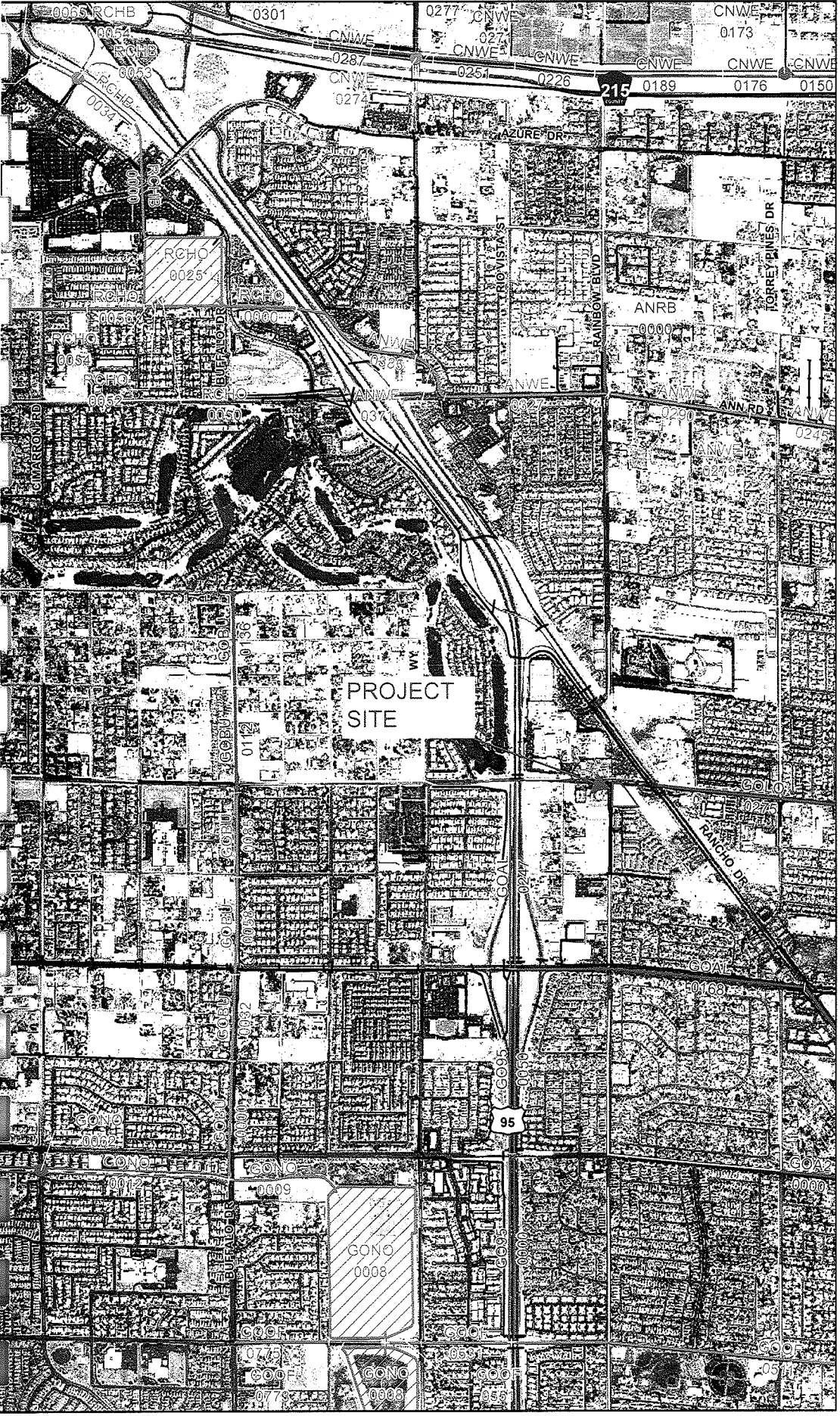


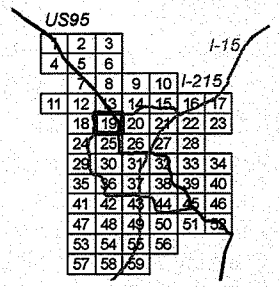
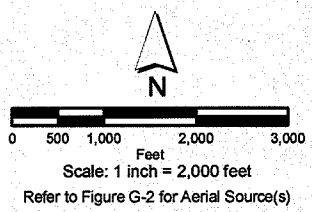


2008
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE
FIGURE F-19

FLOOD CONTROL FACILITIES

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Local Proposed Facilities
- Detention Basin
- Culvert or Bridge Crossing
- Stormdrain
- Lined Channel
- Unlined Channel
- Levee/Dike
- Natural Wash/Floodway
- ID-Mile Separator
- Remove & Replace/Parallel Facilities**
- | | |
|-------------------|-------------------|
| Category A | Category B |
| Channel | Channel |
| Stormdrain | Stormdrain |
| Crossing | Crossing |



3.0 HYDROLOGIC/HYDRAULIC METHODOLOGY

There is no change to the methodology in this entire sections with this update.

3.4 Facility Design Calculations

Normal depth calculations were performed for areas of interest for the existing and developed conditions. All normal depth calculations may be found in Appendix C.

The first point of interest was to determine the depth of flow in Lone Mountain Road based on local hydrologic conditions to ensure that the finished floor elevation is established at an appropriate elevation.

The second point of interest was to determine the depth of flow in Lone Mountain Road based on the Ultimate hydrologic condition to ensure that the finished floor elevation is established at an appropriate elevation. This condition is based on the flow rate established in the Gowan Outfall, Lone Mountain Branch – Rancho to Decatur study.

The next point of interest is the FIS for Rancho Drive, from US95 to Gowan Road. The detailed discussion presented in the original study regarding the differences between the effective model and the corrected effective model is eliminated in this update as there were no additional modifications made.

For the proposed model, the Corrected Effective model was adjusted for proposed improvements which occur generally from cross section stations 416 to 460. Only river stations 108+07 and 107+58 were adjusted for proposed improvements.

The proposed model was adjusted based on proposed improvements. Each section was adjusted both in elevation and Mannings n in accordance with accepted ranges and the proposed conditions. A cross-

section summary table is included in Appendix C before the HEC-RAS models. Table 2 summarized the changes made through the models.

Table 2 – Summary of Cross Section Revisions				
STA	Effective	Duplicate Effective	Corrected Effective	Proposed
109+46	None	None	None	None
108+07	None	None	1, 2	3, 4
107+58	None	None	1, 2	3, 4
105+75	None	None	1, 2	None
105+47	None	None	1, 2	None
105+18	None	None	1, 2	None
104+50	None	None	1, 2	None
103+99	None	None	1, 2	None
102+95	None	None	None	None

1. Added points to reflect the new existing topographic information.
2. Revised Mannings n values to reflect existing improvements.
3. Added points to reflect proposed improvements.
4. Revised Mannings n values to reflect proposed improvements.

4.0 RESULTS

The flow rates developed by this report are shown in Table 3. The development of the site does not substantially increase any of the adjacent flow rates.

TABLE 3 Summary of Flows		
BASIN	Existing (100yr/10yr) (cfs)	Developed (100 yr/10yr) (cfs)
OF1	25 / 12	-
OF2	5 / 2	-
OF3	12 / 7	-
EX1	0 / 0	-
EX2	4 / 1	-
PR1	-	3 / 2
PR2	-	3 / 1
CP1	42 / 21	45 / 22

A 24x36 existing and proposed condition basin map which shows the basin delineation is included in a map pocket at the rear of this report.

Table 4 summarizes the normal depth sections analyzed. All sections meet the velocity-depth product requirements and dry lane requirements. It should be noted that this update reduces the depth and velocity in Lone Mountain Road from the previous study.

Table 4 – Normal Depth Calculations					
Section	Q ₁₀₀ (cfs)	D ₁₀₀ (ft)	V ₁₀₀ (fps)	V•D	Dry Lane
LM ₁₀₀	45	0.84	3.20	2.69	N/A
LM ₁₀	22	0.69	2.61	1.80	17.0'
LM _{ULT}	240	1.13	4.35	4.92	N/A

Table 5 summarizes the water surface elevation determined for the multiple HEC-RAS models. All hydraulic models are included in Appendix C at the rear of this report.

Table 5 – HEC-RAS Results					
River STA	WSE Effective	WSE - DUP Effective	WSE - Corrected Effective	WSE - PROPOSED	COR EFF DIFFERENCE
11438	2320.99	2320.99	2321.01	2321.01	0
11167	2320.05	2320.05	2320.35	2320.35	0
10946	2319.38	2319.38	2319.09	2319.09	0
10807	2319.46	2319.46	2318.74	2318.74	0
10758	2319.31	2319.31	2318.70	2318.70	0
10575	2318.88	2318.88	2318.67	2318.67	0
10547	2318.89	2318.89	2318.64	2318.64	0
10518	2318.84	2318.84	2318.60	2318.60	0
10450	2318.45	2318.45	2318.47	2318.47	0
10399	2318.51	2318.51	2318.48	2318.48	0
10295	2318.39	2318.39	2318.36	2318.36	0
10075	2317.22	2317.22	2317.26	2317.26	0

5.0 CONCLUSIONS AND RECOMMENDATIONS

1. The site is located within a Special Flood Hazard Area. CCRFCD concurrence is required prior to final signature on the improvement plans.
2. The development of this site has no impact on the Clark County Regional Flood Control District Flood Control Master Plan Update. The site is not adjacent to a CCRFCD facility.
3. The finished floor elevation was established as follows:
 - The base flood elevation established based on the effective model at STA 108+07 = 2319.46 plus 1.5'. $FF_{min} = 19.46 + 1.5' = 20.96$.
 - The base flood elevation established based on the proposed model at STA 108+07 = 2318.74 plus 1.5'. $FF_{min} = 18.74 + 1.5' = 20.24$.
 - Twice the depth of flow in Lone Mountain Road based on local flows from CP-2, $Q_{100} = 45$ cfs, $D_{100} = 0.84'$, $2 \cdot D_{100} = 1.68'$ ($F_L = 18.59$, $FF_{min} = 20.27$).
 - Twice the of flow in Lone Mountain Road based on Ultimate flows Mohave based on the Gowan Outfall Lone Mountain Branch study, $Q_{100} = 240$ cfs, $D_{100} = 1.13'$, $2 \cdot D_{100} = 2.26'$ ($F_L = 18.59$, $FF_{min} = 20.85$).
 - Six inches above the adjacent top of curb, $TC = 20.68 + 0.5' =$
 $FF_{min} = 21.18$, **So the minimum finished floor = 21.18.**
5. The grading plan is included in the pocket in the back of this report.
6. This site is designed to be safe from the current FIS flow for Ranch Drive and effective FEMA SFHA Zone AE.
7. At this time, the project will need to go through the SDR process. We have zoning and the site reduces the area of disturbance from the previously approved project.
8. The design of this project does not negatively impact adjacent or downstream properties.
9. The design of this project has no affect on the corrected effective water surface elevation.
10. The proposed project is still safe from the effective, corrected effective, and proposed water surface elevations.

