQUATION	SGL A	DBL A	TRPL A	QDPL A
1) ORIFICE	$22.0\,h^{0.5} + 16.5\,h^{1.5}$	$43.9\,h^{0.5} + 16.5\,h^{1.5}$	$65.9\,h^{0.5} + 16.5\,h^{1.5}$	$87.8\,h^{0.5} + 16.5\,h^{1.5}$
2) 3-SIDED WEIR ($h \le 0.83'$)	$36.4\,h^{1.5}$	$46.2\,h^{1.5}$	$56.0\,h^{1.5}$	$65.7\,h^{1.5}$
3) 4-SIDED WEIR ($h > 0.83'$)	ADD TO 2): $11(h-.83)^{1.5}$	ADD TO 2): $22(h-.83)^{1.5}$	ADD TO 2): $33(h-.83)^{1.5}$	ADD TO 2): $44(h-.83)^{1.5}$

1) $Q = 0.6A\sqrt{2gh} + 3.3(5')h^{1.5}$

2) & 3) $Q = 3.3\,Ph^{1.5}$







BOHANNAN-HUSTON INC.

PROJECT NAME MESA RINCON SUMP SHEET ____ OF ____

PROJECT NO. 2 x 100 YR BY JPK DATE 4/9/92

SUBJECT RATING CURVE FOR TYPE K INLETS CH'D DATE

B-48

Design Log

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InRoads Storm & Sanitary Design Log

Drainage File: P:\020296\cdp\control\data\utilities\020296SD.sdb

Design File: P:\020296\CDP\DESIGN\020296_UTIL JUNK.DWG

Display Log: P:\020296\CDP\DESIGN\design.log

Date: Friday, November 22, 2002 09:50:26 AM

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Table A:

Struct ID	D (in)	Q (cfs)	L (ft)	V (ft/s)	d (ft)	dc (ft)	2 V /2g (ft)	Sf (ft/ft)	Dnstrm Soffit (ft)	EGLdn (ft)	HGLdn (ft)	Tot Loss (ft)	EGLup (ft)	HGLup (ft)	Rim Elev. (ft)
Outfall	-	-	-	-	-	-	-	-	-	-	-	-	-	5101.50	-
SDP1	42	55.20	101.36	5.74	-	-	0.51	0.0030	5101.50	5102.01	5101.50	0.31	5102.32	5101.81	-
SDMH1	-	-	-	-	-	-	-	-	-	5102.32	5101.81	0.29	5102.60	5102.09	5106.91
SDP2	27	55.20	188.42	8.92	-	-	1.24	0.0094	5100.50	5102.60	5102.09	1.77	5104.37	5103.13	-
SDMH2	-	-	-	-	-	-	-	-	-	5104.37	5103.13	0.49	5104.86	5103.62	5106.82
SDP5	30	22.40	148.38	4.56	-	-	0.32	0.0030	5101.25	5104.86	5103.62	0.44	5105.30	5104.97	-
IN1	-	-	-	-	-	-	-	-	-	5105.30	5104.97	0.39	5105.69	5105.36	5105.69
SDP6	24	11.20	23.99	3.57	-	-	0.20	0.0025	5103.11	5105.69	5105.36	0.06	5105.74	5105.55	-
IN2	-	-	-	-	-	-	-	-	-	5105.74	5105.55	-	5105.74	5105.55	5105.69
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5104.37	5103.13	-
SDMH2	-	-	-	-	-	-	-	-	-	5104.37	5103.13	0.46	5104.83	5103.59	5106.82
SDP8	30	21.10	177.53	4.30	-	-	0.29	0.0026	5101.25	5104.83	5103.59	0.47	5105.30	5105.01	-
IN4	-	-	-	-	-	-	-	-	-	5105.30	5105.01	0.35	5105.64	5105.35	5105.58
SDP9	24	10.55	23.99	3.36	-	-	0.18	0.0022	5101.12	5105.64	5105.35	0.05	5105.69	5105.52	-
IN5	-	-	-	-	-	-	-	-	-	5105.69	5105.52	-	5105.69	5105.52	5105.58
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5104.37	5103.13	-
SDMH2	-	-	-	-	-	-	-	-	-	5104.37	5103.13	0.62	5104.99	5103.75	5106.82
SDP7	24	11.70	56.22	3.72	-	-	0.22	0.0027	5102.46	5104.99	5103.75	0.15	5105.14	5104.92	-
IN3	-	-	-	-	-	-	-	-	-	5105.14	5104.92	-	5105.14	5104.92	5106.56

Table B:

