DRAINAGE STUDY

FOR

SUN GATE SUBDIVISION

(FORMERLY KNOWN AS EL RANCHO GRANDE UNIT 12)

JANUARY 8, 2004

Scan Report & Sheets in report

Prepared for:

Curb Inc.

6301 Indian School NE. Suite 208

Albuquerque, NM 87109

Rec 1/9/04

Bohannan ▲ Huston INC.

ENGINEERING ▲

SPATIAL DATA ▲

ADVANCED TECHNOLOGIES ▲

N-9/07

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FOR
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(FORMERLY KNOWN AS EL RANCHO GRANDE UNIT 12)

January 8, 2004

Prepared for:

CURB INC.
6301 INDIAN SCHOOL NE - SUITE 208
ALBUQUERQUE, NM 87110

Prepared by:

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Rick L. Beltramo, P.E. Date 1/8/04

TABLE OF CONTENTS

APPENDICES

EXHIBITS

I. INTRODUCTION

This drainage study establishes a drainage management plan for the proposed development of Sun Gate Subdivision (formerly known as El Rancho Grande Unit 12). The Sun Gate Subdivision is approximately 21 acres of residential (R-2) land to be subdivided into 130 single family residential lots. The property is in the Rio Bravo Sector Plan and is located on Albuquerque's southwest mesa, south of the future Gibson Boulevard and west of Blake Road.

Sun Gate is in the Amole Arroyo Watershed and encompassed by the Amole-Hubbell Drainage Management Plan. In addition, a draft Drainage Management Plan (DMP) is being developed for the Gibson Boulevard corridor between 118th Street and the Amole Arroyo. The drainage area covered by the DMP is approximately 300 acres of residential, commercial, and special use zoned property that bound the north and south side of the future Gibson Boulevard between 118th Street to the west and the Amole Arroyo to the east. Sun Gate is in the Drainage Management Plan (DMP) area. Approval of the Gibson Boulevard DMP by the City of Albuquerque and AMAFCA is not required for approval of this Drainage Study for Sun Gate.

This study provides hydrologic and hydraulic analysis and provides a drainage management plan as necessary to support the planned 130-unit 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. The Arid-lands Hydrologic Model (AHYMO) was utilized to determine peak flow rates for design of the storm drainage improvements within the project. The 100-year, 6-hour storm is used as the design event. The results are included in **Appendix A.** Street capacities were analyzed using Manning's equation, consistent with the revised DPM Section 22.2. The storm sewer system is analyzed

using current DPM methods for gravity flow conditions. All data and calculations supporting this study are located in **Appendix B.**

The hydrologic analysis is also based on the approved drainage report: *Amole-Hubbell Drainage Management Plan, Volume I, Final Facilities Plan Report* dated July 22, 1999, prepared by Leedshill-Herkenhoff, Inc.

III. EXISTING CONDITIONS

A. Topography

Sun Gate is currently undeveloped land with grades ranging from approximately 1% to 6%. The area generally slopes from northwest to southeast. Soils in the area have an SCS soil classification of BCC (Bluepoint loamy fine sand). BCC soils consist of deep, somewhat excessively drained soils formed in sandy alluvial soils, with rapid permeability, slow runoff characteristics, and severe hazard for wind erosion. Vegetation is light consisting mostly of native grasses.

B. Existing Drainage Patterns

Sun Gate is located in the Amole Arroyo Drainage Basin. The site generally drains from northwest to southeast. The only development in the area that has altered the natural drainage pattern of the area is El Rancho Grande Unit 11. This development diverts the offsite flow at the northwest corner of Unit 14 and prevents it from entering the site. The majority of the remaining offsite flow is conveyed south by a natural arroyo that is parallel to the western boundary of Units 14 and 15. Units 14 and 15 currently drain to offsite ponds.

IV. PROPOSED DEVELOPED CONDITIONS

Sun Gate subdivision is a proposed single-family residential development with 130 lots on 21 acres. Proposed street configurations are shown on the *Preliminary Plat*, **Exhibit 1.** The Amole-Hubbell DMP allows for full discharge of developed flows from the Amole Arroyo Basin to the Amole and Hubbell Lake storage facilities. The drainage concepts for Sun Gate is consistent with

those presented in the "Draft Master Drainage Study for the Gibson Boulevard Corridor between 118th Street and the Amole Arroyo". The Sun Gate drainage area corresponds to Basin DB8 in the Gibson Boulevard DMP.

The percent impervious land treatment for the proposed conditions is determined from Table A-5 of the DPM, Section 22.2. The land treatment values used in the AHYMO analysis are the same as the Gibson Boulevard DMP.

A. Offsite Flows

No offsite flows reach the site from the south or east because the natural ground slopes away from Sun Gate on these sides. The offsite flow from the north is intercepted by El Rancho Grande Unit 10 and Gibson Blvd..

The property to the west of Sun Gate is being developed as El Rancho Grande Units 14 and 15. The majority of the offsite flow to the west is conveyed south by a natural arroyo that is parallel to the western boundary of Units 14 and 15. A drainage swale will be graded west of Messina Drive that will convey this flow into the natural arroyo parallel to the western boundary. The temporary ponds created with Units 14 and 15 will be removed with the construction of Sun Gate and a master planned storm drain to be constructed in Open Range Avenue.

B. Onsite Flows

Developed runoff from Sun Gate will be conveyed by the internal street system to Garden Gate Lane, where it will be collected by a public storm drain system. Inlets are located along Garden Gate Lane at the east stub terminus and the intersection of Stone Gate Way. These inlets collect the runoff from the residential streets into a storm drain that discharges to the east at Open Range Avenue. See **Appendix B** for street capacity and inlet capacity calculations. This drainage plan proposes discharging 77.4 cfs to the storm drain in Open Range Avenue and Blake Road.

The storm drain outfall alignment for Sun Gate to the Amole Arroyo has not been identified at this time. The outfall alignment will be determined in the final Gibson

Boulevard DMP and constructed with future phases of the El Rancho Grande development. Therefore, interim facilities will be constructed to accept developed flows from Sun Gate. A retention pond sized to retain the 100-year, 24-hour storm volume will be constructed on Tract 34D-1-A, Lands of Curb Inc. just east of Blake Road. The pond will remain in place until all downstream storm drain improvements identified in the Gibson Boulevard DMP are in place and/or Tract 34-D-1-A is developed. See **Exhibit 2**, *Grading Plan*, for the location of the pond.

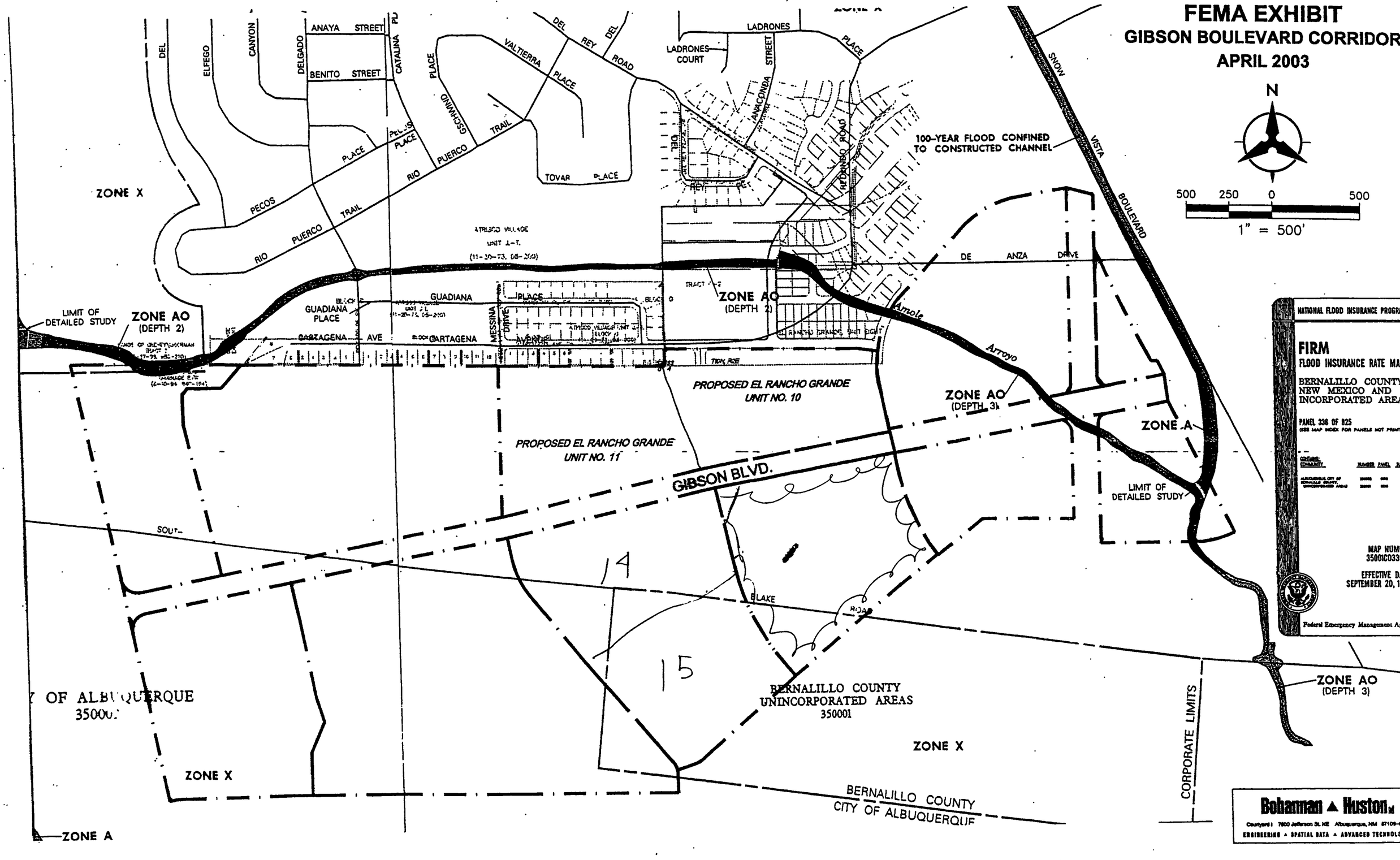
C. FEMA Floodplain

As designated on Panel 336 of 825 (Map number 35001C0336D) of the National Flood Insurance Program, Flood Insurance Rate Maps published by FEMA for Bernalillo County, New Mexico, effective date September 20, 1996, there is no existing flood hazard zone (zone AO) within the proposed development. See the FEMA Floodplain exhibit provided at the end of the report text.

V. CONCLUSION

This report provides a detailed study of the developed runoff and street capacities for the proposed Sun Gate 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 and allows for the safe management of storm runoff in permanent as well as interim conditions.

FEMA EXHIBIT
GIBSON BOULEVARD CORRIDOR
APRIL 2003



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY, NEW MEXICO AND INCORPORATED AREAS

PANEL 336 OF 825
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0336	D
BERNALILLO COUNTY UNINCORPORATED AREAS	350001	0336	D

MAP NUMBER
35001C0336 D

EFFECTIVE DATE:
SEPTEMBER 20, 1996

Federal Emergency Management Agency

Bohannan ▲ Huston Inc.
Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

APPENDICES

APPENDIX A - AHYMO INPUT AND SUMMARY FILES FOR DEVELOPED CONDITIONS

APPENDIX B - STREET CAPACITY AND STORM DRAIN INLET ANALYSIS

APPENDIX C - INFRASTRUCTURE LIST

APPENDIX A

AHYMO INPUT AND SUMMARY FILES

DEVELOPED CONDITIONS

```
*S*                    PROJECT NAME:  SUNGATE SUBDIVISION (ERG 12)
*S*                    DATE:  JANUARY 7, 2004
*S*                    INPUT FILE NAME:  SUNGATE.HYM
*S*                    OUTUPUT FILE NAME:  SUNGATE.OUT
*S*                    PROJECT NUMBER:  040154
*S*                    COMMENTS:     100 YEAR-6 HOUR STORM
*S ////////////////////////////////////////////////////////////////////////
START                  TIME=0.0 HR PUNCH CODE=0
RAINFALL               TYPE=1     RAIN QUARTER=0.0
                       RAIN ONE=1.90 IN    RAIN SIX=2.20 IN
                       RAIN DAY=2.60 IN    DT=0.05 HRS
**************************************************************************
*S*************************************************************************
COMPUTE NM HYD         ID=1     HYD NO=BASIN.A    DA=0.0084 SQ MI
                       PER A=0.0   PER B=22.5   PER C=22.5    PER D=55.0
                       TP=-0.1333 HR     MASSRAIN=-1
PRINT HYD              ID=1     CODE=1
*S*************************************************************************
COMPUTE NM HYD         ID=2     HYD NO=BASIN.B    DA=0.0037 SQ MI
                       PER A=0.0   PER B=22.5   PER C=22.5    PER D=55.0
                       TP=-0.1333 HR     MASSRAIN=-1
PRINT HYD              ID=2     CODE=1
*S*************************************************************************
*S          ADD BASINS A AND B FOR DISCHARGE INTO GARDEN GATE LANE EAST STUB
ADD HYD                ID=3     HYD NO=A.B    ID I=1    ID II=2
PRINT HYD              ID=3     CODE=1
*S*************************************************************************
COMPUTE NM HYD         ID=4     HYD NO=BASIN.C    DA=0.0059 SQ MI
                       PER A=0.0   PER B=22.5   PER C=22.5    PER D=55.0
                       TP=-0.1333 HR     MASSRAIN=-1
PRINT HYD              ID=4     CODE=1
*S*************************************************************************
COMPUTE NM HYD         ID=5     HYD NO=BASIN.D    DA=0.0074 SQ MI
                       PER A=0.0   PER B=22.5   PER C=22.5    PER D=55.0
                       TP=-0.1333 HR     MASSRAIN=-1
PRINT HYD              ID=5     CODE=1
*S*************************************************************************
COMPUTE NM HYD         ID=6     HYD NO=BASIN.E    DA=0.009 SQ MI
                       PER A=0.0   PER B=22.5   PER C=22.5    PER D=55.0
                       TP=-0.1333 HR     MASSRAIN=-1
PRINT HYD              ID=6     CODE=1
*S*************************************************************************
ADD HYD                ID=7     HYD NO=D.E    ID I=5    ID II=6
PRINT HYD              ID=7     CODE=1
*S*************************************************************************
*S          ADD BASINS C, D, E FOR DISCHARGE INTO GARDEN GATE/STONE GATE INTERSECTION
ADD HYD                ID=8     HYD NO=C.D.E    ID I=4   ID II=7
PRINT HYD              ID=8     CODE=1
*S*************************************************************************
*S          TOTAL DEVELOPED FLOW FROM SUN GATE SUBDIVISION
ADD HYD                ID=9     HYD NO=TOTAL    ID I=3   ID II=8
PRINT HYD              ID=9     CODE=1
*S*************************************************************************
FINISH
```