6.0 REFERENCES

"2008 Las Vegas Valley Flood Control Master Plan Update", September 2008.
Clark County Regional Flood Control District

"Drainage of Highway Pavements," U. S. Department of Transportation, Federal
Highway Administration, March 1984.

"HEC-1 Flood Hydrograph Package" Revised January 1985. U.S.Army Corps of
Engineers.

"Hydrologic Criteria and Drainage Design Manual", dated 1999. Clark County
Regional Flood Control District.

"Improvement Standards," Department of Public Works, Clark County, Nevada,
1993.

"Soil Survey of Las Vegas Valley Area, Nevada, Part of Clark County" dated July
1985. U.S. Department of Agriculture, Soil Conservation Service.

"Urban Hydrology for Small Watersheds", June 1986, U.S. Department of
Agriculture, Soil Conservation Service, Technical Release 55, TR-55.

APPENDIX A

Hydrologic Parameter Development

$$I = \int F \cdot dt$$

OVATION

DEVELOPMENT CORP

December 13, 2010

City of Las Vegas
Flood Control
731 South Fourth Street
Las Vegas, NV 89101

Subject: FEMA – Letter of Acknowledgement
Lone Mountain Senior Apartments

To Whom It May Concern:

As the property owner for the above referenced project, I hereby issue this formal letter stating that I acknowledge that the site (APN #138-02-101-015) is within a FEMA Special Flood Hazard Area in Zone AE as shown on the FIRM, Community Parcel Number 32003C2155E, revised by LOMR, dated December 31, 2003.

I further acknowledge the site may be subject to inundation.

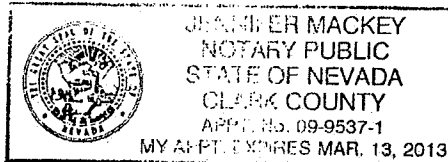
Alan L. Molasky
Alan L. Molasky, Owner

12/16/10
Date

STATE OF NEVADA)

) SS

COUNTY OF CLARK)



On December 16, 2010, before me, the undersigned, NOTARY PUBLIC, in and for said County and State, personally appeared Alan L. Molasky known to me to be the person described in and who executed the foregoing instrument, and who acknowledged to me that he executed the same freely and voluntarily and for the uses and purposes therein mentioned.

WITNESS MY HAND AND OFFICIAL SEAL.

Jennifer Mackey
NOTARY SIGNATURE

CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		February 3, 2011
TO: Land Development Services Department of Public Works		FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT: Drainage Study for: Lone Mountain Senior Apartments		COPIES TO: Impulse Engineering
Cross Streets:	Lone Mountain & Rainbow	
File Number:	F:\Depot\DSMemos\DS4512C.ZNAE.doc	
Parcel Number:	13802101015, 002	
Zoning Action:	SDR-37602, ZON-37600	
FEMA Flood Zone	YES X	NO
Proposed Storm Drain	YES	NO X

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1 st Submittal	11/24/2010 & Supplemental 11/29/2010	12/7/2010	Not Approved	\$400.00	158043: \$400
2 nd Submittal	12/21/2010	01/03/2011	Conditional Approval	\$400.00	159673: \$400
3 rd Submittal	1/25/2011	2/3/2011	CCRFCDC Conc. Recv'd	N/C	N/C
TOTAL FEES (LDDRS):				\$800.00	----

REMARKS: This site is located in a FEMA Special Flood Hazard Area, Zone AE. The engineer must submit the drainage study to FEMA for a Conditional Letter of Map Revision (CLOMR). A favorable CLOMR must be obtained from FEMA prior to the issuance of any permits.

The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Department of Development Services concurrence.
X	is conditionally approved subject to FEMA approval of CLOMR.

The following comments are repeated until they are complete:

1. The off-site improvement bond must include a drainage line item for a Letter of Map Revision (LOMR) in the amount of \$50,000. The Bond will not be released until the LOMR is received from FEMA.
2. The provided HEC-RAS analysis has made adjustments to the Mannings n-values. Flood Control takes no exception to these revisions as there are appropriate based upon a more detailed review and analysis.
3. This site is adjacent to an ongoing CCRFCDC Master Plan facility. The Gowan Outfall – Lone Mountain Branch project has been awarded with construction scheduled to begin in early 2011. The Gowan Outfall project proposes to install a storm drain lateral with a 12.5-foot DM drop inlet on the south side of Lone Mountain Road adjacent to this development. Continue to coordinate the site construction with the Gowan Outfall – Lone Mountain Branch project through Engineering Design; contact Gina Venglass @ 229-6790.

4. Grading Plan (Sheet 7):

Label the wrought iron fencing within the 100-year flood zone east of the entry.

Provide grading elevations for the proposed curbing along the south side of the site adjacent to the Building. Call out the Construction Note for the curbing.

Provide grading elevations at the ADA parking area limits. Show the maximum slope @ 2%.

Provide grading along the walks and deck around the pool area.

5. Section Sheet (Sheet 5):

Revise Section K to reflect wrought iron fencing only as this area is within the Flood Zone.

6. The engineer has provided a table on the grading plans that shows the quantity estimate of all drainage improvements within Public Drainage Easements. All drainage improvements within Public Drainage Easements must be bonded and inspected. Flood Control will not release the Bond until the LOMR is received from FEMA.
7. This site accepts offsite flows and conveys them through the site. The provided "Public Drainage Easement to be Privately Maintained" needs to be shown on the plans. The proposed easement includes the 100-year flood zone within the project site. Public drainage easements must be recorded by separate document prior to the final acceptance of the improvement plans. Submit the easement to Land Development for review and processing with the civil plans.
8. A *Letter of Map Revision* (LOMR) must be obtained from FEMA for any project within a FEMA "AE" flood zone. The bonded improvements will not be released until the LOMR is obtained from FEMA and filed with the *City of Las Vegas*.

The Engineer is to provide addresses for each Building in a FEMA Flood Hazard Zone prior to obtaining a grading permit. This information is necessary to insure that the elevation certificates are provided for each address prior to completion of construction. A FEMA Elevation Certificate will be required once the finish floor is constructed to verify the building elevation prior to framing. A new FEMA Elevation Certificate will be required once the project is complete prior to issuance of the Certificate of Occupancy.

NOTE: The engineer must submit the drainage study to FEMA for a Conditional Letter of Map Revision (CLOMR). A favorable CLOMR must be obtained from FEMA prior to the issuance of any permits. This site is located in a FEMA Zone AE. *Clark County Regional Flood Control District (CCRFGD)* review and approval is required prior to recordation of final map or issuance of building/grading permits. The Engineer must send a copy of the report to the CCRFGD for review. The developer/engineer must also obtain a *Letter of Map Revision (LOMR)* using the approved drainage study as technical support to inform FEMA of the modifications within the flood zone. The approved LOMR must be submitted to the *City of Las Vegas* prior to the release of the bond. FEMA Elevation Certificates, showing as-built finish floor elevations, must be completed for each building in the FEMA AE Zone. The certificate must be submitted to the *City of Las Vegas Flood Control Section* prior to scheduling a framing inspection and Certificate of Occupancy.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see <http://ndep.nv.gov/bwpc/storm01.htm> or call (775) 687-9429.

NOTE: This drainage study assumes that the project will be constructed in one phase. If improvement plans are submitted to break the project into separate phases, a drainage study update will be required for each phase addressing the interim condition.

END OF REMARKS
PBJ/ays

T/R/S: T20S/R60E/S02
AREA L02

Post-it® Fax Note	7671	Date	2/3/11	# of pages	3
To	Peter Laas	From	Albert SunG		
Co./Dept.	Impulse Org.	Co.	CLV		
Phone #		Phone #	229-2001		
Fax #	478-8535	Fax #			

STANDARD FROM 4

Lone Mountain Senior Affordable Housing

Company Name: Impulse Civil Engineering
File No.: C:\Impulse\Projects\Client
Project No.: 2010017.00

Calc By: PJL
Date: 2/5/2011

[illegible]

PRECIPITATION ADJUSTMENT RATIOS

<u>Recurrence Interval</u>	<u>Ratio to NOAA Atlas 2</u>
2-year	1.00
5-year	1.16
10-year	1.24
25-year	1.33
50-year	1.39
100-year	1.43

NOTE: 1. Multiply the values obtained from the NOAA Atlas 2 by the above ratios to obtain the adjusted precipitation values.

2. NOAA Atlas 2 values for use with TR-55 shall not be adjusted by the above ratios.

3. Tables 505 and 506 require no adjustments.

<i>Revision</i>	<i>Date</i>

**WRC
ENGINEERING**

REFERENCE:

USACE, Los Angeles District, 1988

TABLE 501

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

SIX HOUR DEPTH-AREA REDUCTION FACTORS

<u>Drainage Area (Square Miles)</u>	<u>Six-Hour Depth-Area Reduction Factor</u>
0.0	1.00
0.5	0.98
1.0	0.97
2.0	0.93
4.0	0.91
6.0	0.90
8.0	0.88
10.0	0.86
20.0	0.79
30.0	0.74
50.0	0.68
100.0	0.60
150.0	0.55
200.0	0.51
300.0	0.46
400.0	0.42
500.0	0.39

- NOTES: 1. A graphical representation of these factors is presented in Figure 514.
2. Consult with the local entity and/or the CCRFCD for guidance in using the Depth-Area Reduction Factors for drainage areas greater than 200 square miles.