Str ID	Losses Hf	Hb	Hstr	Hc	He	Hj	Total	Loss Coefficients Dstr	Ko	CD	Cd	Cq	Cp	Cb	K
Outfall	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP1	0.31	-	-	-	-	-	0.31	-	-	-	-	-	-	-	-
SDMH1	-	-	0.29	-	-	-	0.29	3.61	1.096	1.000	0.509	1.000	1.000	1.000	0.558
SDP2	1.77	-	-	-	-	-	1.77	-	-	-	-	-	-	-	-
SDMH2	-	-	0.49	-	-	-	0.49	4.43	1.622	1.000	0.750	0.323	1.000	1.000	0.393
SDP5	0.44	-	-	-	-	-	0.44	-	-	-	-	-	-	-	-

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IN1	-	-	0.39	-	-	-	0.39	5.86	1.435	1.000	0.833	1.000	1.000	1.000	1.196
SDP6	0.06	-	-	-	-	-	0.06	-	-	-	-	-	-	-	-
IN2	-	-	-	-	-	-	-	4.19	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH2	-	-	0.46	-	-	-	0.46	4.43	1.622	1.000	0.750	0.303	1.000	1.000	0.369
SDP8	0.47	-	-	-	-	-	0.47	-	-	-	-	-	-	-	-
IN4	-	-	0.35	-	-	-	0.35	5.91	1.435	1.000	0.837	1.000	1.000	1.000	1.202
SDP9	0.05	-	-	-	-	-	0.05	-	-	-	-	-	-	-	-
IN5	-	-	-	-	-	-	-	5.91	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH2	-	-	0.62	-	-	-	0.62	-	-	-	-	-	-	-	0.500
SDP7	0.15	-	-	-	-	-	0.15	-	-	-	-	-	-	-	-
IN3	-	-	-	-	-	-	-	3.51	-	-	-	-	-	-	-

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Shaded cells require user input. Non-shaded cells cannot be edited.*

RANCHO ENCANTADO DEL NORTE SUBDIVISION STORM DRAIN, 2x100 YEAR STORM ANALYSIS FOR SUMP CONDITION

***** HYDRAULIC GRADE LINE CALCULATIONS *****

Manning's n = 0.013
for pipe

LOS VALLES DRIVE SUMP, NORTH OF LOS CERROS ROAD

Station	Structure	Diam. (in.)	Q (cfs)	Area	Vel.	K	Sf	Length (ft.)	MH Dia. (ft.)	JNCT Angle	Hf	Hb	Hj	Hmh	Ht	Total Losses	HGL(dn)	HGL(up)	Notes	Low Point	HV	EGL(dn)	EGL(up)
0.00	SD MH2								6.00	0.00		0.00	0.00	0.06	0.26	0.32		5103.52		5106.82	1.29		5104.81
		30	44.8	4.91	9.13	410	0.0119	149.86			1.79					1.79							
149.86	INLET 1								6.00	90.00		0.21	0.00	0.04	0.01	0.26	5105.31	5106.07		5105.69	0.79	5106.60	5106.86
		24	22.4	3.14	7.13	226	0.0098	28.00			0.27					0.27							
177.86	INLET 2								0.00	0.00		0.00	0.00	0.00	0.00	0.00	5106.34	5107.13		5105.69	0.00	5107.13	5107.13
		24	0.0	3.14	0.00	226	0.0000	28.00			0.00					0.00							

LOS VALLES DRIVE SUMP, SOUTH OF LOS CERROS ROAD

Station	Structure	Diam. (in.)	Q (cfs)	Area	Vel.	K	Sf	Length (ft.)	Dia. (ft.)	Angle	Hf	Hb	Hj	Hmh	Ht	Losses	HGL(dn)	HGL(up)		Point	HV	EGL(dn)	EGL(up)
0.00	SD MH2								6.00	0.00		0.00	0.00	0.06	0.23	0.29		5103.52		5106.82	1.15		5104.67
		30	42.2	4.91	8.60	410	0.0106	179.00			1.89					1.89							
179.00	INLET 4								6.00	90.00		0.18	0.00	0.04	0.01	0.23	5105.41	5106.09		5105.58	0.70	5106.56	5106.79
		24	21.1	3.14	6.72	226	0.0087	28.00			0.24					0.24							
207.00	INLET 5								0.00	0.00		0.00	0.00	0.00	0.00	0.00	5106.33	5107.03		5105.58	0.00	5107.03	5107.03
		24	0.0	3.14	0.00	226	0.0000	28.00			0.00					0.00							

LOS RITOS COURT SUMP

Station	Structure	Diam. (in.)	Q (cfs)	Area	Vel.	K	Sf	Length (ft.)	Dia. (ft.)	Angle	Hf	Hb	Hj	Hmh	Ht	Losses	HGL(dn)	HGL(up)		Point	HV	EGL(dn)	EGL(up)
0.00	SD MH2								6.00	0.00		0.00	0.00	0.04	0.17	0.22		5103.64		5106.82	0.86		5104.50
		24	23.4	3.14	7.45	226	0.0107	57.01			0.61					0.61							
57.01	INLET 3								6.00	90.00		0.04	0.00	0.00	0.00	0.04	5104.25	5105.15		5106.86	0.00	5105.11	5105.15
		24	0.0	3.14	0.00	226	0.0000	28.00			0.00					0.00							