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =01/07/2004
INPUT FILE = SUNGATE.HYM 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*                    PROJECT NAME:  SUNGATE SUBDIVISION (ERG 12)
*S*                    DATE:  JANUARY 7, 2004
*S*                    INPUT FILE NAME:  SUNGATE.HYM
*S*                    OUTUPUT FILE NAME:  SUNGATE.OUT
*S*                    PROJECT NUMBER:  040154
*S*                        COMMENTS: 100 YEAR-6 HOUR STORM
*S ////////////////////////////////////////////////////////////////////////////
START                                                                  TIME=      .00
RAINFALL  TYPE= 1                                                      RAIN6=    2.200
*S***************************************************************************
COMPUTE NM HYD       BASIN.A   -     1        .00840        18.89        .653     1.45690    1.500    3.514 PER IMP=  55.00
*S***************************************************************************
COMPUTE NM HYD       BASIN.B   -     2        .00370         8.33        .287     1.45690    1.500    3.517 PER IMP=  55.00
*S***************************************************************************
*S                 BASINS A AND B FOR DISCHARGE INTO GARDEN GATE LANE EAST STUB
ADD HYD                A.B  1& 2   3        .01210        27.22        .940     1.45685    1.500    3.515
*S***************************************************************************
COMPUTE NM HYD       BASIN.C   -     4        .00590        13.27        .458     1.45690    1.500    3.515 PER IMP=  55.00
*S***************************************************************************
COMPUTE NM HYD       BASIN.D   -     5        .00740        16.64        .575     1.45690    1.500    3.514 PER IMP=  55.00
*S***************************************************************************
COMPUTE NM HYD       BASIN.E   -     6        .00900        20.24        .699     1.45690    1.500    3.513 PER IMP=  55.00
*S***************************************************************************
ADD HYD                D.E  5& 6   7        .01640        36.88       1.274     1.45686    1.500    3.513
*S***************************************************************************
*S                 D, E FOR DISCHARGE INTO GARDEN GATE/STONE GATE INTERSECTION
ADD HYD              C.D.E  4& 7   8        .02230        50.15       1.733     1.45686    1.500    3.514    - -
*S***************************************************************************
*S                  TOTAL DEVELOPED FLOW FROM SUN GATE SUBDIVISION
ADD HYD              TOTAL  3& 8   9        .03440        77.36       2.673     1.45686    1.500    3.514
*S***************************************************************************
FINISH
```

APPENDIX B

STREET CAPACITY AND

STORM DRAIN INLET ANALYSIS

SUN GATE SUBDIVISION
Internal Street Capacity Calculations
January 2004

1. **Corral Gate Lane**
(See Basin Map)
Q = 8.3 cfs

The amount of developed runoff produced from Basin B does not exceed the street capacity. Therefore, inlets are not required on this street. Roll curb may be installed to the eastern edge of the basin. Flow will continue on the surface east towards Bridal Gate Trail. See PC stream output.

2. **Bridal Gate Trail**
(See Basin Map)
Q = 27.2 cfs

The total flow produced from Basins A and B does not exceed the street capacity. Therefore, inlets are not required on this street. Standard curb will be installed throughout Basin A. Flow will continue towards the east stub of Garden Gate Lane. See PC stream output.

3. **Garden Gate Lane**
(See Basin Map)
Q = 27.2 cfs

The total runoff from Basins A and B will be captured by an inlet at the east end of Garden Gate Lane. This inlet discharges into a temporary pond on the east side of Blake Road. The pond will be removed once the master planned storm drain in Blake Road is constructed. See PC stream output and inlet nomograph.

4. **Basin C**
(See Basin Map)
Q = 13.3 cfs

The runoff produced from Basin C does not exceed the street capacity for Iron Gate Trail and a portion of Garden Gate Lane. However, inlets will be placed at the intersection of Garden Gate Lane and Stone Gate Way to capture the flow produced from Basins C, D, and E. See PC stream output and inlet nomograph.

5. **Basins D and E**
(See Basin Map)
Q = 36.9 cfs

The flow in Meadow Gate Trail, Sun Gate Trail, and the west end of Garden Gate Lane does not exceed the street capacity for those roads, therefore, inlets are not required. Inlets will be placed in Garden Gate Lane near the intersection with Sun Gate Trail. Bypass runoff will be captured by a sump inlet at the intersection of Garden Gate Lane and Stone Gate Way.

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

CORRAL GATE LANE - BASIN B

MANNING'S N= .017 SLOPE= .0188

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	0.34	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.54	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.70	0.94	0.01	0.04
0.04	0.04	0.03	0.0	1.32	0.85	1.25	0.01	0.05
0.05	0.05	0.04	0.0	1.64	0.99	1.56	0.02	0.07
0.06	0.06	0.06	0.1	1.97	1.12	1.88	0.02	0.08
0.07	0.07	0.08	0.1	2.30	1.24	2.19	0.02	0.09
0.08	0.08	0.10	0.1	2.63	1.36	2.50	0.03	0.11
0.09	0.09	0.13	0.2	2.96	1.47	2.81	0.03	0.12
0.10	0.10	0.16	0.2	3.29	1.57	3.13	0.04	0.14
0.11	0.11	0.19	0.3	3.62	1.68	3.44	0.04	0.15
0.12	0.12	0.23	0.4	3.95	1.78	3.75	0.05	0.17
0.13	0.13	0.26	0.5	4.28	1.87	4.07	0.05	0.18
0.14	0.14	0.31	0.6	5.15	1.84	4.93	0.05	0.19
0.15	0.15	0.36	0.7	6.03	1.84	5.79	0.05	0.20
0.16	0.16	0.43	0.8	6.91	1.87	6.65	0.05	0.21
0.17	0.17	0.50	0.9	7.79	1.91	7.51	0.06	0.23
0.18	0.18	0.58	1.1	8.67	1.97	8.38	0.06	0.24
0.19	0.19	0.66	1.3	9.54	2.03	9.24	0.06	0.25
0.20	0.20	0.76	1.6	10.42	2.09	10.10	0.07	0.27
0.21	0.21	0.87	1.9	11.30	2.16	10.96	0.07	0.28
0.22	0.22	0.98	2.2	12.18	2.23	11.83	0.08	0.30
0.23	0.23	1.10	2.5	13.06	2.31	12.69	0.08	0.31
0.24	0.24	1.23	2.9	13.93	2.38	13.55	0.09	0.33
0.25	0.25	1.37	3.4	14.81	2.45	14.41	0.09	0.34
0.26	0.26	1.52	3.8	15.69	2.53	15.27	0.10	0.36
0.27	0.27	1.68	4.4	16.57	2.60	16.14	0.11	0.38
0.28	0.28	1.84	4.9	17.45	2.68	17.00	0.11	0.39
0.29	0.29	2.02	5.6	18.32	2.75	17.86	0.12	0.41
0.30	0.30	2.20	6.2	19.20	2.83	18.72	0.12	0.42
0.31	0.31	2.39	6.9	20.08	2.90	19.59	0.13	0.44
0.32	0.32	2.59	7.7	20.96	2.98	20.45	0.14	0.46
0.33	0.33	2.80	8.5	21.84	3.05	21.31	0.14	0.47
0.34	0.34	3.02	9.4	22.71	3.12	22.17	0.15	0.49
0.35	0.35	3.25	10.4	23.59	3.19	23.03	0.16	0.51
0.36	0.36	3.48	11.4	24.47	3.27	23.90	0.17	0.53
0.37	0.37	3.72	12.4	25.35	3.34	24.76	0.17	0.54
0.38	0.38	3.98	13.5	26.23	3.41	25.62	0.18	0.56
0.39	0.39	4.24	14.7	27.10	3.48	26.48	0.19	0.58
0.40	0.40	4.50	16.0	27.98	3.55	27.35	0.20	0.60
0.41	0.41	4.78	17.3	28.86	3.62	28.21	0.20	0.61
0.42	0.42	5.06	19.0	28.88	3.75	28.21	0.22	0.64
0.43	0.43	5.35	20.8	28.90	3.89	28.22	0.24	0.67

ACTUAL FLOW + ROLL CURB LIMIT

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)
0.45	0.45	5.91	24.6	28.94	4.16	28.23	0.27	0.72
0.46	0.46	6.19	26.5	28.96	4.29	28.23	0.29	0.75
0.47	0.47	6.48	28.6	28.98	4.41	28.24	0.30	0.77
0.48	0.48	6.76	30.7	29.01	4.54	28.24	0.32	0.80
0.49	0.49	7.04	32.8	29.03	4.66	28.25	0.34	0.83
0.50	0.50	7.32	35.0	29.05	4.78	28.25	0.36	0.86
0.51	0.51	7.61	37.3	29.07	4.90	28.26	0.37	0.88
0.52	0.52	7.89	39.6	29.09	5.02	28.26	0.39	0.91

STREET CAPACIT

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

CORRAL GATE LANE – BASINS A+B

MANNING'S N= .017 SLOPE= .03

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	0.43	0.31	0.00	0.01	