<i>Revision</i>	<i>Date</i>

**WRC
ENGINEERING**

REFERENCE:
USACE, Los Angeles District, 1988

TABLE 502

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

SIX-HOUR STORM DISTRIBUTIONS

Percent of Total Storm Depth				Percent of Total Storm Depth			
Storm Time (In Minutes)	SDN3	SDN4	SDN5	Storm Time (In Minutes)	SDN3	SDN4	SDN5
0	0.0	0.0	0.0	185	32.2	37.6	43.0
5	2.0	2.0	2.0	190	35.2	41.5	47.7
10	5.7	5.8	5.9	195	40.9	46.2	51.4
15	7.0	7.5	8.0	200	49.9	53.0	56.1
20	8.7	9.9	11.0	205	59.0	61.0	63.0
25	10.8	12.6	14.4	210	71.0	71.0	71.0
30	12.4	13.7	15.0	215	74.4	73.2	72.0
35	13.0	14.5	16.0	220	78.1	75.6	73.1
40	13.0	14.9	16.8	225	81.2	78.2	75.2
45	13.0	15.1	17.1	230	81.9	79.9	77.9
50	13.0	15.5	18.0	235	83.5	81.3	79.0
55	13.0	15.6	18.2	240	85.1	82.3	79.5
60	13.0	15.9	18.7	245	85.6	83.0	80.4
65	13.3	16.2	19.0	250	86.0	83.5	81.0
70	14.0	16.9	19.7	255	86.8	84.4	82.0
75	14.2	17.2	20.2	260	87.6	85.1	82.6
80	14.8	17.9	21.0	265	88.8	86.4	84.0
85	15.8	18.9	22.0	270	91.0	88.5	85.9
90	17.2	20.1	23.0	275	92.6	90.8	88.9
95	18.1	21.1	24.1	280	93.7	92.4	91.0
100	19.0	22.0	25.0	285	95.0	94.4	93.8
105	19.7	22.8	25.9	290	97.0	96.8	96.6
110	19.9	23.2	26.5	295	97.6	97.3	97.0
115	20.0	24.0	28.0	300	98.2	97.8	97.4
120	20.1	24.6	29.0	305	98.5	98.2	97.9
125	20.4	25.2	30.0	310	98.7	98.4	98.1
130	21.4	26.0	30.5	315	98.9	98.6	98.3
135	22.9	26.9	30.9	320	99.0	98.8	98.5
140	24.1	27.6	31.0	325	99.3	99.1	98.9
145	24.9	28.3	31.7	330	99.3	99.2	99.0
150	25.1	28.6	32.1	335	99.4	99.3	99.2
155	25.6	29.2	32.7	340	99.5	99.4	99.3
160	27.0	30.2	33.3	345	99.8	99.7	99.6
165	27.8	31.2	34.6	350	99.8	99.8	99.7
170	28.1	32.1	36.1	355	99.9	99.9	99.9
175	28.3	33.2	38.1	360	100.0	100.0	100.0
180	29.5	35.2	40.8				

- Notes: 1. For drainage areas less than 8 square miles in size, use SDN 3.
 2. For drainage areas greater than or equal to 8 square miles and less than 12 square miles in size, use SDN 4.
 3. For drainage areas greater than or equal to 12 square miles, use SDN 5.
 4. A graphical representation of these values is presented on Figure 515.

Revision	Date

REFERENCE:

TABLE 503

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DEPTH-DURATION-FREQUENCY VALUES FOR McCARRAN AIRPORT RAINFALL AREA (IN INCHES)

TIME	RECURRENCE INTERVAL					
	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
5 min.	0.15	0.27	0.35	0.46	0.54	0.63
10 min.	0.25	0.44	0.57	0.74	0.89	1.02
15 min.	0.33	0.57	0.74	0.97	1.15	1.32
30 min.	0.44	0.78	1.01	1.31	1.55	1.79
1 hour	0.52	0.89	1.15	1.50	1.78	2.06
2 hour	0.59	1.01	1.30	1.70	2.01	2.30
3 hour	0.64	1.08	1.39	1.82	2.15	2.48
6 hour	0.72	1.22	1.58	2.05	2.41	2.77
24 hour (TR-55)	1.20	1.60	1.80	2.40	2.70	2.96

- NOTE: 1. Refer to Figure 513 for a description and drawing of the area included in the McCarran Airport Rainfall Area.
2. The 24 hour values presented above are for use with TR-55 only.
3. Table 501 adjustments not required.

Revision	Date

**WRC
ENGINEERING**

REFERENCE:

USACE, Los Angeles District, 1988

TABLE 505

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME-INTENSITY-FREQUENCY VALUES FOR McCARRAN AIRPORT RAINFALL AREA (IN INCHES PER HOUR)

TIME (min)	RECURRENCE INTERVAL					
	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
5	1.80	3.24	4.20	5.52	6.48	7.56
10	1.50	2.64	3.42	4.44	5.34	6.12
15	1.32	2.28	2.96	3.88	4.60	5.28
30	0.88	1.56	2.02	2.62	3.10	3.58
60	0.52	0.89	1.15	1.50	1.78	2.06

- NOTE: 1. Refer to Figure 513 for a description and drawing of the area included in the McCarran Airport Rainfall Area.
2. Table 501 adjustments not required.

Revision	Date

**WRC
ENGINEERING**

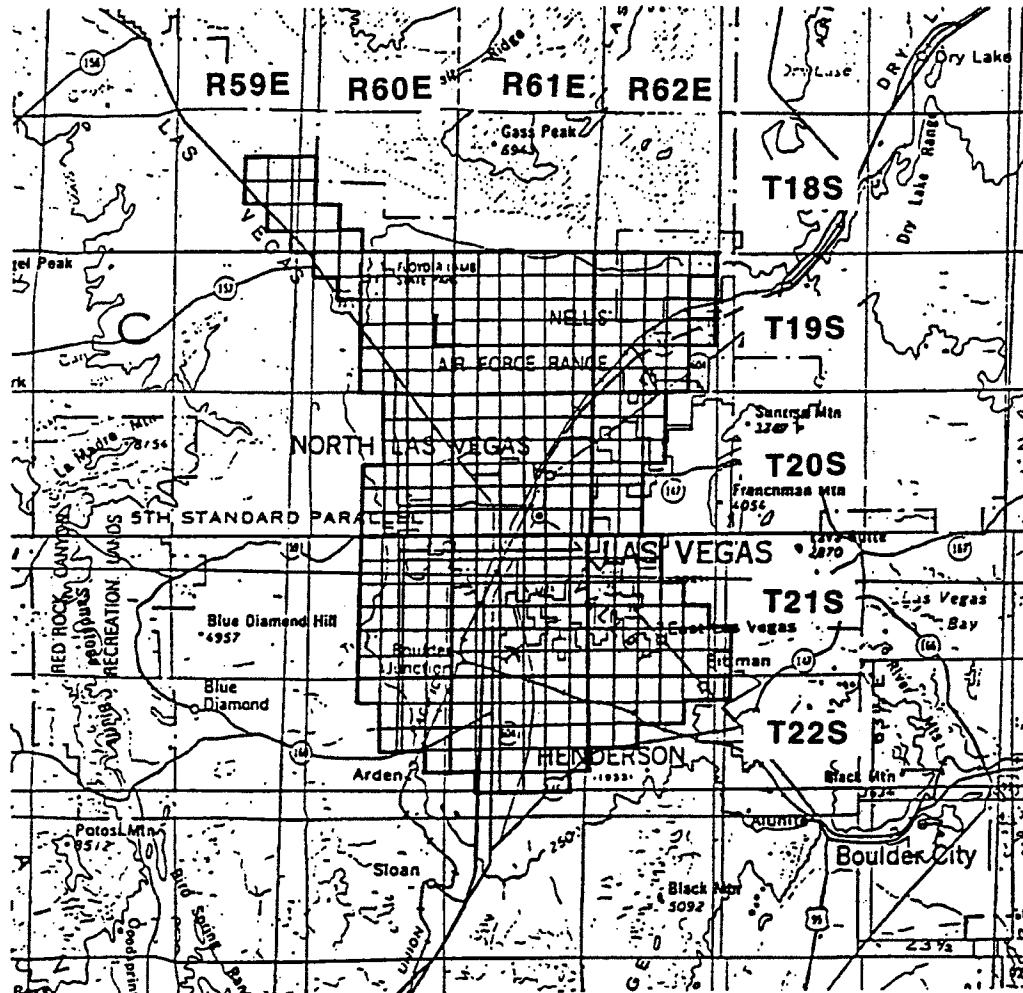
REFERENCE:

USACE, Los Angeles District, 1988

TABLE 506

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

McCARRAN AIRPORT RAINFALL AREA



TOWNSHIP	RANGE	SECTIONS	TOWNSHIP	RANGE	SECTIONS
18 South	59 East	13-15,22-26,36	20 South	62 East	4-9,16-20,29-32
18 South	60 East	30-32	21 South	60 East	1-4,9-16,21-28,33-36
19 South	60 East	1-6,8-16,21-28,33-36	21 South	61 East	ALL SECTIONS
19 South	61 East	ALL SECTIONS	21 South	62 East	4-9,15-23, 25-36
19 South	62 East	2-11,14-23,27-34	22 South	60 East	1-4,10-15,24
20 South	60 East	1-3,10-15,21-28,33-36	22 South	61 East	1-24,26-29
20 South	61 East	ALL SECTIONS	22 South	62 East	1-10,17-18

Notes:

1. Refer to Table 505 and Figure 516 Depth-Duration-Frequency values in the McCarran Airport Rainfall Area.
2. Refer to Table 506 and Figure 517 for Time-Intensity-Frequency values on the McCarran Airport Rainfall Area.