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Design Log

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InRoads Storm & Sanitary Design Log

Drainage File: P:\020296\cdp\control\data\utilities\020296SD.sdb

Design File: P:\020296\CDP\DESIGN\020296_UTIL JUNK.DWG

Display Log: P:\020296\CDP\DESIGN\design.log

Date: Friday, November 22, 2002 09:48:00 AM
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Table A:

Struct ID	D (in)	Q (cfs)	L (ft)	V (ft/s)	d (ft)	dc (ft)	2 V /2g (ft)	Sf (ft/ft)	Dnstrm Soffit (ft)	EGLdn (ft)	HGLdn (ft)	Tot Loss (ft)	EGLup (ft)	HGLup (ft)	Rim Elev. (ft)
Outfall	-	-	-	-	-	-	-	-	-	-	-	-	-	5102.01	-
(Alternate HGL and EGL Used)													5102.87	5102.01	
SDP3	72	149.17	123.81	7.42	4.01	3.31	0.86	0.0012	5104.00	-	5102.01	-	-	5102.26	-
Junction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Alternate HGL and EGL Used)													5103.12	5102.26	
SDP4	72	149.17	451.24	7.42	4.01	3.31	0.86	0.0012	5104.25	-	5102.26	-	-	5103.16	-
Junction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Alternate HGL and EGL Used)													5104.02	5103.16	
SDP21	72	149.17	16.17	7.42	4.01	3.31	0.86	0.0012	5105.15	-	5103.16	-	-	5103.20	-
Junction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Alternate HGL and EGL Used)													5104.05	5103.20	
SDP10	72	149.17	405.20	7.42	4.01	3.31	0.86	0.0012	5105.18	-	5103.20	-	-	5104.00	-
SDMH7	-	-	-	-	-	-	-	-	-	-	5104.00	0.06	-	5104.00	5109.59
(Alternate HGL and EGL Used)													5104.34	5103.59	
SDP22	66	112.87	133.73	6.94	3.56	2.94	0.75	0.0011	5105.53	-	5103.59	-	-	5103.85	-
Junction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Alternate HGL and EGL Used)													5104.60	5103.85	
SDP23	66	112.87	22.74	6.94	3.56	2.94	0.75	0.0011	5105.79	-	5103.85	-	-	5103.89	-
SDMH17	-	-	-	-	-	-	-	-	-	-	5103.89	0.03	-	5103.89	5108.72
(Alternate HGL and EGL Used)													5104.92	5104.21	
SDP25	60	108.77	244.49	6.74	3.83	2.97	0.71	0.0017	5105.38	-	5104.21	-	-	5104.70	-
Junction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Alternate HGL and EGL Used)													5105.40	5104.70	
SDP27	60	108.77	34.44	6.74	3.83	2.97	0.71	0.0017	5105.87	5105.40	5104.70	0.06	5105.47	5104.76	-
SDMH19	-	-	-	-	-	-	-	-	-	5105.47	5104.76	0.05	5105.51	5104.81	5110.20
SDP29	54	89.37	213.88	5.62	-	-	0.49	0.0021	5105.48	5105.51	5104.81	0.46	5105.97	5105.48	-
SDMH20	-	-	-	-	-	-	-	-	-	5105.97	5105.48	0.20	5106.17	5105.68	5109.54
SDP32	54	62.00	63.50	3.90	-	-	0.24	0.0010	5105.95	5106.17	5105.68	0.06	5106.23	5105.99	-
SDMH22	-	-	-	-	-	-	-	-	-	5106.23	5105.99	0.14	5106.37	5106.13	5109.08
SDP33	54	56.00	60.96	3.52	-	-	0.19	0.0008	5106.11	5106.37	5106.13	0.05	5106.42	5106.22	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5104.05	5103.20	-
SDMH7	-	-	-	-	-	-	-	-	-	-	5104.00	0.09	5104.22	5104.00	5109.59
SDP11	42	36.30	139.00	3.77	-	-	0.22	0.0013	5103.53	5104.22	5104.00	0.18	5104.40	5104.18	-
SDMH8	-	-	-	-	-	-	-	-	-	5104.40	5104.18	0.18	5104.58	5104.36	5107.79