0.02	0.02	0.01	0.0	0.66	0.68	0.63	0.01	0.03	
0.03	0.03	0.01	0.0	0.99	0.89	0.94	0.01	0.04	
0.04	0.04	0.03	0.0	1.32	1.08	1.25	0.02	0.06	
0.05	0.05	0.04	0.0	1.64	1.25	1.56	0.02	0.07	
0.06	0.06	0.06	0.1	1.97	1.41	1.88	0.03	0.09	
0.07	0.07	0.08	0.1	2.30	1.57	2.19	0.04	0.11	
0.08	0.08	0.10	0.2	2.63	1.71	2.50	0.05	0.13	
0.09	0.09	0.13	0.2	2.96	1.85	2.81	0.05	0.14	
0.10	0.10	0.16	0.3	3.29	1.99	3.13	0.06	0.16	
0.11	0.11	0.19	0.4	3.62	2.12	3.44	0.07	0.18	
0.12	0.12	0.23	0.5	3.95	2.24	3.75	0.08	0.20	
0.13	0.13	0.26	0.6	4.28	2.37	4.07	0.09	0.22	
0.14	0.14	0.31	0.7	5.15	2.32	4.93	0.08	0.22	
0.15	0.15	0.36	0.8	6.03	2.32	5.79	0.08	0.23	
0.16	0.16	0.43	1.0	6.91	2.36	6.65	0.09	0.25	
0.17	0.17	0.50	1.2	7.79	2.41	7.51	0.09	0.26	
0.18	0.18	0.58	1.4	8.67	2.48	8.38	0.10	0.28	
0.19	0.19	0.66	1.7	9.54	2.56	9.24	0.10	0.29	
0.20	0.20	0.76	2.0	10.42	2.64	10.10	0.11	0.31	
0.21	0.21	0.87	2.4	11.30	2.73	10.96	0.12	0.33	
0.22	0.22	0.98	2.8	12.18	2.82	11.83	0.12	0.34	
0.23	0.23	1.10	3.2	13.06	2.91	12.69	0.13	0.36	
0.24	0.24	1.23	3.7	13.93	3.01	13.55	0.14	0.38	
0.25	0.25	1.37	4.3	14.81	3.10	14.41	0.15	0.40	
0.26	0.26	1.52	4.9	15.69	3.20	15.27	0.16	0.42	
0.27	0.27	1.68	5.5	16.57	3.29	16.14	0.17	0.44	
0.28	0.28	1.84	6.2	17.45	3.38	17.00	0.18	0.46	
0.29	0.29	2.02	7.0	18.32	3.48	17.86	0.19	0.48	
0.30	0.30	2.20	7.9	19.20	3.57	18.72	0.20	0.50	
0.31	0.31	2.39	8.8	20.08	3.67	19.59	0.21	0.52	
0.32	0.32	2.59	9.7	20.96	3.76	20.45	0.22	0.54	ROLL CURB LIMIT
0.33	0.33	2.80	10.8	21.84	3.85	21.31	0.23	0.56	
0.34	0.34	3.02	11.9	22.71	3.94	22.17	0.24	0.58	
0.35	0.35	3.25	13.1	23.59	4.03	23.03	0.25	0.60	
0.36	0.36	3.48	14.4	24.47	4.12	23.90	0.26	0.62	
0.37	0.37	3.72	15.7	25.35	4.21	24.76	0.28	0.65	
0.38	0.38	3.98	17.1	26.23	4.30	25.62	0.29	0.67	
0.39	0.39	4.24	18.6	27.10	4.39	26.48	0.30	0.69	
0.40	0.40	4.50	20.2	27.98	4.48	27.35	0.31	0.71	
0.41	0.41	4.78	21.8	28.86	4.57	28.21	0.32	0.73	
0.42	0.42	5.06	24.0	28.88	4.74	28.21	0.35	0.77	
0.43	0.43	5.35	26.3	28.90	4.92	28.22	0.38	0.81	

□ 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	31.0	28.94	5.25	28.23	0.43	0.88	STREET CAPACITY & ACTUAL FLOW
0.46	0.46	6.19	33.5	28.96	5.41	28.23	0.46	0.92	
0.47	0.47	6.48	36.1	28.98	5.57	28.24	0.48	0.95	
0.48	0.48	6.76	38.7	29.01	5.73	28.24	0.51	0.99	
0.49	0.49	7.04	41.5	29.03	5.89	28.25	0.54	1.03	
0.50	0.50	7.32	44.3	29.05	6.04	28.25	0.57	1.07	
0.51	0.51	7.61	47.1	29.07	6.19	28.26	0.60	1.11	
0.52	0.52	7.89	50.0	29.09	6.34	28.26	0.62	1.14	

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

BRIDAL GATE TRAIL — BASIN A

MANNING'S N= .017 SLOPE= .0328

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	0.45	0.31	0.00	0.01	
0.02	0.02	0.01	0.0	0.66	0.71	0.63	0.01	0.03	
0.03	0.03	0.01	0.0	0.99	0.93	0.94	0.01	0.04	
0.04	0.04	0.03	0.0	1.32	1.13	1.25	0.02	0.06	
0.05	0.05	0.04	0.1	1.64	1.31	1.56	0.03	0.08	
0.06	0.06	0.06	0.1	1.97	1.48	1.88	0.03	0.09	
0.07	0.07	0.08	0.1	2.30	1.64	2.19	0.04	0.11	
0.08	0.08	0.10	0.2	2.63	1.79	2.50	0.05	0.13	
0.09	0.09	0.13	0.2	2.96	1.94	2.81	0.06	0.15	
0.10	0.10	0.16	0.3	3.29	2.08	3.13	0.07	0.17	
0.11	0.11	0.19	0.4	3.62	2.21	3.44	0.08	0.19	
0.12	0.12	0.23	0.5	3.95	2.35	3.75	0.09	0.21	
0.13	0.13	0.26	0.7	4.28	2.47	4.07	0.10	0.23	
0.14	0.14	0.31	0.8	5.15	2.43	4.93	0.09	0.23	
0.15	0.15	0.36	0.9	6.03	2.43	5.79	0.09	0.24	
0.16	0.16	0.43	1.0	6.91	2.47	6.65	0.09	0.25	
0.17	0.17	0.50	1.3	7.79	2.52	7.51	0.10	0.27	
0.18	0.18	0.58	1.5	8.67	2.60	8.38	0.10	0.28	
0.19	0.19	0.66	1.8	9.54	2.68	9.24	0.11	0.30	
0.20	0.20	0.76	2.1	10.42	2.76	10.10	0.12	0.32	
0.21	0.21	0.87	2.5	11.30	2.85	10.96	0.13	0.34	
0.22	0.22	0.98	2.9	12.18	2.95	11.83	0.14	0.36	
0.23	0.23	1.10	3.4	13.06	3.05	12.69	0.14	0.37	
0.24	0.24	1.23	3.9	13.93	3.14	13.55	0.15	0.39	
0.25	0.25	1.37	4.5	14.81	3.24	14.41	0.16	0.41	
0.26	0.26	1.52	5.1	15.69	3.34	15.27	0.17	0.43	
0.27	0.27	1.68	5.8	16.57	3.44	16.14	0.18	0.45	
0.28	0.28	1.84	6.5	17.45	3.54	17.00	0.19	0.47	
0.29	0.29	2.02	7.3	18.32	3.64	17.86	0.21	0.50	
0.30	0.30	2.20	8.2	19.20	3.74	18.72	0.22	0.52	
0.31	0.31	2.39	9.2	20.08	3.83	19.59	0.23	0.54	ROLL CURB LIMIT
0.32	0.32	2.59	10.2	20.96	3.93	20.45	0.24	0.56	
0.33	0.33	2.80	11.3	21.84	4.03	21.31	0.25	0.58	
0.34	0.34	3.02	12.4	22.71	4.12	22.17	0.26	0.60	
0.35	0.35	3.25	13.7	23.59	4.22	23.03	0.28	0.63	
0.36	0.36	3.48	15.0	24.47	4.31	23.90	0.29	0.65	
0.37	0.37	3.72	16.4	25.35	4.41	24.76	0.30	0.67	
0.38	0.38	3.98	17.9	26.23	4.50	25.62	0.31	0.69	
0.39	0.39	4.24	19.5	27.10	4.59	26.48	0.33	0.72	
0.40	0.40	4.50	21.1	27.98	4.68	27.35	0.34	0.74	
0.41	0.41	4.78	22.8	28.86	4.78	28.21	0.35	0.76	
0.42	0.42	5.06	25.1	28.88	4.96	28.21	0.38	0.80	
0.43	0.43	5.35	27.5	28.90	5.14	28.22	0.41	0.84	STREET CAPACITY & ACTUAL FLOW

□ 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	32.5	28.94	5.49	28.23	0.47	0.92
0.46	0.46	6.19	35.1	28.96	5.66	28.23	0.50	0.96
0.47	0.47	6.48	37.7	28.98	5.83	28.24	0.53	1.00
0.48	0.48	6.76	40.5	29.01	5.99	28.24	0.56	1.04
0.49	0.49	7.04	43.4	29.03	6.16	28.25	0.59	1.08
0.50	0.50	7.32	46.3	29.05	6.32	28.25	0.62	1.12
0.51	0.51	7.61	49.3	29.07	6.48	28.26	0.65	1.16
0.52	0.52	7.89	52.3	29.09	6.63	28.26	0.68	1.20

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

GARDEN GATE LANE – BASIN A

MANNING'S N= .017 SLOPE= .007

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

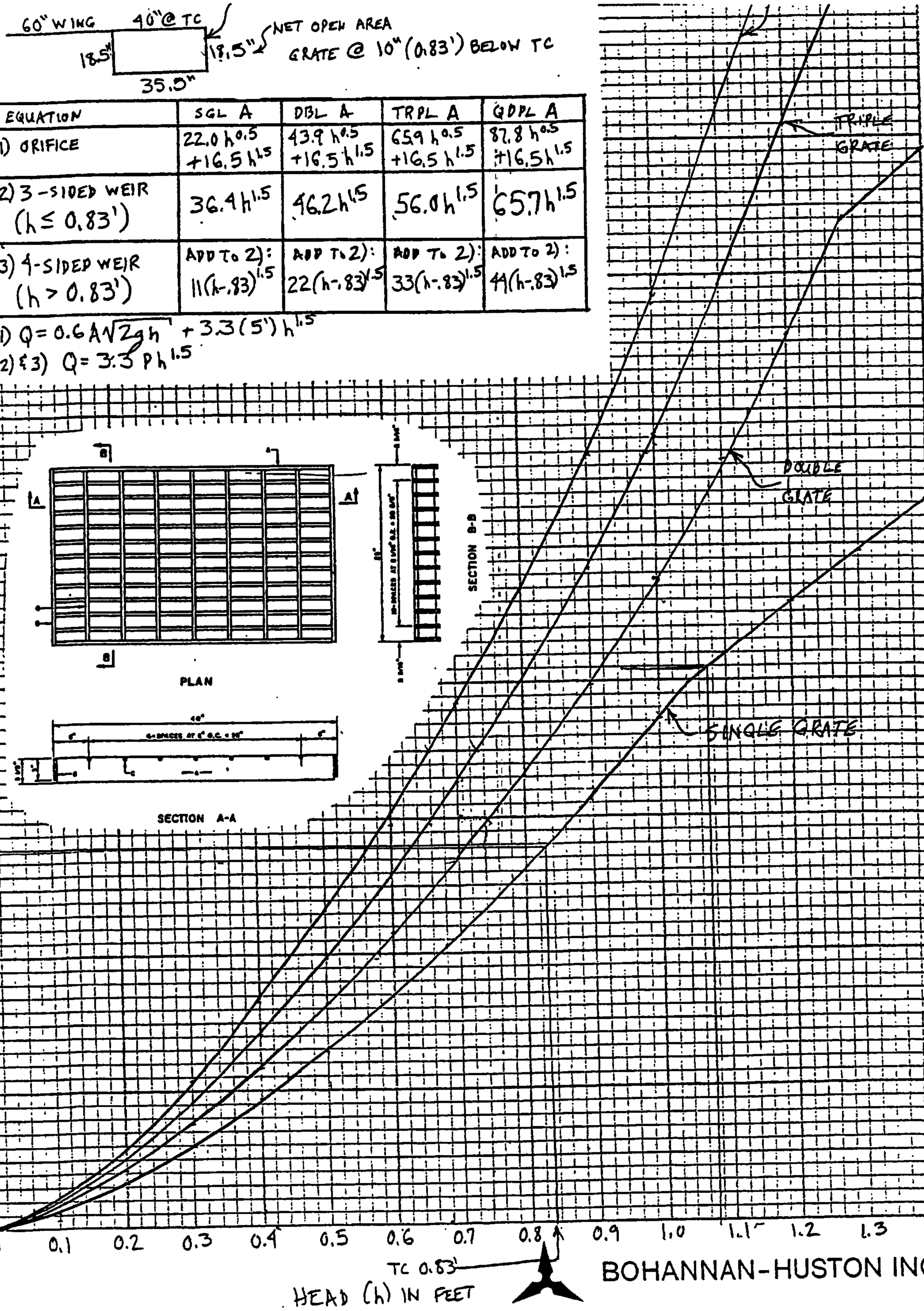
WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.01	0.01	0.00	0.0	0.33	0.21	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.33	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.43	0.94	0.00	0.03
0.04	0.04	0.03	0.0	1.32	0.52	1.25	0.00	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	0.76	2.19	0.01	0.08
0.08	0.08	0.10	0.1	2.63	0.83	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	0.2	3.29	0.96	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	1.14	4.07	0.02	0.15
0.14	0.14	0.31	0.3	5.15	1.12	4.93	0.02	0.16
0.15	0.15	0.36	0.4	6.03	1.12	5.79	0.02	0.17
0.16	0.16	0.43	0.5	6.91	1.14	6.65	0.02	0.18
0.17	0.17	0.50	0.6	7.79	1.17	7.51	0.02	0.19
0.18	0.18	0.58	0.7	8.67	1.20	8.38	0.02	0.20
0.19	0.19	0.66	0.8	9.54	1.24	9.24	0.02	0.21
0.20	0.20	0.76	1.0	10.42	1.28	10.10	0.03	0.23
0.21	0.21	0.87	1.1	11.30	1.32	10.96	0.03	0.24
0.22	0.22	0.98	1.3	12.18	1.36	11.83	0.03	0.25
0.23	0.23	1.10	1.6	13.06	1.41	12.69	0.03	0.26
0.24	0.24	1.23	1.8	13.93	1.45	13.55	0.03	0.27
0.25	0.25	1.37	2.1	14.81	1.50	14.41	0.03	0.28
0.26	0.26	1.52	2.3	15.69	1.54	15.27	0.04	0.30
0.27	0.27	1.68	2.7	16.57	1.59	16.14	0.04	0.31
0.28	0.28	1.84	3.0	17.45	1.63	17.00	0.04	0.32
0.29	0.29	2.02	3.4	18.32	1.68	17.86	0.04	0.33
0.30	0.30	2.20	3.8	19.20	1.73	18.72	0.05	0.35
0.31	0.31	2.39	4.2	20.08	1.77	19.59	0.05	0.36
0.32	0.32	2.59	4.7	20.96	1.82	20.45	0.05	0.37
0.33	0.33	2.80	5.2	21.84	1.86	21.31	0.05	0.38
0.34	0.34	3.02	5.8	22.71	1.90	22.17	0.06	0.40
0.35	0.35	3.25	6.3	23.59	1.95	23.03	0.06	0.41
0.36	0.36	3.48	6.9	24.47	1.99	23.90	0.06	0.42
0.37	0.37	3.72	7.6	25.35	2.04	24.76	0.06	0.43
0.38	0.38	3.98	8.3	26.23	2.08	25.62	0.07	0.45
0.39	0.39	4.24	9.0	27.10	2.12	26.48	0.07	0.46
0.40	0.40	4.50	9.7	27.98	2.16	27.35	0.07	0.47
0.41	0.41	4.78	10.6	28.86	2.21	28.21	0.08	0.49
0.42	0.42	5.06	11.6	28.88	2.29	28.21	0.08	0.50
0.43	0.43	5.35	12.7	28.90	2.37	28.22	0.09	0.52

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	15.0	28.94	2.54	28.23	0.10	0.55
0.46	0.46	6.19	16.2	28.96	2.62	28.23	0.11	0.57
0.47	0.47	6.48	17.4	28.98	2.69	28.24	0.11	0.58
0.48	0.48	6.76	18.7	29.01	2.77	28.24	0.12	0.60
0.49	0.49	7.04	20.0	29.03	2.84	28.25	0.13	0.62
0.50	0.50	7.32	21.4	29.05	2.92	28.25	0.13	0.63
0.51	0.51	7.61	22.8	29.07	2.99	28.26	0.14	0.65
0.52	0.52	7.89	24.2	29.09	3.06	28.26	0.15	0.67