Revision	Date

WRC
ENGINEERING

REFERENCE:

USACE, Los Angeles District, 1988

FIGURE 513

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

RUNOFF CURVE NUMBERS (SEMIARID RANGELANDS¹)

Cover description		Curve numbers for hydrologic soil group—			
Cover type	Hydrologic condition ²	A ³	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

¹Average runoff condition, and $I_a = 0.2S$.

²Poor: < 30% ground cover (litter, grass, and brush overstory).

Fair: 30 to 70% ground cover.

Good: > 70% ground cover.

³Curve numbers for group A have been developed only for desert shrub.

Revision	Date

**WRC
ENGINEERING**

REFERENCE:

SCS TR-55, USDA, June 1986.

**TABLE 602
4 of 4**

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

RUNOFF CURVE NUMBERS - RESIDENTIAL DISTRICTS

Average Lot Size or Usage ¹	Percent Impervious ²	Curve Number for Hydrologic Soil Groups			
		A	B	C	D
Apartments/Condos	72	81	88	91	93
Townhouses/6,000 sq ft lots or less	60	80	87	90	92
7,000 sq ft lots	63	76	84	89	91
8,000 sq ft lots	58	73	82	88	90
10,000 sq ft lots	38	61	75	83	87
14,000 sq ft lots	30	57	72	81	86
20,000 sq ft lots	25	54	70	80	85
40,000 sq ft lots	20	51	68	79	84
80,000 sq ft lots	12	46	65	77	82

- 1 Lot size should represent the size of the average lot and not the gross acreage divided by the number of lots.
- 2 Actual percent impervious value should be compared to selected land use type.
- 3 In cases where average residential lots are smaller than 6,000 sq ft, commercial/business/industrial land use should be used.

Revision	Date

REFERENCE:

TABLE 602A

APPENDIX B

Hydrologic Analyses

$$I = \int F \cdot dt$$

```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* SEPTEMBER 1990
* VERSION 4.0
*
* RUN DATE 02/05/2011 TIME 15:12:02
*
*****

```

```

*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****

```

```

X X XXXXXXX XXXXX X
X X X X X XX
X X X X X
XXXXXXX XXXX X XXXXX X
X X X X X
X X X X X
X X XXXXXXX XXXXX XXX

```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY, DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1 ID LONE MNT SENIOR APARTMENTS
2 ID TECHNICAL DRAINAGE STUDY UPDATE
3 ID EXISTING CONDITIONS
4 ID
5 ID
6 ID 2/05/11
7 ID
8 ID IMPULSE CIVIL ENGINEERING
9 ID
10 ID INPUT FILE: LN-MTN-UP1.DAT
11 ID OUTPUT FILE: LN-MTN-UP1.OUT
12 ID
13 ID 100-YEAR, 6-HOUR STORM, SDN3
14 ID PB10 = 1.58, PB100 = 2.77
15 ID 6-HOUR DARF = 1.00
16 ID JR = 1.58 / 2.77 = 0.57 (10 YEAR)
17 ID JR = 2.05 / 2.77 = 0.74 (25 YEAR)
18 ID JR = 2.41 / 2.77 = 0.87 (50 YEAR)
19 ID JR = 2.77 / 2.77 = 1.00 (100 YEAR)
20 ID
21 ID
22 *DIAGRAM
23 IT 5 0 0 300
24 IN 4 0 0
25 IO 5 0 0
26 JR PREC 0.57 1.00
27
28 KK OF1
29 KM RUNOFF FROM BASIN OF1
30 KM EXISTING APARTMENTS THAT DRAIN TO LONE MOUNTAIN ROAD
31 KM AREA=9.41 ACRES
32 BA .0147
33 PB 2.77
34 PC 0 .0200 .0570 .0700 .0870 .1080 .1240 .1300 .1300 .1300
35 PC .1300 .1300 .1300 .1330 .1400 .1420 .1480 .1580 .1720 .1810
36 PC .1900 .1970 .1990 .2000 .2010 .2040 .2140 .2290 .2410 .2490
37 PC .2510 .2560 .2700 .2780 .2810 .2830 .2950 .3220 .3520 .4090
38 PC .4990 .5900 .7100 .7440 .7810 .8120 .8190 .8350 .8510 .8560
39 PC .8600 .8680 .8760 .8880 .9100 .9260 .9370 .9500 .9700 .9760
40 PC .9820 .9850 .9870 .9890 .9900 .9930 .9930 .9940 .9950 .9980
41 PC .9980 .9990 1.000
42 LS 0 93.00
43 UD .1731
44
45 KK OF2
46 KM RUNOFF FROM BASIN OF2
47 KM EXISTING 1 ACRES LOTS THAT DRAIN TO LONE MOUNTAIN ROAD
48 KM AREA=2.58 ACRES
49 BA .0040
50 LS 0 84.00
51 UD .1461

```

1 HEC-1 INPUT PAGE 2

```

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
49 KK OF3
50 KM RUNOFF FROM BASIN OF3
51 KM EXISTING LONE MOUNTAIN ROAD

```

```

52      KM  AREA=3.85 ACRES
53      BA  .0060
54      LS   0   98.00
55      UD  .1619

56      KK   EX1
57      KM  RUNOFF FROM BASIN EX1
58      KM  EXISTING PORTION OF THE SITE
59      KM  AREA=0.21 ACRES
60      BA  .0003
61      LS   0   88.00
62      UD  .1000

63      KK  CP-1
64      KM  COMBINE: OF1, OF2, AND OF3 WITH EX1
65      HC   4

66      KK   EX2
67      KM  RUNOFF FROM BASIN EX2
68      KM  EXISTING PORTION OF THE SITE THAT DRAINS TO RAINBOW
69      KM  AREA=1.56 ACRES
70      BA  .0024
71      LS   0   88.00
72      UD  .1437
73      ZZ

```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```

INPUT LINE      (V) ROUTING      (--->) DIVERSION OR PUMP FLOW

NO.      (.) CONNECTOR      (<---) RETURN OF DIVERTED OR PUMPED FLOW

26      OF1
.
42      .      OF2
.
49      .      .      OF3
.
56      .      .      .      EX1
.
63      CP-1 .....
.
66      .      EX2

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```

*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* SEPTEMBER 1990 *
* VERSION 4.0 *
* RUN DATE 02/05/2011 TIME 15:12:02 *
*****

```

```

*****
* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
*****

```

LONE MNT SENIOR APARTMENTS
 TECHNICAL DRAINAGE STUDY UPDATE
 EXISTING CONDITIONS

2/05/11

IMPULSE CIVIL ENGINEERING

INPUT FILE: LN-MTN-UP1.DAT
 OUTPUT FILE: LN-MTN-UP1.OUT

100-YEAR, 6-HOUR STORM, SDN3
 PB10 = 1.58, PB100 = 2.77
 6-HOUR DARF = 1.00
 JR = 1.58 / 2.77 = 0.57 (10 YEAR)
 JR = 2.05 / 2.77 = 0.74 (25 YEAR)
 JR = 2.41 / 2.77 = 0.87 (50 YEAR)
 JR = 2.77 / 2.77 = 1.00 (100 YEAR)

24 IO

OUTPUT CONTROL VARIABLES

```

IPRNT      5 PRINT CONTROL
IPLOT      0 PLOT CONTROL
QSCAL      0. HYDROGRAPH PLOT SCALE

```

IT

HYDROGRAPH TIME DATA

```

NMIN      5 MINUTES IN COMPUTATION INTERVAL
IDATE      1 0 STARTING DATE
ITIME      0000 STARTING TIME
NQ        300 NUMBER OF HYDROGRAPH ORDINATES
NDDATE      2 0 ENDING DATE

```

NDTIME 0055 ENDING TIME
ICENT 19 CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 24.92 HOURS

ENGLISH UNITS

DRAINAGE AREA SQUARE MILES
PRECIPITATION DEPTH INCHES
LENGTH, ELEVATION FEET
FLOW CUBIC FEET PER SECOND
STORAGE VOLUME ACRE-Feet
SURFACE AREA ACRES
TEMPERATURE DEGREES FAHRENHEIT

JP MULTI-PLAN OPTION
NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
.57 1.00

1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1	RATIO 2
				.57	1.00
HYDROGRAPH AT					
+	OF1	.01	1	FLOW	12.
				TIME	25.
				2.92	2.92
HYDROGRAPH AT					
+	OF2	.00	1	FLOW	2.
				TIME	5.
				2.92	2.92
HYDROGRAPH AT					
+	OF3	.01	1	FLOW	7.
				TIME	12.
				2.92	2.92
HYDROGRAPH AT					
+	EX1	.00	1	FLOW	0.
				TIME	0.
				2.83	2.83
4 COMBINED AT					
+	CP-1	.03	1	FLOW	21.
				TIME	42.
				2.92	2.92
HYDROGRAPH AT					
+	EX2	.00	1	FLOW	1.
				TIME	4.
				2.92	2.92

*** NORMAL END OF HEC-1 ***

```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* SEPTEMBER 1990
* VERSION 4.0
*
* RUN DATE 02/05/2011 TIME 15:21:01
*
*****