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SDP14	36	36.30	121.57	5.14	-	-	0.41	0.0030	5103.28	5104.58	5104.36	0.36	5104.94	5104.53	-		
Junction	-	-	-	-	-	-	-	-	-	5104.94	5104.53	0.00	5104.94	5104.53	-		
SDP15	36	36.30	10.00	5.14	-	-	0.41	0.0030	5103.46	5104.94	5104.53	0.03	5104.97	5104.56	-		
SDMH11	-	-	-	-	-	-	-	-	-	5104.97	5104.56	0.19	5105.16	5104.75	5106.29		
SDP16	36	21.60	64.25	3.06	-	-	0.15	0.0010	5103.52	5105.16	5104.75	0.07	5105.23	5105.08	-		
SDMH12	-	-	-	-	-	-	-	-	-	5105.23	5105.08	0.07	5105.29	5105.15	5106.71		
SDP17	36	21.60	36.14	3.06	-	-	0.15	0.0010	5103.66	5105.29	5105.15	0.04	5105.33	5105.19	-		
SDMH13	-	-	-	-	-	-	-	-	-	5105.33	5105.19	0.07	5105.40	5105.25	5106.80		
SDP18	36	21.60	190.53	3.06	-	-	0.15	0.0010	5103.75	5105.40	5105.25	0.20	5105.60	5105.45	-		
IN8	-	-	-	-	-	-	-	-	-	5105.60	5105.45	0.13	5105.72	5105.58	5105.96		
SDP19	24	5.01	23.99	1.60	-	-	0.04	0.0005	5103.07	5105.72	5105.58	0.01	5105.74	5105.70	-		
IN9	-	-	-	-	-	-	-	-	-	5105.74	5105.70	-	5105.74	5105.70	5105.96		
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5104.60	5103.85	-		
SDMH17	-	-	-	-	-	-	-	-	-	-	5103.89	0.01	5103.91	5103.89	5108.72		
SDP24	18	2.05	24.03	1.16	-	-	0.02	0.0004	5101.78	5103.91	5103.89	0.01	5103.92	5103.90	-		
IN11	-	-	-	-	-	-	-	-	-	5103.92	5103.90	-	5103.92	5103.90	5108.44		
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5104.60	5103.85	-		
SDMH17	-	-	-	-	-	-	-	-	-	-	5103.89	0.37	5103.91	5103.89	5108.72		
SDP26	18	2.05	8.03	1.16	-	-	0.02	0.0004	5101.70	5103.91	5103.89	0.00	5103.92	5103.90	-		
IN12	-	-	-	-	-	-	-	-	-	5103.92	5103.90	-	5103.92	5103.90	5108.43		
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5105.47	5104.70	-		
SDMH19	-	-	-	-	-	-	-	-	-	5105.47	5104.70	0.06	5105.52	5104.82	5110.20		
SDP28	30	19.40	47.35	3.95	-	-	0.24	0.0022	5103.48	5105.52	5104.82	0.11	5105.63	5105.39	-		
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5105.97	5105.48	-		
SDMH20	-	-	-	-	-	-	-	-	-	5105.97	5105.48	0.09	5106.06	5105.56	5109.54		
SDP30	36	27.37	189.76	3.87	-	-	0.23	0.0017	5104.45	5106.06	5105.56	0.32	5106.38	5106.15	-		
IN13	-	-	-	-	-	-	-	-	-	5106.38	5106.15	0.09	5106.47	5106.24	5106.31		
SDP36	30	16.25	49.85	3.31	-	-	0.17	0.0016	5104.37	5106.47	5106.24	0.08	5106.55	5106.38	-		
SDMH24	-	-	-	-	-	-	-	-	-	5106.55	5106.38	0.19	5106.74	5106.57	5106.78		
SDP37	30	16.25	130.85	3.31	-	-	0.17	0.0016	5104.51	5106.74	5106.57	0.21	5106.94	5106.77	-		
SDMH25	-	-	-	-	-	-	-	-	-	5106.94	5106.77	0.10	5107.05	5106.88	5107.43		
SDP40	30	16.25	56.71	3.31	-	-	0.17	0.0016	5104.87	5107.05	5106.88	0.09	5107.14	5106.97	-		
SDMH26	-	-	-	-	-	-	-	-	-	5107.14	5106.97	0.05	5107.19	5107.02	5107.68		
SDP41	30	16.25	43.45	3.31	-	-	0.17	0.0016	5105.08	5107.19	5107.02	0.07	5107.26	5107.09	-		
SDMH27	-	-	-	-	-	-	-	-	-	5107.26	5107.09	0.07	5107.33	5107.16	5107.86		
SDP42	30	16.25	75.17	3.31	-	-	0.17	0.0016	5105.25	5107.33	5107.16	0.12	5107.45	5107.28	-		
IN18	-	-	-	-	-	-	-	-	-	5107.45	5107.28	0.13	5107.58	5107.41	5108.15		
SDP43	24	12.29	56.20	3.91	-	-	0.24	0.0030	5105.29	5107.58	5107.41	0.17	5107.74	5107.50	-		
IN19	-	-	-	-	-	-	-	-	-	5107.74	5107.50	0.25	5107.99	5107.75	5108.25		
SDP44	24	8.41	100.85	2.68	-	-	0.11	0.0014	5105.62	5107.99	5107.75	0.14	5108.13	5108.02	-		
IN20	-	-	-	-	-	-	-	-	-	5108.13	5108.02	0.07	5108.20	5108.09	5109.44		
SDP45	18	3.28	153.66	1.85	-	-	0.05	0.0010	5105.94	5108.20	5108.09	0.15	5108.35	5108.29	-		
IN21	-	-	-	-	-	-	-	-	-	5108.35	5108.29	-	5108.35	5108.29	5110.57		
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5106.23	5105.99	-		
SDMH22	-	-	-	-	-	-	-	-	-	5106.23	5105.99	0.03	5106.26	5106.03	5109.08		
SDP34	18	6.00	113.55	3.40	-	-	0.18	0.0033	5103.11	5106.26	5106.03	0.37	5106.63	5106.45	-		
IN15	-	-	-	-	-	-	-	-	-	5106.63	5106.45	0.26	5106.89	5106.71	5107.69		
SDP35	18	3.00	31.99	1.70	-	-	0.04	0.0008	5103.66	5106.89	5106.71	0.03	5106.92	5106.87	-		
IN16	-	-	-	-	-	-	-	-	-	5106.92	5106.87	-	5106.92	5106.87	5107.70		
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5104.97	5104.56	-		
SDMH11	-	-	-	-	-	-	-	-	-	5104.97	5104.56	0.08	5105.05	5104.64	5106.29		