0.53	0.53	8.17	25.6	29.11	3.14	28.27	0.15	0.68
0.54	0.54	8.45	27.1	29.13	3.21	28.27	0.16	0.70
0.55	0.55	8.74	28.6	29.15	3.28	28.28	0.17	0.72
0.56	0.56	9.02	30.2	29.17	3.34	28.28	0.17	0.73
0.57	0.57	9.30	31.7	29.19	3.41	28.29	0.18	0.75
0.58	0.58	9.59	33.3	29.21	3.48	28.29	0.19	0.77
0.59	0.59	9.87	35.0	29.23	3.55	28.30	0.20	0.79
0.60	0.60	10.15	36.7	29.25	3.61	28.30	0.20	0.80
0.61	0.61	10.43	38.4	29.27	3.68	28.31	0.21	0.82
0.62	0.62	10.72	40.1	29.29	3.74	28.31	0.22	0.84
0.63	0.63	11.00	41.9	29.31	3.80	28.32	0.22	0.85
0.64	0.64	11.28	43.6	29.34	3.87	28.32	0.23	0.87
0.65	0.65	11.57	45.5	29.36	3.93	28.33	0.24	0.89
0.66	0.66	11.85	47.3	29.38	3.99	28.33	0.25	0.91
0.67	0.67	12.13	49.2	29.40	4.05	28.34	0.26	0.93
0.68	0.68	12.42	50.0	30.44	4.02	30.30	0.25	0.93
0.69	0.69	12.72	50.8	31.49	4.00	31.34	0.25	0.94
0.70	0.70	13.06	51.0	33.45	3.91	32.39	0.24	0.94
0.71	0.71	13.39	52.1	34.50	3.89	33.44	0.24	0.95
0.72	0.72	13.73	53.2	35.54	3.88	34.48	0.23	0.95
0.73	0.73	14.08	54.5	36.59	3.87	35.53	0.23	0.96
0.74	0.74	14.44	55.7	37.64	3.86	36.58	0.23	0.97
0.75	0.75	14.81	57.1	38.68	3.86	37.62	0.23	0.98
0.76	0.76	15.19	58.5	39.73	3.85	38.67	0.23	0.99
0.77	0.77	15.58	60.0	40.78	3.85	39.72	0.23	1.00
0.78	0.78	15.98	61.6	41.83	3.85	40.77	0.23	1.01
0.79	0.79	16.40	63.2	42.87	3.85	41.81	0.23	1.02
0.80	0.80	16.82	64.9	43.92	3.86	42.86	0.23	1.03
0.81	0.81	17.25	66.6	44.97	3.86	43.91	0.23	1.04
0.82	0.82	17.70	68.5	46.01	3.87	44.95	0.23	1.05
0.83	0.83	18.15	70.4	47.06	3.88	46.00	0.23	1.06

ACTUAL FLOW

STREET CAPACITY



BOHANNAN-HUSTON INC.

PROJECT NAME Sun Gate SHEET ____ OF ____

PROJECT NO. Garden Gate Inlet BY ____ DATE ____

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

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

IRON GATE TRAIL - BASIN C

MANNING'S N= .017 SLOPE= .034

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	0.46	0.31	0.00	0.01	
0.02	0.02	0.01	0.0	0.66	0.72	0.63	0.01	0.03	
0.03	0.03	0.01	0.0	0.99	0.95	0.94	0.01	0.04	
0.04	0.04	0.03	0.0	1.32	1.15	1.25	0.02	0.06	
0.05	0.05	0.04	0.1	1.64	1.33	1.56	0.03	0.08	
0.06	0.06	0.06	0.1	1.97	1.50	1.88	0.04	0.10	
0.07	0.07	0.08	0.1	2.30	1.67	2.19	0.04	0.11	
0.08	0.08	0.10	0.2	2.63	1.82	2.50	0.05	0.13	
0.09	0.09	0.13	0.2	2.96	1.97	2.81	0.06	0.15	
0.10	0.10	0.16	0.3	3.29	2.12	3.13	0.07	0.17	
0.11	0.11	0.19	0.4	3.62	2.25	3.44	0.08	0.19	
0.12	0.12	0.23	0.5	3.95	2.39	3.75	0.09	0.21	
0.13	0.13	0.26	0.7	4.28	2.52	4.07	0.10	0.23	
0.14	0.14	0.31	0.8	5.15	2.47	4.93	0.09	0.23	
0.15	0.15	0.36	0.9	6.03	2.47	5.79	0.10	0.25	
0.16	0.16	0.43	1.1	6.91	2.51	6.65	0.10	0.26	
0.17	0.17	0.50	1.3	7.79	2.57	7.51	0.10	0.27	
0.18	0.18	0.58	1.5	8.67	2.64	8.38	0.11	0.29	
0.19	0.19	0.66	1.8	9.54	2.72	9.24	0.12	0.31	
0.20	0.20	0.76	2.1	10.42	2.81	10.10	0.12	0.32	
0.21	0.21	0.87	2.5	11.30	2.91	10.96	0.13	0.34	
0.22	0.22	0.98	2.9	12.18	3.00	11.83	0.14	0.36	
0.23	0.23	1.10	3.4	13.06	3.10	12.69	0.15	0.38	
0.24	0.24	1.23	3.9	13.93	3.20	13.55	0.16	0.40	
0.25	0.25	1.37	4.5	14.81	3.30	14.41	0.17	0.42	
0.26	0.26	1.52	5.2	15.69	3.40	15.27	0.18	0.44	
0.27	0.27	1.68	5.9	16.57	3.50	16.14	0.19	0.46	
0.28	0.28	1.84	6.6	17.45	3.60	17.00	0.20	0.48	
0.29	0.29	2.02	7.5	18.32	3.70	17.86	0.21	0.50	
0.30	0.30	2.20	8.4	19.20	3.80	18.72	0.22	0.52	(LOT 77) ROLL CURB LIMIT
0.31	0.31	2.39	9.3	20.08	3.90	19.59	0.24	0.55	
0.32	0.32	2.59	10.4	20.96	4.00	20.45	0.25	0.57	
0.33	0.33	2.80	11.5	21.84	4.10	21.31	0.26	0.59	
0.34	0.34	3.02	12.7	22.71	4.20	22.17	0.27	0.61	
0.35	0.35	3.25	13.9	23.59	4.30	23.03	0.29	0.64	ACTUAL Q
0.36	0.36	3.48	15.3	24.47	4.39	23.90	0.30	0.66	
0.37	0.37	3.72	16.7	25.35	4.49	24.76	0.31	0.68	
0.38	0.38	3.98	18.2	26.23	4.58	25.62	0.33	0.71	
0.39	0.39	4.24	19.8	27.10	4.68	26.48	0.34	0.73	
0.40	0.40	4.50	21.5	27.98	4.77	27.35	0.35	0.75	
0.41	0.41	4.78	23.3	28.86	4.86	28.21	0.37	0.78	
0.42	0.42	5.06	25.6	28.88	5.05	28.21	0.40	0.82	
0.43	0.43	5.35	28.0	28.90	5.23	28.22	0.43	0.86	STREET CAPACITY

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	33.0	28.94	5.59	28.23	0.49	0.94
0.46	0.46	6.19	35.7	28.96	5.76	28.23	0.52	0.98
0.47	0.47	6.48	38.4	28.98	5.93	28.24	0.55	1.02
0.48	0.48	6.76	41.2	29.01	6.10	28.24	0.58	1.06
0.49	0.49	7.04	44.1	29.03	6.27	28.25	0.61	1.10
0.50	0.50	7.32	47.1	29.05	6.43	28.25	0.64	1.14
0.51	0.51	7.61	50.2	29.07	6.59	28.26	0.68	1.19
0.52	0.52	7.89	53.3	29.09	6.75	28.26	0.71	1.23

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

GARDEN GATE LANE — BASIN C

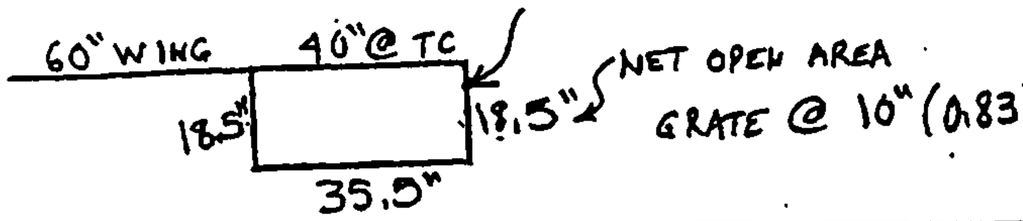
MANNING'S N= .017 SLOPE= .007

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	0.21	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	0.76	2.19	0.01	0.08
0.08	0.08	0.10	0.1	2.63	0.83	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	0.2	3.29	0.96	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	1.14	4.07	0.02	0.15
0.14	0.14	0.31	0.3	5.15	1.12	4.93	0.02	0.16
0.15	0.15	0.36	0.4	6.03	1.12	5.79	0.02	0.17
0.16	0.16	0.43	0.5	6.91	1.14	6.65	0.02	0.18
0.17	0.17	0.50	0.6	7.79	1.17	7.51	0.02	0.19
0.18	0.18	0.58	0.7	8.67	1.20	8.38	0.02	0.20
0.19	0.19	0.66	0.8	9.54	1.24	9.24	0.02	0.21
0.20	0.20	0.76	1.0	10.42	1.28	10.10	0.03	0.23
0.21	0.21	0.87	1.1	11.30	1.32	10.96	0.03	0.24
0.22	0.22	0.98	1.3	12.18	1.36	11.83	0.03	0.25
0.23	0.23	1.10	1.6	13.06	1.41	12.69	0.03	0.26
0.24	0.24	1.23	1.8	13.93	1.45	13.55	0.03	0.27
0.25	0.25	1.37	2.1	14.81	1.50	14.41	0.03	0.28
0.26	0.26	1.52	2.3	15.69	1.54	15.27	0.04	0.30
0.27	0.27	1.68	2.7	16.57	1.59	16.14	0.04	0.31
0.28	0.28	1.84	3.0	17.45	1.63	17.00	0.04	0.32
0.29	0.29	2.02	3.4	18.32	1.68	17.86	0.04	0.33
0.30	0.30	2.20	3.8	19.20	1.73	18.72	0.05	0.35
0.31	0.31	2.39	4.2	20.08	1.77	19.59	0.05	0.36
0.32	0.32	2.59	4.7	20.96	1.82	20.45	0.05	0.37
0.33	0.33	2.80	5.2	21.84	1.86	21.31	0.05	0.38
0.34	0.34	3.02	5.8	22.71	1.90	22.17	0.06	0.40
0.35	0.35	3.25	6.3	23.59	1.95	23.03	0.06	0.41
0.36	0.36	3.48	6.9	24.47	1.99	23.90	0.06	0.42
0.37	0.37	3.72	7.6	25.35	2.04	24.76	0.06	0.43
0.38	0.38	3.98	8.3	26.23	2.08	25.62	0.07	0.45
0.39	0.39	4.24	9.0	27.10	2.12	26.48	0.07	0.46
0.40	0.40	4.50	9.7	27.98	2.16	27.35	0.07	0.47
0.41	0.41	4.78	10.6	28.86	2.21	28.21	0.08	0.49
0.42	0.42	5.06	11.6	28.88	2.29	28.21	0.08	0.50
0.43	0.43	5.35	12.7	28.90	2.37	28.22	0.09	0.52

ACTUAL Q

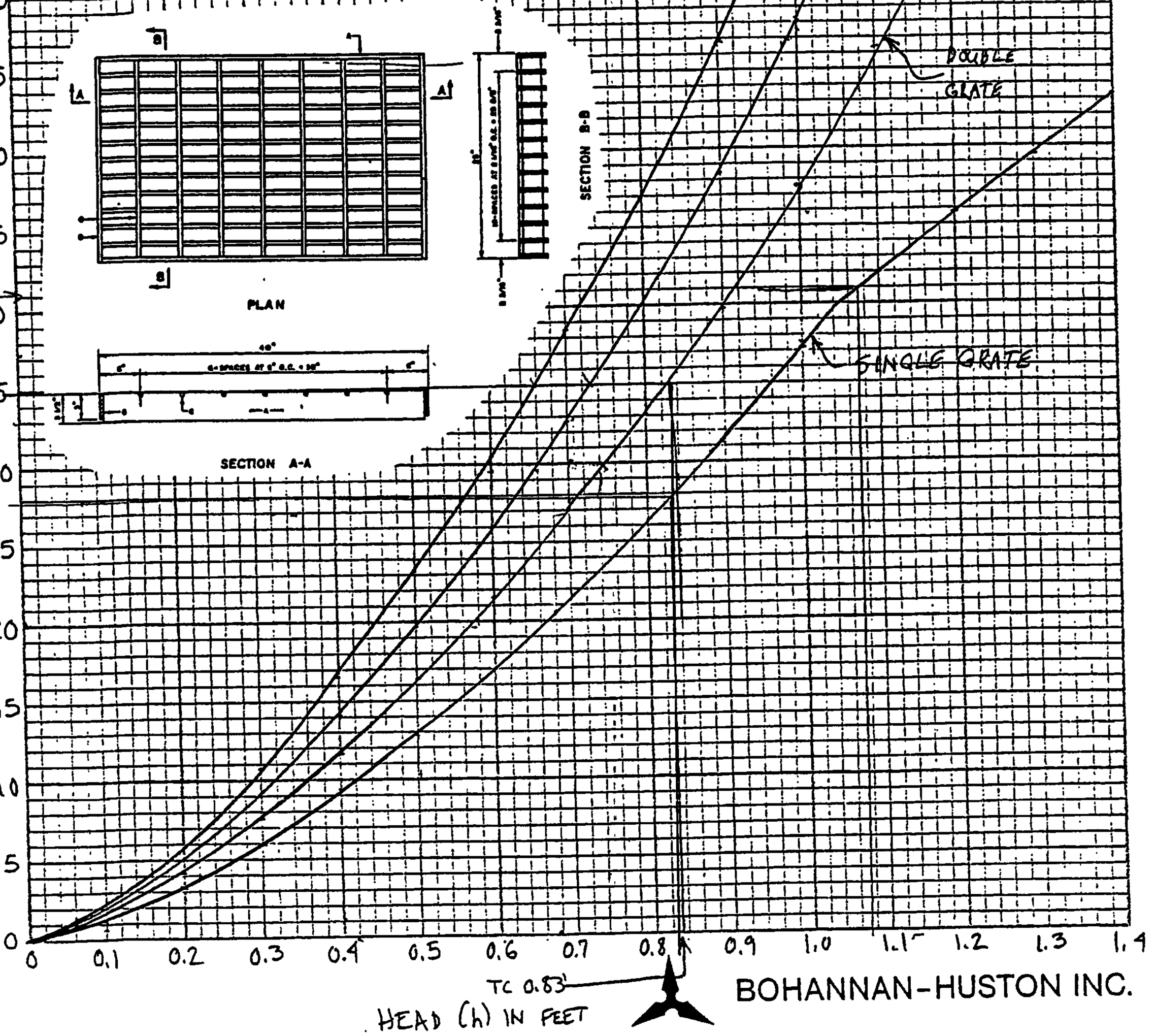
☐ WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.45	0.45	5.91	15.0	28.94	2.54	28.23	0.10	0.55
0.46	0.46	6.19	16.2	28.96	2.62	28.23	0.11	0.57
0.47	0.47	6.48	17.4	28.98	2.69	28.24	0.11	0.58
0.48	0.48	6.76	18.7	29.01	2.77	28.24	0.12	0.60
0.49	0.49	7.04	20.0	29.03	2.84	28.25	0.13	0.62
0.50	0.50	7.32	21.4	29.05	2.92	28.25	0.13	0.63
0.51	0.51	7.61	22.8	29.07	2.99	28.26	0.14	0.65
0.52	0.52	7.89	24.2	29.09	3.06	28.26	0.15	0.67



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 Sun Gate SHEET ____ OF ____

PROJECT NO. Garden Gate + Stone Gate BY ____ DATE ____

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

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

SUN GATE TRAIL — BASIN D

MANNING'S N= .017 SLOPE= .0395

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	0.49	0.31	0.00	0.01	
0.02	0.02	0.01	0.0	0.66	0.78	0.63	0.01	0.03	
0.03	0.03	0.01	0.0	0.99	1.02	0.94	0.02	0.05	
0.04	0.04	0.03	0.0	1.32	1.24	1.25	0.02	0.06	
0.05	0.05	0.04	0.1	1.64	1.44	1.56	0.03	0.08	
0.06	0.06	0.06	0.1	1.97	1.62	1.88	0.04	0.10	
0.07	0.07	0.08	0.1	2.30	1.80	2.19	0.05	0.12	
0.08	0.08	0.10	0.2	2.63	1.96	2.50	0.06	0.14	
0.09	0.09	0.13	0.3	2.96	2.13	2.81	0.07	0.16	
0.10	0.10	0.16	0.4	3.29	2.28	3.13	0.08	0.18	
0.11	0.11	0.19	0.5	3.62	2.43	3.44	0.09	0.20	
0.12	0.12	0.23	0.6	3.95	2.57	3.75	0.10	0.22	
0.13	0.13	0.26	0.7	4.28	2.72	4.07	0.11	0.24	