```

```

*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****

```

```

X X XXXXXXX XXXXX X
X X X X X XX
X X X X X
XXXXXXX XXXX X XXXXX X
X X X X X
X X X X X
X X XXXXXXX XXXXX XXX

```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,

DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION

KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1

HEC-1 INPUT

PAGE 1

```

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1 ID LONE MNT SENIOR APARTMENTS
2 ID TECHNICAL DRAINAGE STUDY UPDATE
3 ID PROPOSED CONDITIONS
4 ID
5 ID
6 ID 2/05/11
7 ID
8 ID IMPULSE CIVIL ENGINEERING
9 ID
10 ID INPUT FILE: LN-MTN-P-UP1.DAT
11 ID OUTPUT FILE: LN-MTN-P-UP1.OUT
12 ID
13 ID 100-YEAR, 6-HOUR STORM, SDN3
14 ID PB10 = 1.58, PB100 = 2.77
15 ID 6-HOUR DARF = 1.00
16 ID JR = 1.58 / 2.77 = 0.57 (10 YEAR)
17 ID JR = 2.05 / 2.77 = 0.74 (25 YEAR)
18 ID JR = 2.41 / 2.77 = 0.87 (50 YEAR)
19 ID JR = 2.77 / 2.77 = 1.00 (100 YEAR)
20 ID
21 ID
22 ID *DIAGRAM
23 IT 5 0 0 300
24 IN 4 0 0
25 IO 5 0 0
26 JR PREC 0.57 1.00
27
28 KK OF1
29 KM RUNOFF FROM BASIN OF1
30 KM EXISTING APARTMENTS THAT DRAIN TO LONE MOUNTAIN ROAD
31 KM AREA=9.41 ACRES
32 BA .0147
33 PB 2.77
34 PC 0 .0200 .0570 .0700 .0870 .1080 .1240 .1300 .1300 .1300
35 PC .1300 .1300 .1300 .1330 .1400 .1420 .1480 .1580 .1720 .1810
36 PC .1900 .1970 .1990 .2000 .2010 .2040 .2140 .2290 .2410 .2490
37 PC .2510 .2560 .2700 .2780 .2810 .2830 .2950 .3220 .3520 .4090
38 PC .4990 .5900 .7100 .7440 .7810 .8120 .8190 .8350 .8510 .8560
39 PC .8600 .8680 .8760 .8880 .9100 .9260 .9370 .9500 .9700 .9760
40 PC .9820 .9850 .9870 .9890 .9900 .9930 .9930 .9940 .9950 .9980
41 PC .9980 .9990 1.000
42 LS 0 93.00
43 UD .1731
44
45 KK OF2
46 KM RUNOFF FROM BASIN OF2
47 KM EXISTING 1 ACRES LOTS THAT DRAIN TO LONE MOUNTAIN ROAD
48 KM AREA=2.58 ACRES
49 BA .0040
50 LS 0 84.00
51 UD .1461

```

HEC-1 INPUT

PAGE 2

```

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
49 KK OF3
50 KM RUNOFF FROM BASIN OF3
51 KM EXISTING LONE MOUNTAIN ROAD

```

1

```

52      KM  AREA=3.85 ACRES
53      BA  .0060
54      LS   0   98.00
55      UD  .1619

56      KK   PR1
57      KM  RUNOFF FROM BASIN PR1
58      KM  PORTION OF THE SITE THAT DRAINS TO LONE MOUNTAIN
59      KM  AREA=1.02 ACRES
60      BA  .0016
61      LS   0   95.00
62      UD  .0986

63      KK   CP-1
64      KM  COMBINE: OF BASINS WITH PR1
65      HC   4

66      KK   PR2
67      KM  RUNOFF FROM BASIN PR2
68      KM  PORTION OF THE SITE THAT DRAINS TO RAINBOW
69      KM  AREA=0.75 ACRES
70      BA  .0012
71      LS   0   95.00
72      UD  .0988
73      ZZ

```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```

INPUT
LINE      (V) ROUTING      (--->) DIVERSION OR PUMP FLOW
          (.) CONNECTOR    (<---) RETURN OF DIVERTED OR PUMPED FLOW

26      OF1
      .
42      .      OF2
      .
49      .      .      OF3
      .
56      .      .      .      PR1
      .
63      CP-1.....
      .
66      .      PR2

```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```

*****
* FLOOD HYDROGRAPH PACKAGE (HEC-1) *
* SEPTEMBER 1990 *
* VERSION 4.0 *
* RUN DATE 02/05/2011 TIME 15:21:01 *
*****

```

```

*****
* U.S. ARMY CORPS OF ENGINEERS *
* HYDROLOGIC ENGINEERING CENTER *
* 609 SECOND STREET *
* DAVIS, CALIFORNIA 95616 *
* (916) 756-1104 *
*****

```

LONE MNT SENIOR APARTMENTS
TECHNICAL DRAINAGE STUDY UPDATE
PROPOSED CONDITIONS

2/05/11

IMPULSE CIVIL ENGINEERING

INPUT FILE: LN-MTN-P-UP1.DAT
OUTPUT FILE: LN-MTN-P-UP1.OUT

100-YEAR, 6-HOUR STORM, SDN3
PB10 = 1.58, PB100 = 2.77
6-HOUR DARF = 1.00
JR = 1.58 / 2.77 = 0.57 (10 YEAR)
JR = 2.05 / 2.77 = 0.74 (25 YEAR)
JR = 2.41 / 2.77 = 0.87 (50 YEAR)
JR = 2.77 / 2.77 = 1.00 (100 YEAR)

24 IO

OUTPUT CONTROL VARIABLES

```

IPRNT      5 PRINT CONTROL
IPLOT      0 PLOT CONTROL
QSCAL      0. HYDROGRAPH PLOT SCALE

```

IT

HYDROGRAPH TIME DATA

```

NMIN      5 MINUTES IN COMPUTATION INTERVAL
IDATE      1 0 STARTING DATE
ITIME      0000 STARTING TIME
NQ        300 NUMBER OF HYDROGRAPH ORDINATES
NDDATE     2 0 ENDING DATE

```

NDTIME 0055 ENDING TIME
ICENT 19 CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 24.92 HOURS

ENGLISH UNITS

DRAINAGE AREA SQUARE MILES
PRECIPITATION DEPTH INCHES
LENGTH, ELEVATION FEET
FLOW CUBIC FEET PER SECOND
STORAGE VOLUME ACRE-Feet
SURFACE AREA ACRES
TEMPERATURE DEGREES FAHRENHEIT

JP MULTI-PLAN OPTION
NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
.57 1.00

1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1	RATIO 2
				.57	1.00
HYDROGRAPH AT					
+	OF1	.01	1	FLOW	12.
				TIME	25.
				2.92	2.92
HYDROGRAPH AT					
+	OF2	.00	1	FLOW	2.
				TIME	5.
				2.92	2.92
HYDROGRAPH AT					
+	OF3	.01	1	FLOW	7.
				TIME	12.
				2.92	2.92
HYDROGRAPH AT					
+	PR1	.00	1	FLOW	2.
				TIME	3.
				2.83	2.83
4 COMBINED AT					
+	CP-1	.03	1	FLOW	22.
				TIME	45.
				2.92	2.92
HYDROGRAPH AT					
+	PR2	.00	1	FLOW	1.
				TIME	3.
				2.83	2.83

*** NORMAL END OF HEC-1 ***

APPENDIX C

Hydraulic Analyses

$$I = \int F \cdot dt$$

EXISTING 10-YEAR
Worksheet for Irregular Channel

Project Description	
Project File	c:\impulse\projects\clients\ovation\lone mountain\hydrology revised\lonemtn.fm2
Worksheet	LONE MOUNTAIN
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope	0.005000 ft/ft			
Elevation range: 0.00 ft to 2.00 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2.00	0.00	50.00	0.016
0.00	0.60			
5.00	0.50			
5.50	0.50			
5.50	0.00			
7.00	0.13			
7.00	0.17			
50.00	1.03			
Discharge	20.00	cfs		

Results		
Wtd. Mannings Coefficient	0.016	
Water Surface Elevation	0.67	ft
Flow Area	7.87	ft ²
Wetted Perimeter	32.66	ft
Top Width	32.04	ft
Height	0.67	ft
Critical Depth	0.65	ft
Critical Slope	0.006210	ft/ft
Velocity	2.54	ft/s
Velocity Head	0.10	ft
Specific Energy	0.77	ft
Froude Number	0.90	
Flow is subcritical.		

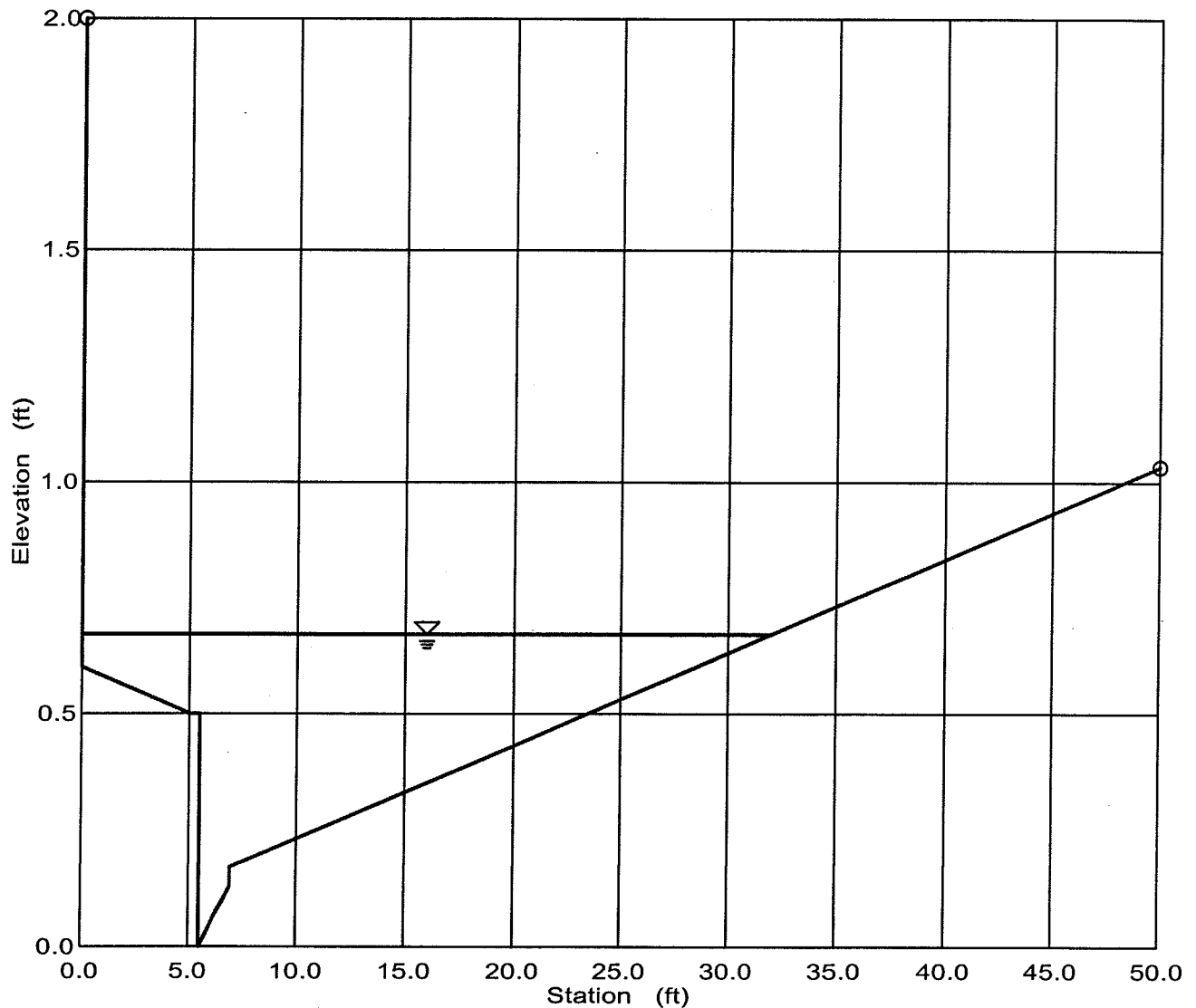
Cross Section
Cross Section for Irregular Channel