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SDP20	24	14.70	98.30	4.68	-	-	0.34	0.0042	5102.77	5105.05	5104.64	0.42	5105.48	5105.13	-	
IN10	-	-	-	-	-	-	-	-	-	5105.48	5105.13	-	5105.48	5105.13	5105.81	
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	5106.38	5106.15	-	
IN13	-	-	-	-	-	-	-	-	-	5106.38	5106.15	0.03	5106.41	5106.18	5106.31	
SDP31	18	5.28	32.01	2.99	-	-	0.14	0.0025	5103.37	5106.41	5106.18	0.08	5106.49	5106.35	-	
IN14	-	-	-	-	-	-	-	-	-	5106.49	5106.35	-	5106.49	5106.35	5106.30***	

Surcharged ***

Table B:

	Losses							Loss Coefficients							
Str ID	Hf	Hb	Hstr	Hc	He	Hj	Total	Dstr	Ko	CD	Cd	Cq	Cp	Cb	K
Outfall	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP3	0.15	-	-	-	-	-	0.15	-	-	-	-	-	-	-	-
Junction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP4	0.56	-	-	-	-	-	0.56	-	-	-	-	-	-	-	-
Junction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP21	0.02	-	-	-	-	-	0.02	-	-	-	-	-	-	-	-
Junction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP10	0.50	-	-	-	-	-	0.50	-	-	-	-	-	-	-	-
SDMH7	-	-	0.06	-	-	-	0.06	4.01	0.133	1.000	0.393	1.346	1.000	1.000	0.071
SDP22	0.15	-	-	-	-	-	0.15	-	-	-	-	-	-	-	-
Junction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP23	0.03	0.00	-	-	-	-	0.03	-	-	-	-	-	-	-	-
SDMH17	-	-	0.03	-	-	-	0.03	3.56	0.109	1.000	0.385	1.083	1.000	1.000	0.046
SDP25	0.43	0.02	-	-	-	-	0.45	-	-	-	-	-	-	-	-
Junction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDP27	0.06	0.00	-	-	-	-	0.06	-	-	-	-	-	-	-	-
SDMH19	-	-	0.05	-	-	-	0.05	3.83	0.120	1.000	0.426	1.274	1.000	1.000	0.065
SDP29	0.44	0.01	-	-	-	-	0.46	-	-	-	-	-	-	-	-
SDMH20	-	-	0.20	-	-	-	0.20	4.08	1.462	1.000	0.472	0.588	1.000	1.000	0.406
SDP32	0.06	-	-	-	-	-	0.06	-	-	-	-	-	-	-	-
SDMH22	-	-	0.14	-	-	-	0.14	4.43	1.395	1.000	0.496	0.844	1.000	1.000	0.583
SDP33	0.05	-	-	-	-	-	0.05	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH7	-	-	0.09	-	-	-	0.09	4.01	1.462	1.000	0.393	0.189	1.000	1.000	0.108
SDP11	0.18	-	-	-	-	-	0.18	-	-	-	-	-	-	-	-
SDMH8	-	-	0.18	-	-	-	0.18	3.95	1.518	1.000	0.537	1.000	1.000	1.000	0.816
SDP14	0.36	-	-	-	-	-	0.36	-	-	-	-	-	-	-	-
Junction	-	0.00	-	-	-	-	0.00	-	-	-	-	-	-	-	-
SDP15	0.03	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-
SDMH11	-	-	0.19	-	-	-	0.19	4.09	1.553	1.000	0.602	0.492	1.000	1.000	0.461
SDP16	0.07	-	-	-	-	-	0.07	-	-	-	-	-	-	-	-
SDMH12	-	-	0.07	-	-	-	0.07	4.47	0.719	1.000	0.635	1.000	1.000	1.000	0.457
SDP17	0.04	-	-	-	-	-	0.04	-	-	-	-	-	-	-	-
SDMH13	-	-	0.07	-	-	-	0.07	4.48	0.724	1.000	0.636	1.000	1.000	1.000	0.461
SDP18	0.20	-	-	-	-	-	0.20	-	-	-	-	-	-	-	-