0.14	0.14	0.31	0.8	5.15	2.66	4.93	0.11	0.25	
0.15	0.15	0.36	1.0	6.03	2.67	5.79	0.11	0.26	
0.16	0.16	0.43	1.2	6.91	2.71	6.65	0.11	0.27	
0.17	0.17	0.50	1.4	7.79	2.77	7.51	0.12	0.29	
0.18	0.18	0.58	1.6	8.67	2.85	8.38	0.13	0.31	
0.19	0.19	0.66	1.9	9.54	2.94	9.24	0.13	0.32	
0.20	0.20	0.76	2.3	10.42	3.03	10.10	0.14	0.34	
0.21	0.21	0.87	2.7	11.30	3.13	10.96	0.15	0.36	
0.22	0.22	0.98	3.2	12.18	3.24	11.83	0.16	0.38	
0.23	0.23	1.10	3.7	13.06	3.34	12.69	0.17	0.40	
0.24	0.24	1.23	4.3	13.93	3.45	13.55	0.18	0.42	
0.25	0.25	1.37	4.9	14.81	3.56	14.41	0.20	0.45	
0.26	0.26	1.52	5.6	15.69	3.67	15.27	0.21	0.47	
0.27	0.27	1.68	6.3	16.57	3.78	16.14	0.22	0.49	
0.28	0.28	1.84	7.2	17.45	3.88	17.00	0.23	0.51	
0.29	0.29	2.02	8.1	18.32	3.99	17.86	0.25	0.54	ROLL CURB LIMIT (LOT 55)
0.30	0.30	2.20	9.0	19.20	4.10	18.72	0.26	0.56	
0.31	0.31	2.39	10.1	20.08	4.21	19.59	0.27	0.58	
0.32	0.32	2.59	11.2	20.96	4.31	20.45	0.29	0.61	
0.33	0.33	2.80	12.4	21.84	4.42	21.31	0.30	0.63	
0.34	0.34	3.02	13.7	22.71	4.52	22.17	0.32	0.66	
0.35	0.35	3.25	15.0	23.59	4.63	23.03	0.33	0.68	
0.36	0.36	3.48	16.5	24.47	4.73	23.90	0.35	0.71	ACTUAL Q
0.37	0.37	3.72	18.0	25.35	4.84	24.76	0.36	0.73	
0.38	0.38	3.98	19.6	26.23	4.94	25.62	0.38	0.76	
0.39	0.39	4.24	21.3	27.10	5.04	26.48	0.39	0.78	
0.40	0.40	4.50	23.2	27.98	5.14	27.35	0.41	0.81	
0.41	0.41	4.78	25.1	28.86	5.24	28.21	0.43	0.84	
0.42	0.42	5.06	27.6	28.88	5.44	28.21	0.46	0.88	STREET CAPACITY
0.43	0.43	5.35	30.2	28.90	5.64	28.22	0.49	0.92	

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	35.6	28.94	6.03	28.23	0.56	1.01
0.46	0.46	6.19	38.5	28.96	6.21	28.23	0.60	1.06
0.47	0.47	6.48	41.4	28.98	6.40	28.24	0.64	1.11
0.48	0.48	6.76	44.5	29.01	6.58	28.24	0.67	1.15
0.49	0.49	7.04	47.6	29.03	6.76	28.25	0.71	1.20
0.50	0.50	7.32	50.8	29.05	6.93	28.25	0.75	1.25
0.51	0.51	7.61	54.1	29.07	7.11	28.26	0.78	1.29
0.52	0.52	7.89	57.4	29.09	7.28	28.26	0.82	1.34

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

MEADOW GATE TRAIL – BASIN E

MANNING'S N= .017 SLOPE= .0361

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	0.47	0.31	0.00	0.01	
0.02	0.02	0.01	0.0	0.66	0.75	0.63	0.01	0.03	
0.03	0.03	0.01	0.0	0.99	0.98	0.94	0.01	0.04	
0.04	0.04	0.03	0.0	1.32	1.18	1.25	0.02	0.06	
0.05	0.05	0.04	0.1	1.64	1.37	1.56	0.03	0.08	
0.06	0.06	0.06	0.1	1.97	1.55	1.88	0.04	0.10	
0.07	0.07	0.08	0.1	2.30	1.72	2.19	0.05	0.12	
0.08	0.08	0.10	0.2	2.63	1.88	2.50	0.05	0.13	
0.09	0.09	0.13	0.3	2.96	2.03	2.81	0.06	0.15	
0.10	0.10	0.16	0.3	3.29	2.18	3.13	0.07	0.17	
0.11	0.11	0.19	0.4	3.62	2.32	3.44	0.08	0.19	
0.12	0.12	0.23	0.6	3.95	2.46	3.75	0.09	0.21	
0.13	0.13	0.26	0.7	4.28	2.60	4.07	0.10	0.23	
0.14	0.14	0.31	0.8	5.15	2.55	4.93	0.10	0.24	
0.15	0.15	0.36	0.9	6.03	2.55	5.79	0.10	0.25	
0.16	0.16	0.43	1.1	6.91	2.59	6.65	0.10	0.26	
0.17	0.17	0.50	1.3	7.79	2.65	7.51	0.11	0.28	
0.18	0.18	0.58	1.6	8.67	2.72	8.38	0.12	0.30	
0.19	0.19	0.66	1.9	9.54	2.81	9.24	0.12	0.31	
0.20	0.20	0.76	2.2	10.42	2.90	10.10	0.13	0.33	
0.21	0.21	0.87	2.6	11.30	3.00	10.96	0.14	0.35	
0.22	0.22	0.98	3.0	12.18	3.09	11.83	0.15	0.37	
0.23	0.23	1.10	3.5	13.06	3.20	12.69	0.16	0.39	
0.24	0.24	1.23	4.1	13.93	3.30	13.55	0.17	0.41	
0.25	0.25	1.37	4.7	14.81	3.40	14.41	0.18	0.43	
0.26	0.26	1.52	5.3	15.69	3.51	15.27	0.19	0.45	
0.27	0.27	1.68	6.1	16.57	3.61	16.14	0.20	0.47	
0.28	0.28	1.84	6.8	17.45	3.71	17.00	0.21	0.49	
0.29	0.29	2.02	7.7	18.32	3.82	17.86	0.23	0.52	
0.30	0.30	2.20	8.6	19.20	3.92	18.72	0.24	0.54	ROLL CURB LIMIT (LOT 20)
0.31	0.31	2.39	9.6	20.08	4.02	19.59	0.25	0.56	
0.32	0.32	2.59	10.7	20.96	4.12	20.45	0.26	0.58	
0.33	0.33	2.80	11.8	21.84	4.23	21.31	0.28	0.61	
0.34	0.34	3.02	13.1	22.71	4.33	22.17	0.29	0.63	
0.35	0.35	3.25	14.4	23.59	4.43	23.03	0.30	0.65	
0.36	0.36	3.48	15.7	24.47	4.52	23.90	0.32	0.68	
0.37	0.37	3.72	17.2	25.35	4.62	24.76	0.33	0.70	
0.38	0.38	3.98	18.8	26.23	4.72	25.62	0.35	0.73	
0.39	0.39	4.24	20.4	27.10	4.82	26.48	0.36	0.75	ACTUAL Q
0.40	0.40	4.50	22.1	27.98	4.91	27.35	0.38	0.78	
0.41	0.41	4.78	24.0	28.86	5.01	28.21	0.39	0.80	
0.42	0.42	5.06	26.4	28.88	5.20	28.21	0.42	0.84	
0.43	0.43	5.35	28.8	28.90	5.39	28.22	0.45	0.88	STREET CAPACITY

□ 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	34.0	28.94	5.76	28.23	0.52	0.97
0.46	0.46	6.19	36.8	28.96	5.94	28.23	0.55	1.01
0.47	0.47	6.48	39.6	28.98	6.12	28.24	0.58	1.05
0.48	0.48	6.76	42.5	29.01	6.29	28.24	0.61	1.09
0.49	0.49	7.04	45.5	29.03	6.46	28.25	0.65	1.14
0.50	0.50	7.32	48.5	29.05	6.63	28.25	0.68	1.18
0.51	0.51	7.61	51.7	29.07	6.79	28.26	0.72	1.23
0.52	0.52	7.89	54.9	29.09	6.96	28.26	0.75	1.27

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

GARDEN GATE LANE – BASIN E

MANNING'S N= .017 SLOPE= .02

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	0.35	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.55	0.63	0.00	0.02
0.03	0.03	0.01	0.0	0.99	0.73	0.94	0.01	0.04
0.04	0.04	0.03	0.0	1.32	0.88	1.25	0.01	0.05
0.05	0.05	0.04	0.0	1.64	1.02	1.56	0.02	0.07
0.06	0.06	0.06	0.1	1.97	1.15	1.88	0.02	0.08
0.07	0.07	0.08	0.1	2.30	1.28	2.19	0.03	0.10
0.08	0.08	0.10	0.1	2.63	1.40	2.50	0.03	0.11
0.09	0.09	0.13	0.2	2.96	1.51	2.81	0.04	0.13
0.10	0.10	0.16	0.3	3.29	1.62	3.13	0.04	0.14
0.11	0.11	0.19	0.3	3.62	1.73	3.44	0.05	0.16
0.12	0.12	0.23	0.4	3.95	1.83	3.75	0.05	0.17
0.13	0.13	0.26	0.5	4.28	1.93	4.07	0.06	0.19
0.14	0.14	0.31	0.6	5.15	1.89	4.93	0.06	0.20
0.15	0.15	0.36	0.7	6.03	1.90	5.79	0.06	0.21
0.16	0.16	0.43	0.8	6.91	1.93	6.65	0.06	0.22
0.17	0.17	0.50	1.0	7.79	1.97	7.51	0.06	0.23
0.18	0.18	0.58	1.2	8.67	2.03	8.38	0.06	0.24
0.19	0.19	0.66	1.4	9.54	2.09	9.24	0.07	0.26
0.20	0.20	0.76	1.6	10.42	2.16	10.10	0.07	0.27
0.21	0.21	0.87	1.9	11.30	2.23	10.96	0.08	0.29
0.22	0.22	0.98	2.3	12.18	2.30	11.83	0.08	0.30
0.23	0.23	1.10	2.6	13.06	2.38	12.69	0.09	0.32
0.24	0.24	1.23	3.0	13.93	2.45	13.55	0.09	0.33
0.25	0.25	1.37	3.5	14.81	2.53	14.41	0.10	0.35
0.26	0.26	1.52	4.0	15.69	2.61	15.27	0.11	0.37
0.27	0.27	1.68	4.5	16.57	2.69	16.14	0.11	0.38
0.28	0.28	1.84	5.1	17.45	2.76	17.00	0.12	0.40
0.29	0.29	2.02	5.7	18.32	2.84	17.86	0.13	0.42
0.30	0.30	2.20	6.4	19.20	2.92	18.72	0.13	0.43
0.31	0.31	2.39	7.2	20.08	2.99	19.59	0.14	0.45
0.32	0.32	2.59	8.0	20.96	3.07	20.45	0.15	0.47
0.33	0.33	2.80	8.8	21.84	3.14	21.31	0.15	0.48
0.34	0.34	3.02	9.7	22.71	3.22	22.17	0.16	0.50
0.35	0.35	3.25	10.7	23.59	3.29	23.03	0.17	0.52
0.36	0.36	3.48	11.7	24.47	3.37	23.90	0.18	0.54
0.37	0.37	3.72	12.8	25.35	3.44	24.76	0.18	0.55
0.38	0.38	3.98	14.0	26.23	3.51	25.62	0.19	0.57
0.39	0.39	4.24	15.2	27.10	3.59	26.48	0.20	0.59
0.40	0.40	4.50	16.5	27.98	3.66	27.35	0.21	0.61
0.41	0.41	4.78	17.8	28.86	3.73	28.21	0.22	0.63
0.42	0.42	5.06	19.6	28.88	3.87	28.21	0.23	0.65
0.43	0.43	5.35	21.5	28.90	4.01	28.22	0.25	0.68

ACTUAL Q

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	25.3	28.94	4.29	28.23	0.29	0.74
0.46	0.46	6.19	27.4	28.96	4.42	28.23	0.30	0.76
0.47	0.47	6.48	29.5	28.98	4.55	28.24	0.32	0.79
0.48	0.48	6.76	31.6	29.01	4.68	28.24	0.34	0.82
0.49	0.49	7.04	33.9	29.03	4.81	28.25	0.36	0.85
0.50	0.50	7.32	36.1	29.05	4.93	28.25	0.38	0.88
0.51	0.51	7.61	38.5	29.07	5.06	28.26	0.40	0.91
0.52	0.52	7.89	40.9	29.09	5.18	28.26	0.42	0.94

STREET CAPACITY

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

GARDEN GATE LANE — BASIN D

MANNING'S N= .017 SLOPE= .033

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

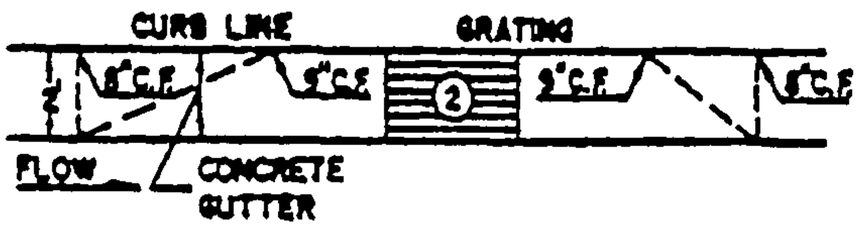
☐ WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.01	0.01	0.00	0.0	0.33	0.45	0.31	0.00	0.01
0.02	0.02	0.01	0.0	0.66	0.71	0.63	0.01	0.03
0.03	0.03	0.01	0.0	0.99	0.93	0.94	0.01	0.04
0.04	0.04	0.03	0.0	1.32	1.13	1.25	0.02	0.06
0.05	0.05	0.04	0.1	1.64	1.31	1.56	0.03	0.08