Project Description

Project File	c:\impulse\projects\clients\ovation\lone mountain\hydrology revised\lonemtn.fm2
Worksheet	LONE MOUNTAIN
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data

Wtd. Mannings Coefficient	0.016
Channel Slope	0.005000 ft/ft
Water Surface Elevation	0.67 ft
Discharge	20.00 cfs



EXISTING 100-YEAR Worksheet for Irregular Channel

Project Description	
Project File	c:\impulse\projects\clients\ovation\lone mountain\hydrology revised\lonemtn.fm2
Worksheet	LONE MOUNTAIN
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

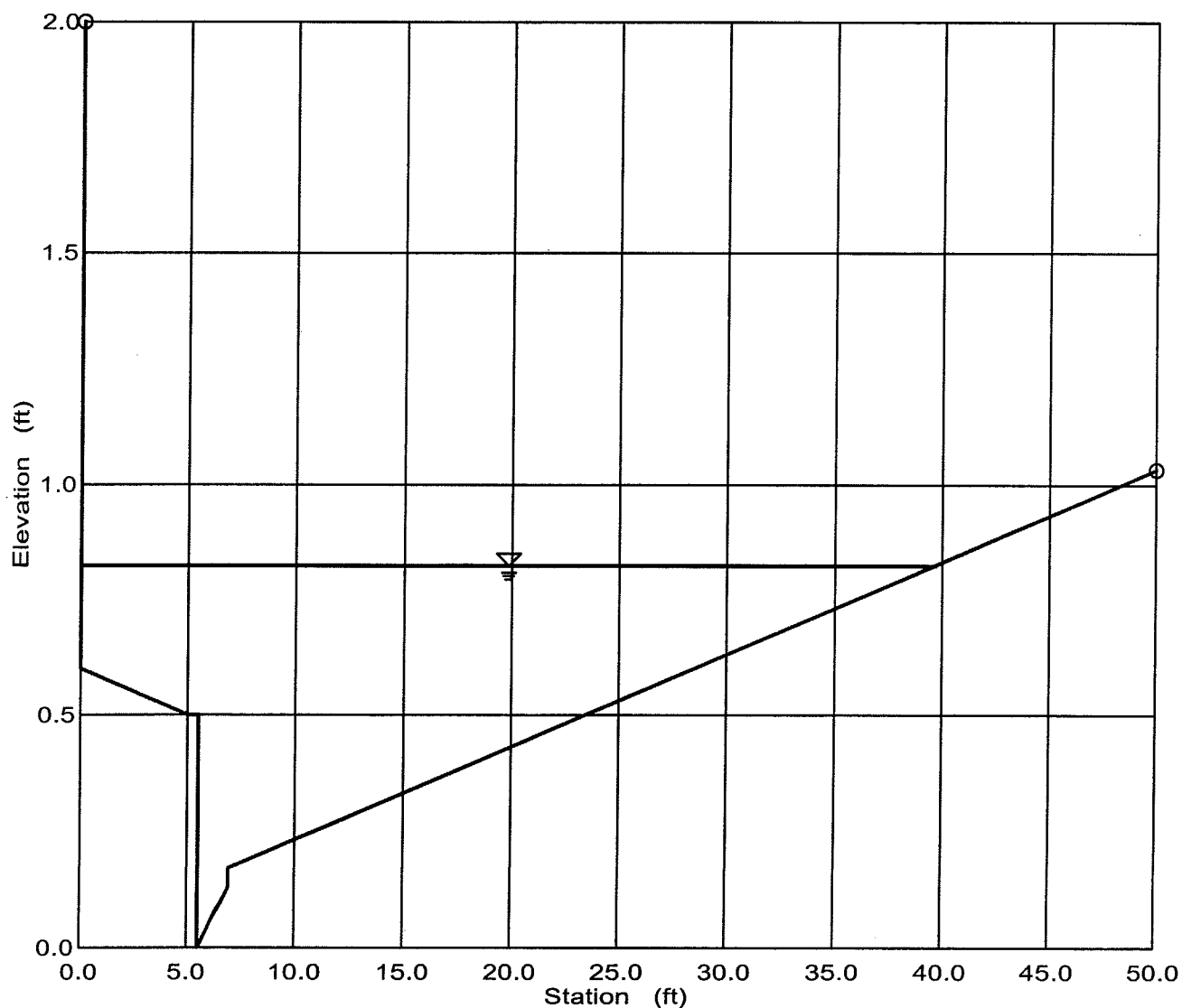
Input Data				
Channel Slope		0.005000 ft/ft		
Elevation range: 0.00 ft to 2.00 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2.00	0.00	50.00	0.016
0.00	0.60			
5.00	0.50			
5.50	0.50			
5.50	0.00			
7.00	0.13			
7.00	0.17			
50.00	1.03			
Discharge	42.00	cfs		

Results		
Wtd. Mannings Coefficient	0.016	
Water Surface Elevation	0.82	ft
Flow Area	13.38	ft ²
Wetted Perimeter	40.50	ft
Top Width	39.72	ft
Height	0.82	ft
Critical Depth	0.81	ft
Critical Slope	0.005541	ft/ft
Velocity	3.14	ft/s
Velocity Head	0.15	ft
Specific Energy	0.98	ft
Froude Number	0.95	
Flow is subcritical.		

Cross Section Cross Section for Irregular Channel

Project Description	
Project File	c:\impulse\projects\clients\ovation\lone mountain\hydrology revised\lonemtn.fm2
Worksheet	LONE MOUNTAIN
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.016
Channel Slope	0.005000 ft/ft
Water Surface Elevation	0.82 ft
Discharge	42.00 cfs



**PROPOSED 10-YEAR
Worksheet for Irregular Channel**

Project Description	
Project File	c:\impulse\projects\clients\ovation\lone mountain\hydrology revised\lonemtn.fm2
Worksheet	LONE MOUNTAIN
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

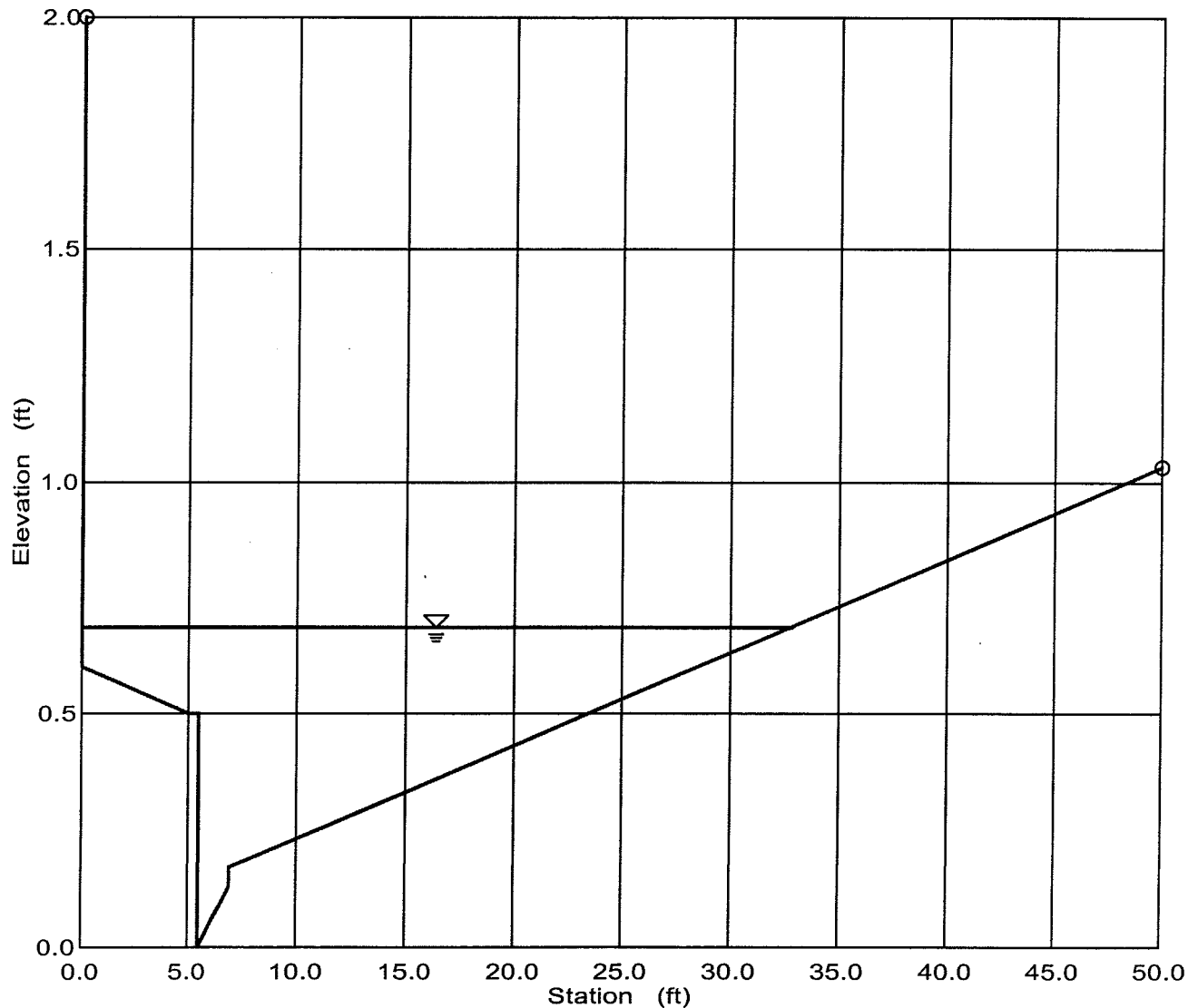
Input Data				
Channel Slope	0.005000 ft/ft			
Elevation range: 0.00 ft to 2.00 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2.00	0.00	50.00	0.016
0.00	0.60			
5.00	0.50			
5.50	0.50			
5.50	0.00			
7.00	0.13			
7.00	0.17			
50.00	1.03			
Discharge	22.00	cfs		

Results		
Wtd. Mannings Coefficient	0.016	
Water Surface Elevation	0.69	ft
Flow Area	8.42	ft ²
Wetted Perimeter	33.53	ft
Top Width	32.89	ft
Height	0.69	ft
Critical Depth	0.67	ft
Critical Slope	0.006117	ft/ft
Velocity	2.61	ft/s
Velocity Head	0.11	ft
Specific Energy	0.79	ft
Froude Number	0.91	
Flow is subcritical.		