IN8	-	-	0.13	-	-	-	0.13	4.42	1.396	1.000	0.631	1.000	1.000	1.000	0.881
SDP19	0.01	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-
IN9	-	-	-	-	-	-	-	4.39	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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SDMH17	-	-	0.01	-	-	-	0.01	3.56	1.418	1.000	0.385	0.014	1.000	1.000	0.007
SDP24	0.01	-	-	-	-	-	0.01	-	-	-	-	-	-	-	-
IN11	-	-	-	-	-	-	-	2.43	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH17	-	-	0.37	-	-	-	0.37	-	-	-	-	-	-	-	0.500
SDP26	0.00	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
IN12	-	-	-	-	-	-	-	3.20	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH19	-	-	0.06	-	-	-	0.06	3.83	1.439	1.000	0.426	0.137	1.000	1.000	0.084
SDP28	0.11	-	-	-	-	-	0.11	-	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH20	-	-	0.09	-	-	-	0.09	4.08	1.444	1.000	0.472	0.261	1.000	1.000	0.177
SDP30	0.32	0.00	-	-	-	-	0.32	-	-	-	-	-	-	-	-
IN13	-	-	0.09	-	-	-	0.09	4.33	0.543	1.000	0.623	1.160	1.000	1.000	0.393
SDP36	0.08	-	-	-	-	-	0.08	-	-	-	-	-	-	-	-
SDMH24	-	-	0.19	-	-	-	0.19	4.42	1.592	1.000	0.704	1.000	1.000	1.000	1.121
SDP37	0.21	-	-	-	-	-	0.21	-	-	-	-	-	-	-	-
SDMH25	-	-	0.10	-	-	-	0.10	4.45	0.863	1.000	0.707	1.000	1.000	1.000	0.610
SDP40	0.09	-	-	-	-	-	0.09	-	-	-	-	-	-	-	-
SDMH26	-	-	0.05	-	-	-	0.05	4.43	0.418	1.000	0.705	1.000	1.000	1.000	0.295
SDP41	0.07	-	-	-	-	-	0.07	-	-	-	-	-	-	-	-
SDMH27	-	-	0.07	-	-	-	0.07	4.38	0.623	1.000	0.700	1.000	1.000	1.000	0.437
SDP42	0.12	-	-	-	-	-	0.12	-	-	-	-	-	-	-	-
IN18	-	-	0.13	-	-	-	0.13	4.09	1.116	1.000	0.672	1.000	1.000	1.000	0.750
SDP43	0.17	-	-	-	-	-	0.17	-	-	-	-	-	-	-	-
IN19	-	-	0.25	-	-	-	0.25	3.93	1.378	1.000	0.750	1.000	1.000	1.000	1.034
SDP44	0.14	-	-	-	-	-	0.14	-	-	-	-	-	-	-	-
IN20	-	-	0.07	-	-	-	0.07	3.79	0.853	1.000	0.734	1.000	1.000	1.000	0.626
SDP45	0.15	-	-	-	-	-	0.15	-	-	-	-	-	-	-	-
IN21	-	-	-	-	-	-	-	2.33	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH22	-	-	0.03	-	-	-	0.03	4.43	0.143	1.000	0.496	1.913	1.000	1.000	0.136
SDP34	0.37	-	-	-	-	-	0.37	-	-	-	-	-	-	-	-
IN15	-	-	0.26	-	-	-	0.26	4.29	1.549	1.000	0.939	1.000	1.000	1.000	1.454
SDP35	0.03	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-
IN16	-	-	-	-	-	-	-	4.56	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SDMH11	-	-	0.08	-	-	-	0.08	4.09	0.204	1.000	0.602	1.673	1.000	1.000	0.206
SDP20	0.42	0.01	-	-	-	-	0.42	-	-	-	-	-	-	-	-
IN10	-	-	-	-	-	-	-	3.90	-	-	-	-	-	-	-
New Branch	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IN13	-	-	0.03	-	-	-	0.03	4.33	1.385	1.000	0.623	0.163	1.000	1.000	0.141
SDP31	0.08	-	-	-	-	-	0.08	-	-	-	-	-	-	-	-
IN14	-	-	-	-	-	-	-	4.40	-	-	-	-	-	-	-