0.06	0.06	0.06	0.1	1.97	1.48	1.88	0.03	0.09
0.07	0.07	0.08	0.1	2.30	1.64	2.19	0.04	0.11
0.08	0.08	0.10	0.2	2.63	1.80	2.50	0.05	0.13
0.09	0.09	0.13	0.2	2.96	1.94	2.81	0.06	0.15
0.10	0.10	0.16	0.3	3.29	2.08	3.13	0.07	0.17
0.11	0.11	0.19	0.4	3.62	2.22	3.44	0.08	0.19
0.12	0.12	0.23	0.5	3.95	2.35	3.75	0.09	0.21
0.13	0.13	0.26	0.7	4.28	2.48	4.07	0.10	0.23
0.14	0.14	0.31	0.8	5.15	2.43	4.93	0.09	0.23
0.15	0.15	0.36	0.9	6.03	2.44	5.79	0.09	0.24
0.16	0.16	0.43	1.1	6.91	2.47	6.65	0.10	0.26
0.17	0.17	0.50	1.3	7.79	2.53	7.51	0.10	0.27
0.18	0.18	0.58	1.5	8.67	2.60	8.38	0.11	0.29
0.19	0.19	0.66	1.8	9.54	2.68	9.24	0.11	0.30
0.20	0.20	0.76	2.1	10.42	2.77	10.10	0.12	0.32
0.21	0.21	0.87	2.5	11.30	2.86	10.96	0.13	0.34
0.22	0.22	0.98	2.9	12.18	2.96	11.83	0.14	0.36
0.23	0.23	1.10	3.4	13.06	3.06	12.69	0.14	0.37
0.24	0.24	1.23	3.9	13.93	3.15	13.55	0.15	0.39
0.25	0.25	1.37	4.5	14.81	3.25	14.41	0.16	0.41
0.26	0.26	1.52	5.1	15.69	3.35	15.27	0.17	0.43
0.27	0.27	1.68	5.8	16.57	3.45	16.14	0.18	0.45
0.28	0.28	1.84	6.5	17.45	3.55	17.00	0.20	0.48
0.29	0.29	2.02	7.4	18.32	3.65	17.86	0.21	0.50
0.30	0.30	2.20	8.2	19.20	3.75	18.72	0.22	0.52
0.31	0.31	2.39	9.2	20.08	3.85	19.59	0.23	0.54
0.32	0.32	2.59	10.2	20.96	3.94	20.45	0.24	0.56
0.33	0.33	2.80	11.3	21.84	4.04	21.31	0.25	0.58
0.34	0.34	3.02	12.5	22.71	4.14	22.17	0.27	0.61
0.35	0.35	3.25	13.7	23.59	4.23	23.03	0.28	0.63
0.36	0.36	3.48	15.1	24.47	4.33	23.90	0.29	0.65
0.37	0.37	3.72	16.5	25.35	4.42	24.76	0.30	0.67
0.38	0.38	3.98	17.9	26.23	4.51	25.62	0.32	0.70
0.39	0.39	4.24	19.5	27.10	4.61	26.48	0.33	0.72
0.40	0.40	4.50	21.2	27.98	4.70	27.35	0.34	0.74
0.41	0.41	4.78	22.9	28.86	4.79	28.21	0.36	0.77
0.42	0.42	5.06	25.2	28.88	4.97	28.21	0.38	0.80
0.43	0.43	5.35	27.6	28.90	5.16	28.22	0.41	0.84

STREET CAPACITY

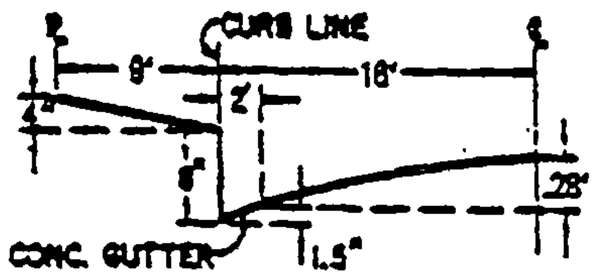
☐ WSEL (FT)	DEPTH INC (FT)	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID (FT)	VEL HEAD (FT)	ENERGY HEAD (FT)
0.45	0.45	5.91	32.6	28.94	5.51	28.23	0.47	0.92
0.46	0.46	6.19	35.2	28.96	5.68	28.23	0.50	0.96
0.47	0.47	6.48	37.9	28.98	5.85	28.24	0.53	1.00
0.48	0.48	6.76	40.6	29.01	6.01	28.24	0.56	1.04
0.49	0.49	7.04	43.5	29.03	6.18	28.25	0.59	1.08
0.50	0.50	7.32	46.4	29.05	6.34	28.25	0.62	1.12
0.51	0.51	7.61	49.4	29.07	6.50	28.26	0.66	1.17
0.52	0.52	7.89	52.5	29.09	6.65	28.26	0.69	1.21

ACTUAL Q = 36.8

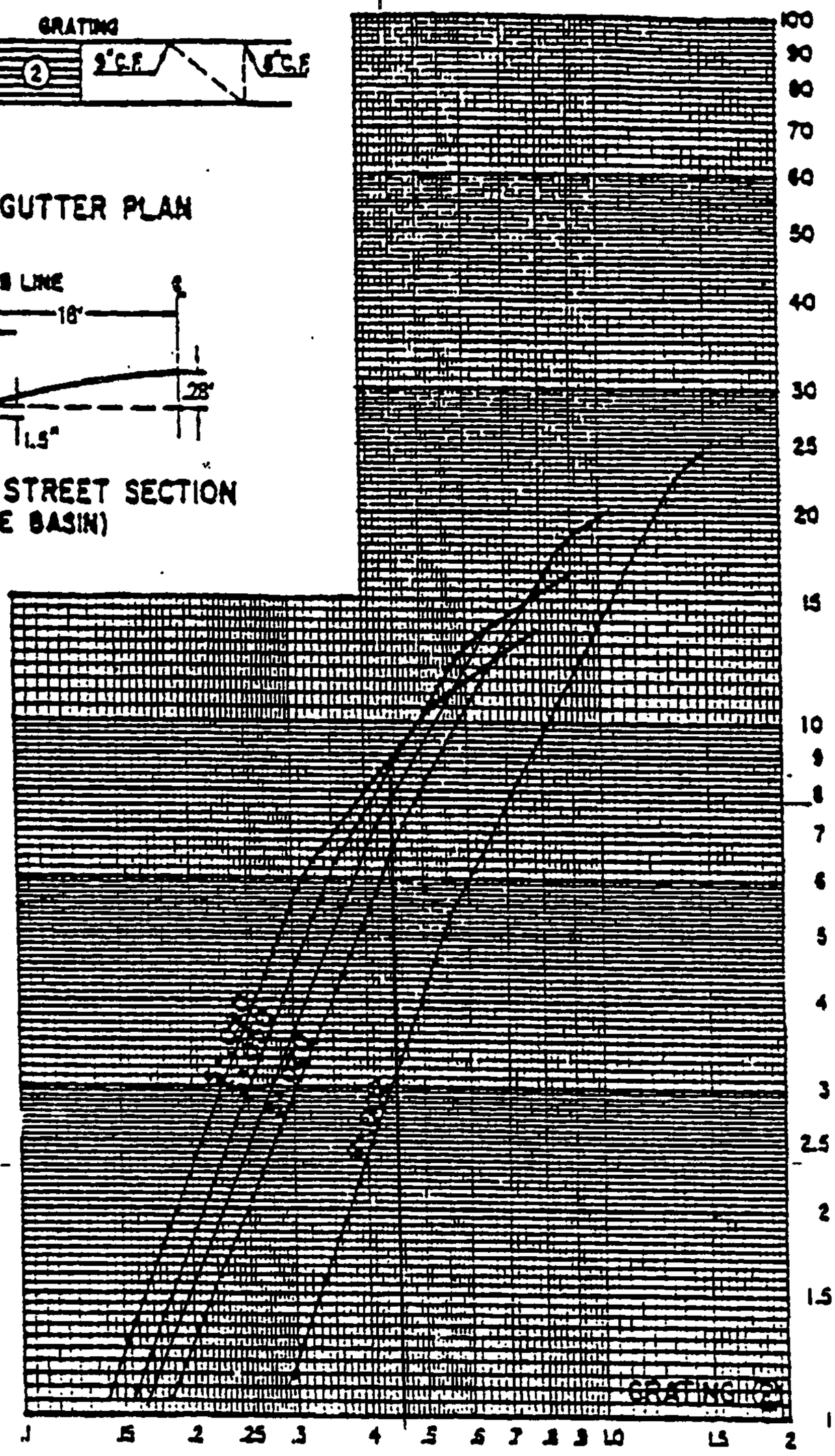
GRATING CAPACITIES FOR TYPE 'A' , 'C' and 'D'



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



Q = 7.8 cfs

D = 0.46'

PLATE 22.3 D-5

Garden Gate Lane

Basin D

Slope = 3.3%

APPENDIX C

INFRASTRUCTURE LIST

Current DRC
Project No. _____

Date Submitted: January 8, 2004

Date Site Plan Approved: _____

Date Preliminary Plat Approved: _____

Date Preliminary Plat Expiers: _____

Figure 12

INFRASTRUCTURE LIST

EXHIBIT "A"
TO SUBDIVISION IMPROVEMENTS AGREEMENT
DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

DRB Project No. _____

APPLICATION NO.

SUN GATE SUBDIVISION
PRELIMINARY PLAT

Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development. This Listing is not necessarily a complete listing. During the SIA process and/or in the review of the construction drawings, if the DRC Chair determines that appurtenant items and/or unforeseen items have not been included in the infrastructure listing, the DRC Chair may include those items in the listing and related financial guarantee. Likewise, if the DRC Chair determines that appurtenant or non-essential items can be deleted from the listing, those items may be deleted as well as the related portions of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and agent/owner. If such approvals are obtained, these revisions to the listing will be incorporated administratively. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility will be required as a condition of project acceptance and close out by the City.

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
			ONSITE PUBLIC ROADWAY IMPROVEMENTS						
		30' EOA-F	ARTERIAL PAVING W/ PCC CURB & GUTTER AND PCC 6' WIDE SIDEWALK ON SOUTH SIDE ONLY	GIBSON BLVD.	MESA ARENOS0 DR.	BLAKE ROAD	/	/	/
		24' EOA-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON WEST SIDE ONLY	BLAKE ROAD	GIBSON BOULEVARD	OPEN RANGE AVENUE	/	/	/
		16' EOA-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON EAST SIDE ONLY	MESA ARENOSO DR	GIBSON BOULEVARD	OPEN RANGE AVENUE	/	/	/
		24' EOA-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON NORTH SIDE ONLY	OPEN RANGE AVE.	BLAKE ROAD	MESA ARENOSO DRIVE	/	/	/
		24' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON NORTH SIDE ONLY*	CORRAL GATE LANE	WEST STUB TERMINUS	MEADOW GATE TRAIL	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON BOTH SIDES*	CORRAL GATE LANE	MEADOW GATE TRAIL	BRIDAL GATE TRAIL	/	/	/
		24' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON NORTH SIDE ONLY*	CORRAL GATE LANE	BRIDAL GATE TRAIL	EAST STUB TERMINUS	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON BOTH SIDES*	MEADOW GATE TRAIL	CORRAL GATE LANE	GARDEN GATE LANE	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON BOTH SIDES*	SUN GATE TRAIL	CORRAL GATE LANE	GARDEN GATE LANE	/	/	/

C-1-2

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON BOTH SIDES*	IRON GATE TRAIL	CORRAL GATE LANE	GARDEN GATE LANE	/	/	/
		24' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON SOUTH SIDE ONLY*	GARDEN GATE LANE	WEST STUB TERMINUS	MEADOW GATE TRAIL	/	/	/
		28' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON BOTH SIDES*	GARDEN GATE LANE	MEADOW GATE TRAIL	BRIDAL GATE TRAIL	/	/	/
		24' F-F	RESIDENTIAL PAVING W/ PCC CURB & GUTTER AND PCC 4' WIDE SIDEWALK ON SOUTH SIDE ONLY*	GARDEN GATE LANE	BRIDAL GATE TRAIL	EAST STUB TERMINUS	/	/	/
			* SIDEWALKS TO BE DEFERRED PER DEFERRAL EXHIBIT 'B'.				/	/	/
			STREET LIGHTS AS PER COA DPM						

ONSITE PUBLIC STORM DRAIN IMPROVEMENTS

	18"-36" DIA	RCP W/ NEC. MH'S, LATERALS & INLETS	GARDEN GATE LANE	EAST STUB TERMINUS	RETENTION POND	/ / /
	66" DIA	RCP W/ NEC. MH'S, LATERALS & INLETS	OPEN RANGE AVENUE	MESA ARENOSA DR.	BLAKE ROAD	/ / /
	18" - 36" DIA	RCP W/ NEC. MH'S, LATERALS & INLETS	GARDEN GATE LANE	SUN GATE TRAIL	STONE GATE WAY	/ / /
		2.7 ACRE-FEET TEMPORARY RETENTION POND WITH PUBLIC EASEMENT AND COVENANT AND AGREEMENT	TRACT 34D-1-A			/ / /

NOTE: A GRADING AND DRAINAGE CERTIFICATION OF THE APPROVED GRADING PLAN IS REQUIRED PRIOR TO THE RELEASE OF FINANCIAL GUARANTEES.

NINA LEUNG
PREPARED BY: PRINT NAME

DRB CHAIR — DATE

PARKS & RECREATION DEPARTMENT — DATE

BOHANNAN HUSTON INC.
FIRM:

TRANSPORTATION DEVELOPMENT — DATE

AMAFCA — DATE

SIGNATURE — DATE

UTILITY DEVELOPMENT — DATE

CITY ENGINEER — DATE

MAXIMUM TIME ALLOW TO CONSTRUCT IMPROVEMENTS WITHOUT A DRB EXTENSION

NEW MEXICO UTILITIES INC. — DATE

DATE

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT/OWNER

C-4/4

EXHIBITS

EXHIBIT 1 - PRELIMINARY PLAT

EXHIBIT 2 - GRADING PLAN

EXHIBIT 3 - DEVELOPED CONDITIONS BASIN MAP

EXHIBIT 4 - MASTER STORM DRAIN BASIN MAP

EXHIBIT 1

PRELIMINARY PLAT

EXHIBIT 2

GRADING PLAN

EXHIBIT 3

DEVELOPED CONDITIONS BASIN MAP

EXHIBIT 4

MASTER STORM DRAIN BASIN MAP

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

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

February 27, 2004

Rick Beltramo, PE
Bohannan Huston, Inc.
7500 Jefferson NE
Albuquerque, NM 87109

Re: Sungate Subdivision Drainage Report
Engineer's Stamp dated 1-8-04 (N9/D7)

Dear Mr. Beltramo,

Based upon the information provided in your submittal dated 1-9-04, the above referenced report is approved for Preliminary Plat action by the DRB. Prior to Work Order, Grading Permit or Final Plat, please address the following.