Cross Section
Cross Section for Irregular Channel

Project Description	
Project File	c:\impulse\projects\clients\ovation\lone mountain\hydrology revised\lonemtn.fm2
Worksheet	LONE MOUNTAIN
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.016
Channel Slope	0.005000 ft/ft
Water Surface Elevation	0.69 ft
Discharge	22.00 cfs



PROPOSED 100-YEAR
Worksheet for Irregular Channel

Project Description	
Project File	c:\impulse\projects\clients\ovation\lone mountain\hydrology revised\lonemtn.fm2
Worksheet	LONE MOUNTAIN
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

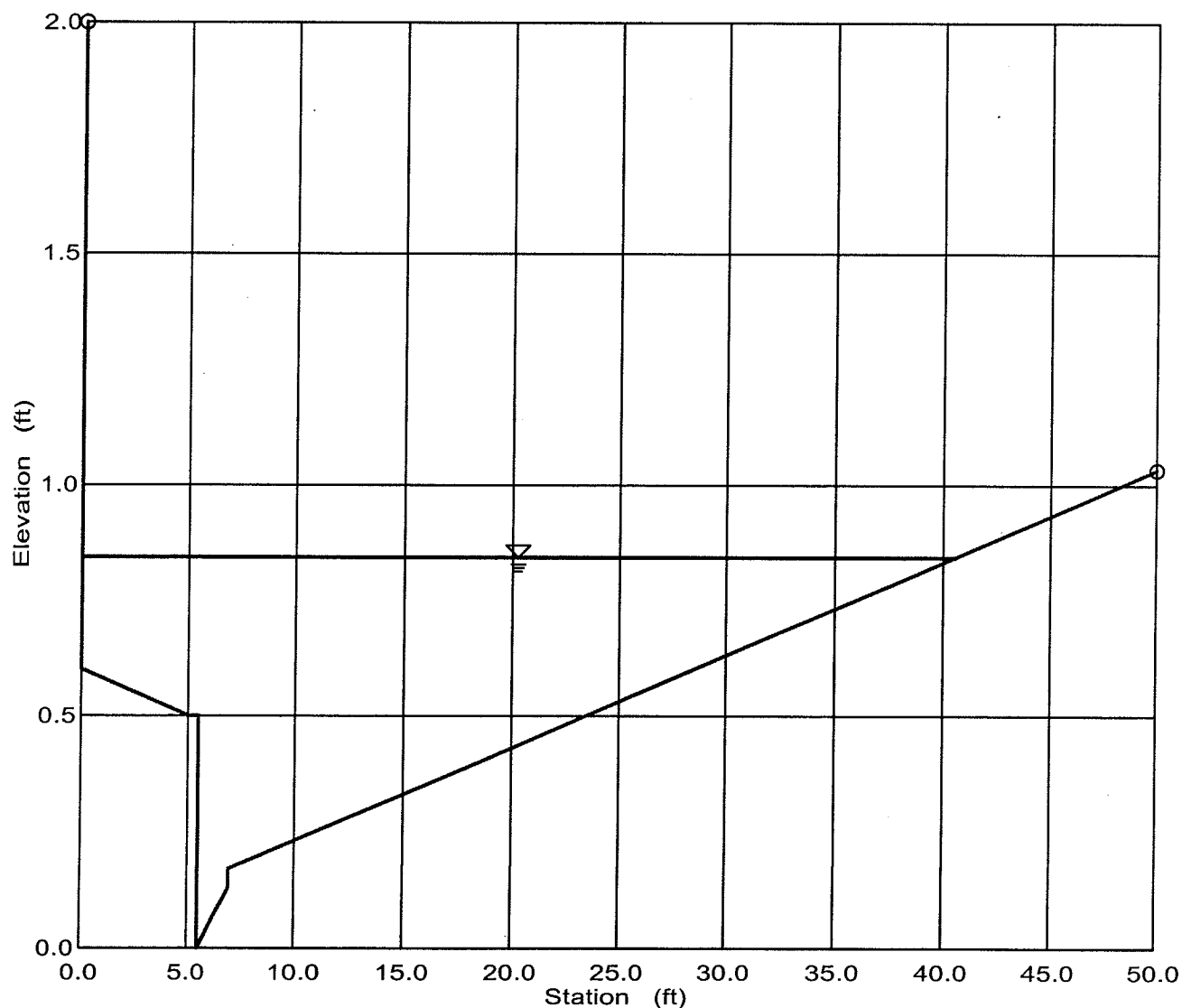
Input Data				
Channel Slope	0.005000 ft/ft			
Elevation range: 0.00 ft to 2.00 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2.00	0.00	50.00	0.016
0.00	0.60			
5.00	0.50			
5.50	0.50			
5.50	0.00			
7.00	0.13			
7.00	0.17			
50.00	1.03			
Discharge	45.00	cfs		

Results		
Wtd. Mannings Coefficient	0.016	
Water Surface Elevation	0.84	ft
Flow Area	14.07	ft ²
Wetted Perimeter	41.37	ft
Top Width	40.58	ft
Height	0.84	ft
Critical Depth	0.83	ft
Critical Slope	0.005485	ft/ft
Velocity	3.20	ft/s
Velocity Head	0.16	ft
Specific Energy	1.00	ft
Froude Number	0.96	
Flow is subcritical.		

Cross Section Cross Section for Irregular Channel

Project Description	
Project File	c:\impulse\projects\clients\ovation\lone mountain\hydrology revised\lonemtn.fm2
Worksheet	LONE MOUNTAIN
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.016
Channel Slope	0.005000 ft/ft
Water Surface Elevation	0.84 ft
Discharge	45.00 cfs



ULTIMATE 100-YEAR Worksheet for Irregular Channel

Project Description

Project File	c:\impulse\projects\clients\ovation\lone mountain\hydrology revised\lonemtn.fm2
Worksheet	100' LONE MOUNTAIN
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data

Channel Slope 0.005000 ft/ft

Elevation range: 0.00 ft to 2.00 ft.

Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	2.00	0.00	100.00	0.016
0.00	0.60			
5.00	0.50			
5.50	0.50			
5.50	0.00			
7.00	0.13			
7.00	0.17			
50.00	1.03			
93.00	0.17			
93.00	0.13			
94.50	0.00			
94.50	0.50			
95.00	0.50			
100.00	0.60			
100.00	2.00			

Discharge 240.00 cfs

Results

Wtd. Mannings Coefficient	0.016	
Water Surface Elevation	1.13	ft
Flow Area	55.14	ft ²
Wetted Perimeter	102.17	ft
Top Width	100.00	ft
Height	1.13	ft
Critical Depth	1.14	ft
Critical Slope	0.004649 ft/ft	
Velocity	4.35	ft/s
Velocity Head	0.29	ft
Specific Energy	1.42	ft
Froude Number	1.03	