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Shaded cells require user input. Non-shaded cells cannot be edited.*

RANCHO ENCANTADO SUR SUBDIVISION STORM DRAIN, 2x100 YEAR STORM ANALYSIS FOR SUMP CONDITION

***** HYDRAULIC GRADE LINE CALCULATIONS *****

Manning's n = 0.013
for pipe

MESA RINCON DRIVE SUMP

Station	Structure	Diam. (in.)	Q (cfs)	Area	Vel.	K	Sf	Length (ft.)	MH Dia. (ft.)	JNCT Angle	Hf	Hb	Hj	Hmh	Ht	Total Losses	HGL(dn)	HGL(up)	Notes	Low Point	HV	EGL(dn)	EGL(up)
0.00	SD MH11								6.00	0.00		0.00	0.00	0.03	0.12	0.14		5104.65		5107.79	0.58		5105.23
		36	43.2	7.07	6.11	667	0.0042	64.25			0.27					0.27							
64.25	SD MH12								6.00	0.00		0.00	0.00	0.03	0.00	0.03	5104.92	5104.95		5106.29	0.58	5105.50	5105.53
		36	43.2	7.07	6.11	667	0.0042	36.14			0.15					0.15							
100.39	SD MH13								6.00	0.00		0.00	0.00	0.03	0.00	0.03	5105.10	5105.13		5106.71	0.58	5105.68	5105.71
		36	43.2	7.07	6.11	667	0.0042	192.01			0.81					0.81							
292.40	INLET 8								0.00	0.00		0.00	0.00	0.04	0.00	0.04	5105.93	5105.82		5105.96	0.73	5106.51	5106.55
		24	21.6	3.14	6.88	226	0.0091	28.00			0.26					0.26							
320.40	INLET 9								0.00	0.00		0.00	0.00	0.00	0.00	0.00	5106.07	5106.81		5105.96	0.00	5106.81	5106.81
		24	0.0	3.14	0.00	226	0.0000	0.00			0.00					0.00							

MESA VIENTO ROAD SUMP

Station	Structure	Diam. (in.)	Q (cfs)	Area	Vel.	K	Sf	Length (ft.)	MH Dia. (ft.)	JNCT Angle	Hf	Hb	Hj	Hmh	Ht	Total Losses	HGL(dn)	HGL(up)	Notes	Low Point	HV	EGL(dn)	EGL(up)
0.00	SD MH11								6.00	0.00		0.00	0.00	0.07	0.27	0.34		5104.54		5107.79	1.36		5105.90
		24	29.4	3.14	9.36	226	0.0169	98.56			1.66					1.66							
98.56	INLET 10								6.00	0.00		0.00	0.00	0.00	0.00	0.00	5106.20	5107.56		5105.81	0.00	5107.56	5107.56
		24	0.0	3.14	0.00	226	0.0000	0.00			0.00					0.00							