- Please show actual grading of the pond and add water surface elevation and retained volumes.

- Please resubmit the grading plan with all the storm drain required shown.

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

Sincerely,

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

C: file

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

N-9/07

PROJECT TITLE: Sun Gate Subdivision ZONE MAP/DRG. FILE # N-9
DRB #: 1003175 EPC#: WORK ORDER#:

LEGAL DESCRIPTION: Tract 33C-1-A, Lands of Salazar Family Trust, Salazar Quatro Trust, JSJ Investment Co., and Falba Hannett
CITY ADDRESS: North of Gibson Blvd. and west of Blake Road

ENGINEERING FIRM: Bohannan Huston, Inc. CONTACT: Rick Beltramo
ADDRESS: 7500 Jefferson NE – Courtyard I PHONE: (505) 823-1000
CITY, STATE: Albuquerque, NM ZIP CODE: 87109

OWNER: Curb Inc. CONTACT: Bo Johnson
ADDRESS: 6301 Indian School Rd. Suite 208 PHONE: 899-9656
CITY, STATE: Albuquerque, NM ZIP CODE: 87110

ARCHITECT: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

SURVEYOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

CONTRACTOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

CHECK TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- ___ DRAINAGE PLAN 1st SUBMITTAL, *REQUIRES TCL or equal*
- ___ DRAINAGE PLAN RESUBMITTAL
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- X GRADING PLAN
- ___ EROSION CONTROL PLAN
- ___ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEERS CERTIFICATION (TCL)
- ___ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ___ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SIA / FINANCIAL GUARANTEE RELEASE
- X PRELIMINARY PLAT APPROVAL
- ___ S. DEV. PLAN FOR SUB'D. APPROVAL
- ___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM.)
- ___ CERTIFICATE OF OCCUPANCY (TEMP.)
- X GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ___ YES
- ___ NO
- ___ COPY PROVIDED

Rec 1/9/04

DATE SUBMITTED: January 8, 2004 BY: Rick Beltramo

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

CITY OF ALBUQUERQUE

October 11, 2004

Chris Sholtis, PE
Bohannan Huston, Inc
7500 Jefferson NE
Albuquerque, NM 87109

Re: Sungate Estates Subdivision Drainage Report
Engineer's Stamp dated 9-9-04, (N9/D8B)

Dear Mr. Sholtis,

Based upon the information provided in your submittal dated 9-8-04, the above referenced report is approved for Preliminary Plat action by the DRB. Once that board has approved the plan, please submit a mylar copy for my signature in order to obtain Grading Permit.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. Refer to the attachment that is provided with this letter for details. If you have any questions please feel free to call the Municipal Development Department, Hydrology section at 768-3654 (Charles Caruso).

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

Sincerely,

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

C: Chuck Caruso, CoA
file

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

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

~~D-9~~ N-9/D8B

PROJECT TITLE: Sun Gate Estates Subdivision ZONE MAP/DRG. FILE # N-9
DRB #_____ EPC#:_____ WORK ORDER#:_____

LEGAL DESCRIPTION: Tract 31A-1-A, Lands of Salazar Family Trust, JSJ Investment Co., and Falba Hannett
CITY ADDRESS: South of Gibson Blvd. and west of Blake Road

ENGINEERING FIRM: Bohannan Huston, Inc. CONTACT: Chris Sholtis
ADDRESS: 7500 Jefferson NE – Courtyard I PHONE: (505) 823-1000
CITY, STATE: Albuquerque, NM ZIP CODE: 87109

OWNER: D.R.HORTON CONTACT: R.P. Bohannan
ADDRESS: 4400 Alameda NM, Suite B PHONE: (505)797-4245
CITY, STATE: Albuquerque, NM ZIP CODE: 87109

ARCHITECT:_____ CONTACT:_____
ADDRESS:_____ PHONE:_____
CITY, STATE:_____ ZIP CODE:_____

SURVEYOR: : Aldrich Land Surveying CONTACT: Tim Aldrich
ADDRESS: : PO Box 30701 PHONE: (505) 884-1990
CITY, STATE: Albuquerque, NM ZIP CODE: 87190-0701

CONTRACTOR:_____ CONTACT:_____
ADDRESS:_____ PHONE:_____
CITY, STATE:_____ ZIP CODE:_____

CHECK TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- ____ DRAINAGE PLAN 1st SUBMITTAL, ***REQUIRES TCL or equal***
- ____ DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- X GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEERS CERTIFICATION (TCL)
- ____ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ____ SIA / FINANCIAL GUARANTEE RELEASE
- X PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D. APPROVAL
- ____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY (PERM.)
- ____ CERTIFICATE OF OCCUPANCY (TEMP.)
- X GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ____ YES
- X NO
- ____ COPY PROVIDED

DATE SUBMITTED: September 8, 2004 BY: Chris Sholtis

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope of the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. Conceptual Grading and Drainage Plan: Required for approval of Site Development Plans greater than five (5) Acres and Sector Plans.

2. Drainage Plans: Required for building permits, grading permits, paving permits and site plans less than fi acres.

3. Drainage Report: Required for subdivisions containing more than ten (10) lots or constituting five more.

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 10, 2004

Mr. Christian J. Sholtis, P.E.
Bohannan Huston Inc.
7500 Jefferson St. NE
Albuquerque, NM 87109-4335

N-9

RE: Water and Sewer Availability Statement
Tract 31A1A of the Lands of Salazar Family Trust, JSJ Investment Co. and Falba Hannett

Mr. Sholtis:

Project Information: The project site consists of approximately 44 acres of undeveloped property south of Gibson and west of Blake / De Anza in southwest Albuquerque. Current zoning is R-LT as governed by the Rio Bravo Sector Plan. It is understood that planned development will involve subdivision of the site into 265 lots which will then be developed as single family residences. Based on the existing topography, the dwellings within this tract will have pad elevations between 5,096 and 5,140 feet and will be within the 2WR pressure zone.

Existing Conditions: As of the date of this correspondence, there are no existing structures present on-site. Nearby construction projects include a 20-inch water transmission line which will supply both pressure zones 2W and 2WR. This line will be located along the site's eastern and northeastern property lines within the rights-of-way of Open Range Avenue and Mesa Arenosco Drive. The Snow Vista sanitary sewer interceptor, which will be the outfall for region, is currently in the design phases and will be located east of the site. Additional lines are planned as part of the adjacent El Rancho Grande developments.

Metered Water Service to the proposed subdivision will require the construction of Master Plan zone 2WR lines around the perimeter of the site. These lines will be minimum 12-inch distribution lines with the exception of the line immediately south of the site in the as yet unnamed roadway. That line may be an 8-inch linking the 12-inch in Mesa Arenosco Drive to the 12-inch in 98th Street. These lines will be supplied by the 20-inch transmission line. Please refer to project number 679581 for specifics regarding this line. A pressure reducing valve (PRV) must be included at the point of connection between the 12-inch and the 20-inch at the intersection of Blake, De Anza, and Open Range Avenue. It is assumed that, until the development of Tract 30A1 to the south, this will be the only point of connection between the 20-inch and the network of 12-inch lines. In addition to the perimeter lines, minimum 6-inch looped water lines must be constructed at standard locations within each of the rights-of-way internal to the subdivision. Please be advised that any parcel subjected to static water pressures in excess of 80 psi must be equipped with its own PRV as required by code.

Sanitary Sewer Service will be contingent on the completion and acceptance of the Snow Vista Interceptor as well as on- and off-site collectors. Minimum 8-inch collectors along with manholes at regular intervals must be constructed within each of the rights-of-way internal to the subdivision. The majority of these sewer lines will outfall to the new 10-inch in Blake. The exception to this will be a portion of the southeast corner. Barring the placement of a significant quantity of fill, traditional gravity sewers discharging to Blake will not be possible in this area. As such, an additional off-site line as well as a secondary point of connection to the Snow Vista interceptor will be necessary. In order to properly size this line between the site and the

interceptor, an analysis of the upstream drainage basin as well as the adjacent parcels will be required. Under no circumstances may this line be less than 8-inch in diameter. Upon completion and acceptance of these improvements, service for each parcel will be available via routine connection.

Fire Protection: Fire flow rates are determined by the Fire Marshal based on both the size and type of construction. At a minimum, fire hydrants must be included at each street intersection. Additional hydrants may be required so as not to exceed a maximum distance of 500 feet from any given structure to the nearest hydrant. This distance is measured as the fire equipment travels. The precise number and location of each fire hydrant must be coordinated with the Fire Marshal and approved prior to DRC approval.

Design and Construction of all required improvements will be at the developer / property owner's expense and must be coordinated through the City of Albuquerque via the DRC / City Work Order process. Both water and sewer stubs to each property must be included with the design of the new lines. Designs must be by a New Mexico registered professional engineer. Construction must be by a licensed, bonded public utility contractor.

Easements: City of Albuquerque public water and sewer easements are required for all public lines to be constructed outside of dedicated rights-of-way. Minimum easement widths shall be 20-feet where single service lines are to be constructed and 25-feet where both water and sewer lines are included. Acceptable easements must be documented prior to DRC approval.

Utility Expansion Charges: In addition to installation and construction costs, both sanitary sewer and metered water service to each property will be subject to Utility Expansion Charges (UEC). These charges are payable at the time service is requested and will be based on the ordinances in effect at the time of connection.

Pro Rata Charges: Any and all outstanding pro rata charges assessed towards this property will be due at the time of development. The costs of perimeter and off-site water and sanitary sewer lines may be prorated against adjacent benefiting properties. Such assessments must be requested at the time of development in order to be considered.

Closure: This statement of availability will remain in effect for a period of one (1) year from the date of issue and applies only to the development identified herein. Its validity is, in part, contingent upon the continuing accuracy of the information supplied by the developer. Changes in the proposed development may require reevaluation of availability and should be brought to the attention of the Utility Development Section of the City of Albuquerque as soon as possible. Any outstanding pro rata and standby assessments must be paid at the time service is taken. All charges and rates collected will be based on the ordinances and policies in effect at the time service is actually requested and authorized.

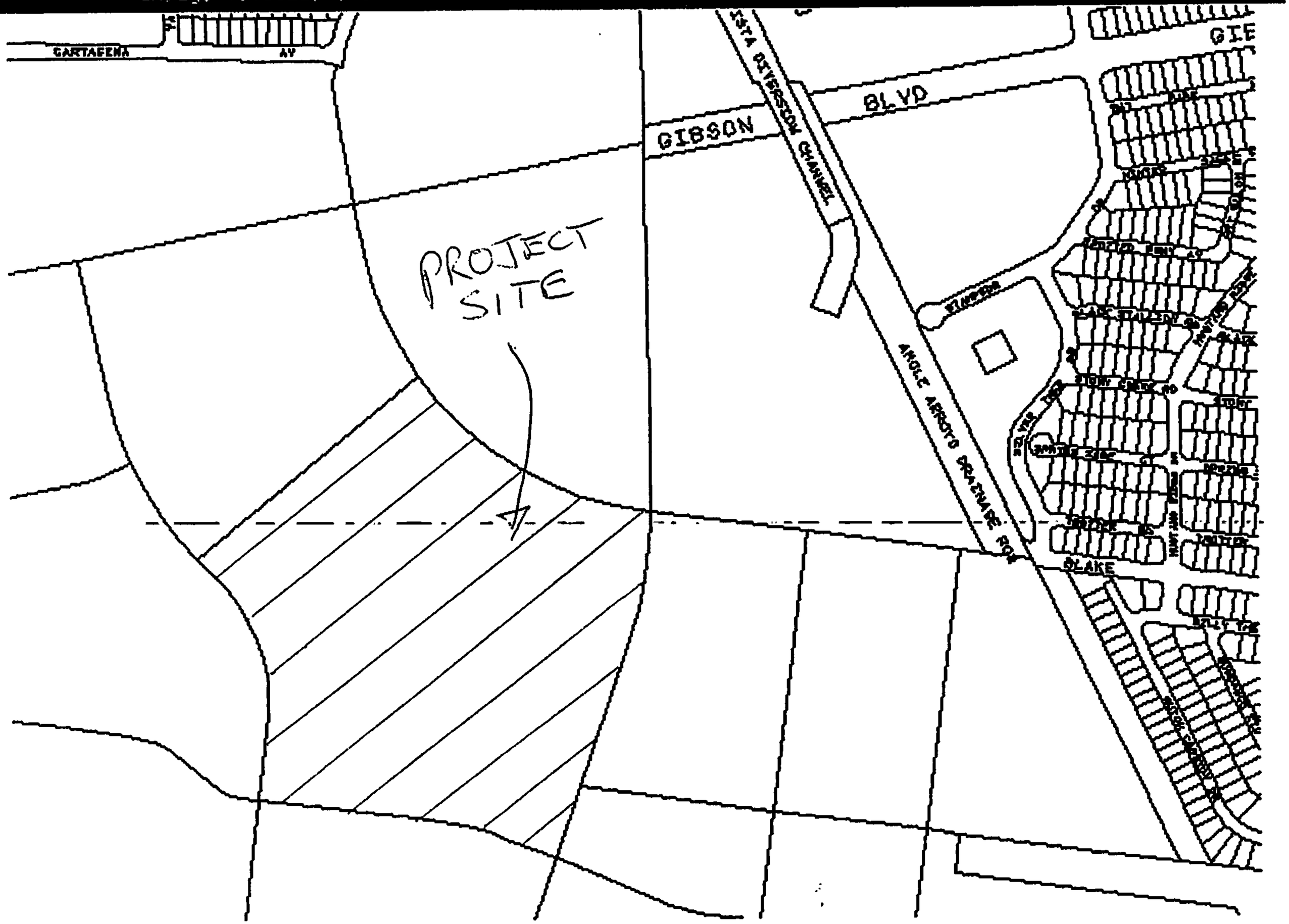
Please feel free to contact the undersigned at (505) 924-3987, or by fax at (505) 924-3864 if you have questions regarding the information presented herein or need additional information.

Sincerely,

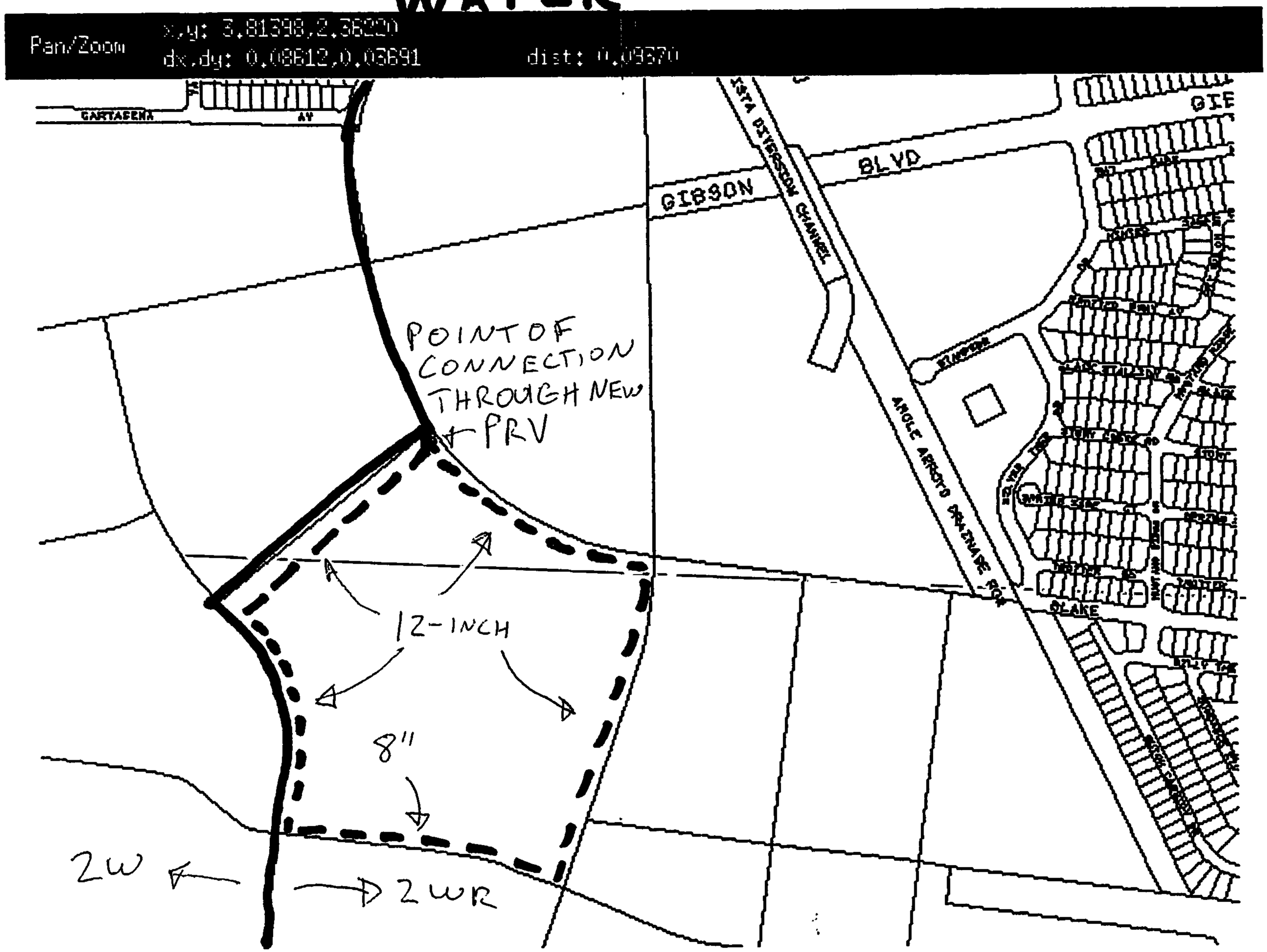
Jeremy Hoover, E.I.T.
Engineering Associate
Utility Development Services
Public Works Department

f/availability N-9
f/readers #40404
f/DRB #1003014

Pan/Zoom x,y: 5.81398,2.36220
dx,dy: 0.08612,0.03691 dist: 0.09370



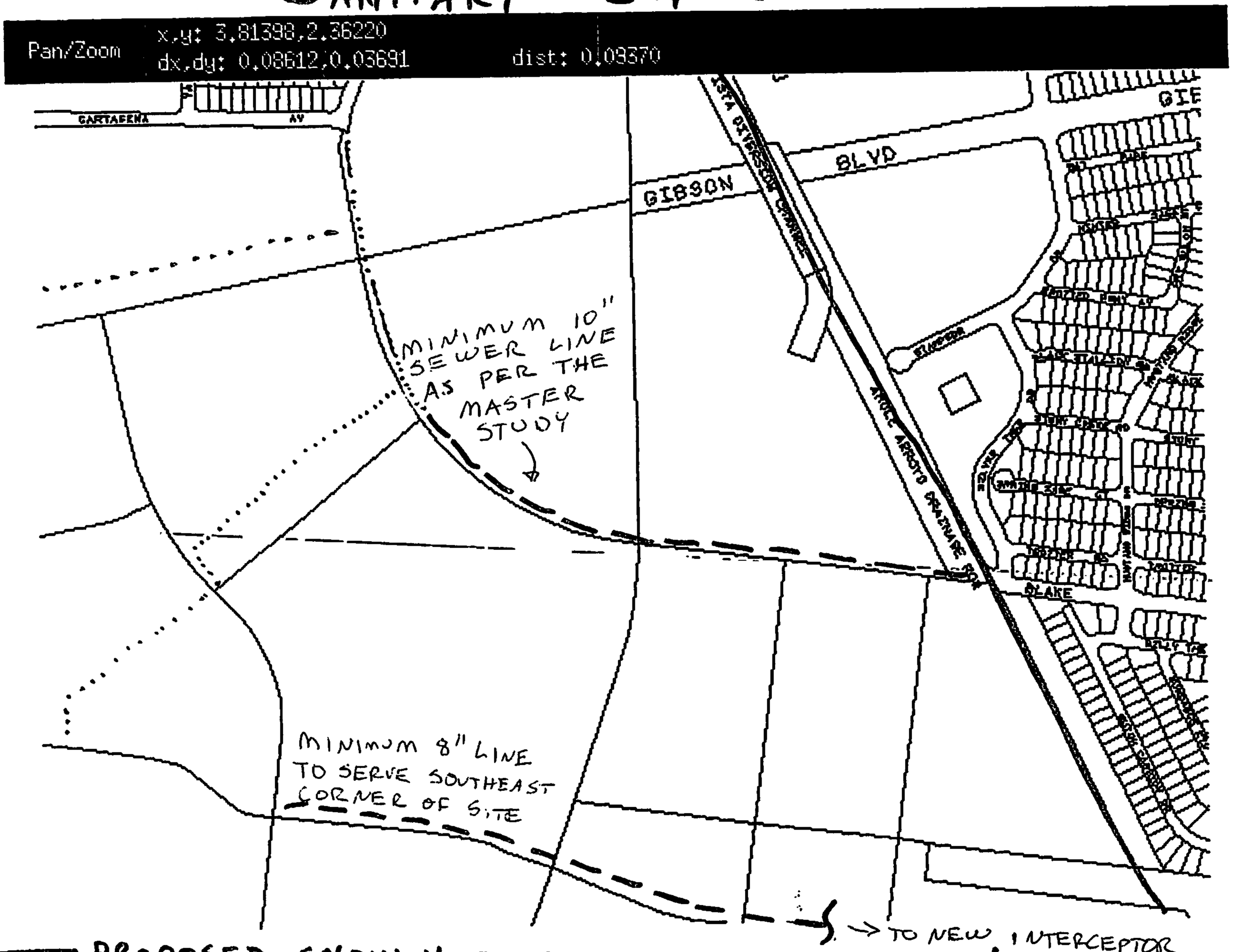
WATER



——RIO BRAVO SECTOR PLAN WATER LINE IMPROVEMENTS

---- REQUIRED LINE EXTENSIONS

SANITARY SEWER



—— PROPOSED SNOW VISTA SEWER INTERCEPTOR (ALIGNMENT UNDETERMINE

--- REQUIRED PUBLIC LINE EXTENSION

..... OFFSITE LINES WITH SEPARATE PROJECTS

CITY OF ALBUQUERQUE

July 12, 2005

Mr. Chris Sholtis, PE
BOHANNAN-HUSTON, INC.
7500 Jefferson St. NE
Albuquerque, NM 87109

RE: SUN GATE SUBDIVISION (N-9/D7)
Engineers Certification for Release of Financial Guaranty
Approved Engineers Stamp dated 01/08/2004
Resubmitted/Certified Engineer Stamp dated 05/05/2004
Engineers Certification dated 07/12/2005

Dear Chris:

Based upon the information provided in your Engineer's Certification Submittal dated 07/12/2004, 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

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

C: Marilyn Maldonado, COA# 736781
File

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

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Sungate Subdivision — ZONE MAP/DRG. FILE #: N9/D7
DRB #. 1003175 — EPC#. — WORK ORDER #. 736781

LEGAL DESCRIPTION: Sungate Subdivision
CITY ADDRESS: SE Corner of Blake Rd. SW and Gibson Blvd. SW

ENGINEERING FIRM:	Bohannan Huston, Inc.	CONTACT:	Christian J. Sholtis, PE
ADDRESS:	7500 Jefferson Street NE	PHONE:	(505) 823-1000
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87109
OWNER:	DR Horton	CONTACT:	R.P. Bohannan, PE
ADDRESS:	4400 Alameda NE, Ste B	PHONE:	797-4245
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87113
ARCHITECT:		CONTACT:	
ADDRESS:		PHONE:	
CITY, STATE:		ZIP CODE:	
SURVEYOR:	Aldrich Land Surveying	CONTACT:	Tim Aldrich, PS
ADDRESS:	PO Box 30701	PHONE:	884-1990
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87190
CONTRACTOR:	New Concepts, Inc.	CONTACT:	Tom Lakeman
ADDRESS:	PO Box 9555	PHONE:	452-8910
CITY, STATE:	Albuquerque, NM	ZIP CODE:	87119

CHECK TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN 1ST SUBMITTAL, ***REQUIRES TCL or equal***
- ____ DRAINAGE PLAN RESUBMITTAL
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEER'S CERTIFICATION (TCL)
- ____ ENGINEER'S CERTIFICATION (DRB APPR. SITE PLAN)
- ____ OTHER

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- X SIA / FINANCIAL GUARANTEE RELEASE
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D APPROVAL
- ____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
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- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
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- ____ CERTIFICATE OF OCCUPANCY (TEMP.)
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ____ YES
- X NO
- ____ COPY PROVIDED

RECEIVED
JUL 12 2005
HYDROLOGY SECTION

DATE SUBMITTED: July 12, 2005 — BY: Christian J. Sholtis, PE

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