95/28-9

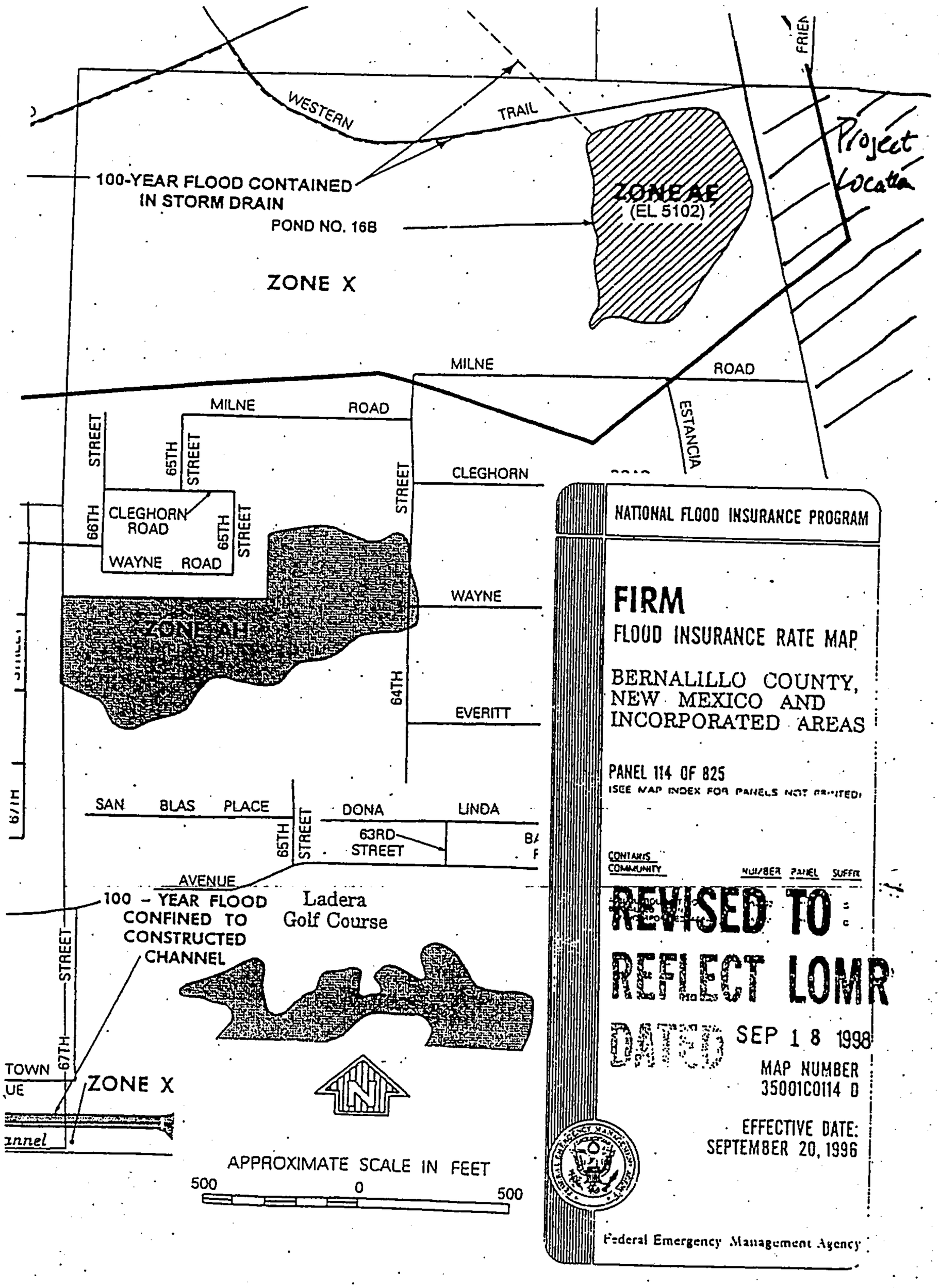

Figure 1 FEMA Flood Insurance Rate Map

CITY OF ALBUQUERQUE

Planning Department
Transportation Development Services Section

October 7, 2004

Scott J. Steffen, P.E.
7500 Jefferson, Courtyard I
Albuquerque, NM 87109-4335

Re: Certification Submittal for Final Building Certificate of Occupancy for Rancho Encantado Condominiums, [F-11 / D13]
SE corner of Milne Road and Quaker Heights Place
Engineer's Stamp Dated 10/07/04

Dear Mr. Steffen:

The TCL / Letter of Certification submitted on October 7, 2004 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Sincerely,

Nilo E. Salgado-Fernandez, P.E.
Senior Traffic Engineer
Development and Building Services
Planning Department

c: Engineer
Hydrology file
CO Clerk

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

Bohannan ▲ Huston INC.

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7500 Jefferson St. NE
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October 7, 2004

Nilo Salgado-Fernandez, P.E.
Transportation Development Division
City of Albuquerque
600 2nd Street NW
Albuquerque, NM 87102

Re: Site Plan Certification
Rancho Encantado Condominiums, COA Project No. 704381; DRB Case No. 1002384

Dear Mr. Salgado-Fernandez:

I, Scott J. Steffen, NMPE 14664, hereby certify that the Rancho Encantado Condominium site has been constructed and is in substantial compliance with the DRB approved site plan, dated 1/23/03, and the changes shown on the approved Administrative Amendment to the site plan, dated June 16, 2004. I further certify that I have personally visited the project site on 10/06/04 and have determined by visual inspection that the site is in substantial compliance with the approved site plan. This certification is submitted in support of a request for a certificate of occupancy.

Changes shown on the approved site plan, as part of the administrative amendment, include the addition of handicap parking spaces for Unit 14 and in the center common parking area; and the relocation of the parking area in the cul-de-sac at the east end of the site. These changes are shown on the enclosed copy of the approved site plan.

Your review and approval is requested for certificate of occupancy for the project. I appreciate your time and consideration. If you have questions or require additional information, please contact me at 823-1000.

Sincerely,

Scott J. Steffen, P.E.
Project Manager, Community Development
and Planning Group

Enclosure

cc: R.P. Bohannan, DR Horton

SCOTT J. STEFFEN NEW MEXICO 14664 REGISTERED PROFESSIONAL ENGINEER 10/7/04

RECEIVED OCT 7 2004 HYDROLOGY SECTION