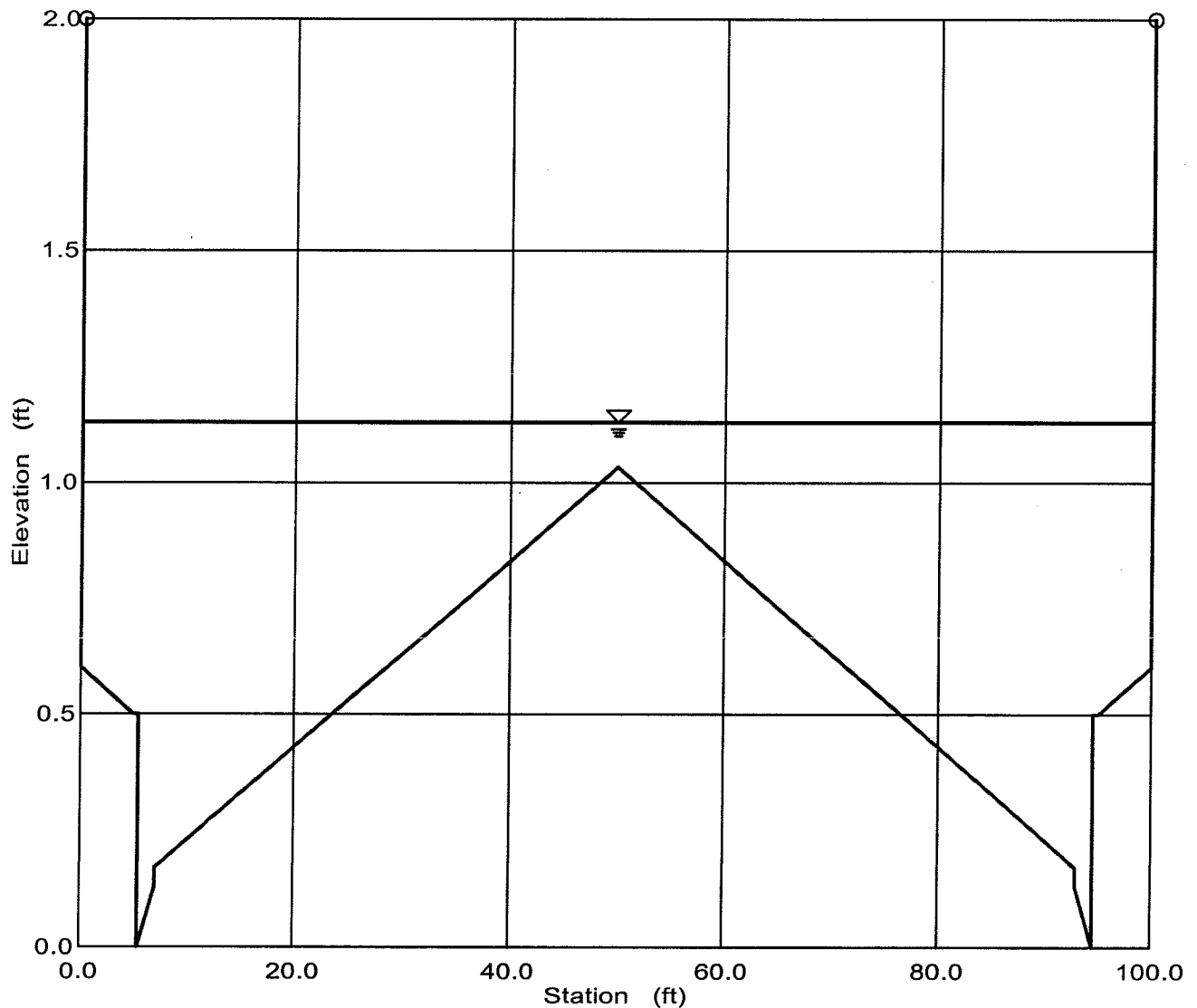
Flow is supercritical.

Cross Section

Cross Section for Irregular Channel

Project Description	
Project File	c:\impulse\projects\clients\ovation\lone mountain\hydrology revised\lonemtn.fm2
Worksheet	100' LONE MOUNTAIN
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Section Data	
Wtd. Mannings Coefficient	0.016
Channel Slope	0.005000 ft/ft
Water Surface Elevation	1.13 ft
Discharge	240.00 cfs



EFFECTIVE MODEL

HEC-RAS Plan: Plan 1 River: RANCHO ROAD Reach: 95 TO GOWAN Profile: Effective

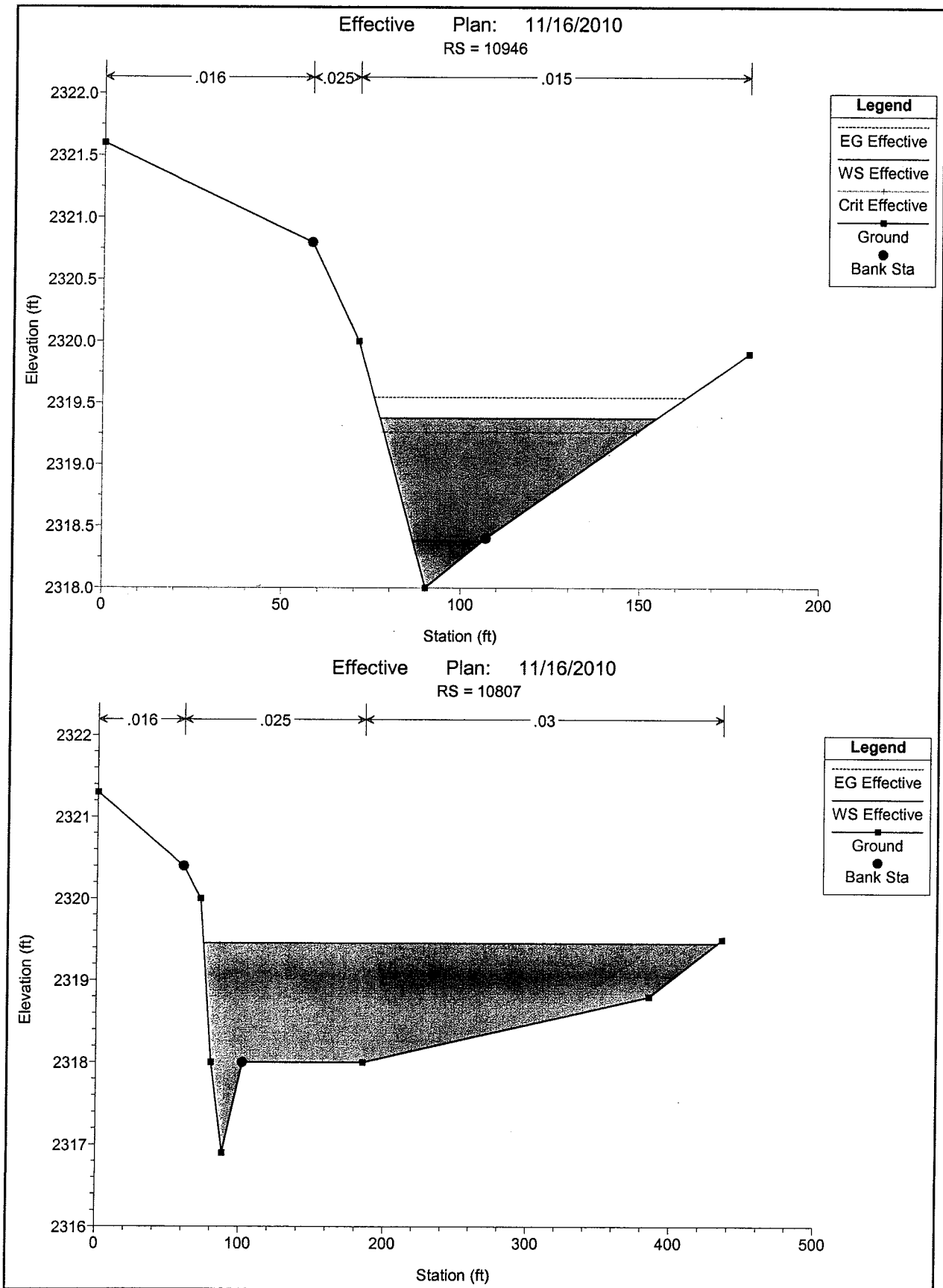
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
95 TO GOWAN	13266	Effective	192.00	2324.00	2324.79	2324.71	2324.89	0.006366	2.64	75.19	209.66	0.63
95 TO GOWAN	13036	Effective	192.00	2323.20	2324.69		2324.71	0.000472	1.08	167.39	261.91	0.19
95 TO GOWAN	12852	Effective	192.00	2322.60	2324.58	2324.21	2324.64	0.001141	2.16	103.87	183.73	0.36
95 TO GOWAN	12677	Effective	192.00	2322.00	2323.64	2323.64	2324.15	0.011939	5.68	33.78	41.09	1.10
95 TO GOWAN	12430	Effective	192.00	2322.00	2323.33	2322.76	2323.37	0.000622	1.63	121.71	161.79	0.27
95 TO GOWAN	12355	Effective	192.00	2322.00	2323.32		2323.33	0.000255	1.08	201.92	347.92	0.17
95 TO GOWAN	12295	Effective	155.00	2320.35	2323.31		2323.32	0.000082	0.79	227.13	267.84	0.10
95 TO GOWAN	12280	Effective	155.00	2322.68	2323.30		2323.32	0.000300	0.51	147.66	245.54	0.13
95 TO GOWAN	12264	Effective	155.00	2321.80	2323.30		2323.31	0.000153	0.85	179.31	227.01	0.13
95 TO GOWAN	12145	Effective	190.00	2320.30	2323.28		2323.30	0.000117	1.02	206.35	182.41	0.13
95 TO GOWAN	12111	Effective	190.00	2319.81	2322.91	2321.69	2323.25	0.002352	4.72	40.24	13.00	0.47
95 TO GOWAN	12036		Culvert									
95 TO GOWAN	11961	Effective	161.00	2319.46	2322.12		2322.46	0.002629	4.65	34.59	13.00	0.50
95 TO GOWAN	11897	Effective	161.00	2320.00	2322.03		2322.22	0.003523	3.57	45.16	46.26	0.62
95 TO GOWAN	11748	Effective	161.00	2319.30	2321.96		2322.02	0.000515	1.87	86.17	52.51	0.26
95 TO GOWAN	11683	Effective	161.00	2319.00	2321.94		2321.99	0.000372	1.64	98.27	57.19	0.22
95 TO GOWAN	11653	Effective	161.00	2318.84	2321.63	2320.49	2321.94	0.002281	4.44	36.30	13.00	0.47
95 TO GOWAN	11621		Culvert									
95 TO GOWAN	11590	Effective	161.00	2318.86	2320.78		2321.43	0.006946	6.44	24.99	13.00	0.82
95 TO GOWAN	11538	Effective	161.00	2318.00	2321.09		2321.14	0.000712	1.87	90.31	97.10	0.29
95 TO GOWAN	11438	Effective	161.00	2318.70	2320.99		2321.06	0.000914	2.21	80.56	103.95	0.33
95 TO GOWAN	11167	Effective	161.00	2318.30	2320.05	2320.05	2320.48	0.009160	5.23	30.83	37.75	0.98
95 TO GOWAN	10946	Effective	161.00	2318.00	2319.38	2319.26	2319.55	0.001442	3.67	52.36	77.72	0.66
95 TO GOWAN	10807	Effective	192.00	2316.90	2319.46		2319.46	0.000064	0.68	395.80	357.69	0.09
95 TO GOWAN	10758	Effective	192.00	2316.50	2319.31	2317.79	2319.44	0.000813	2.92	75.64	127.89	0.31
95 TO GOWAN	10667		Culvert									
95 TO GOWAN	10575	Effective	192.00	2316.09	2318.88		2318.97	0.000448	2.59	90.63	101.89	0.44
95 TO GOWAN	10547	Effective	192.00	2316.00	2318.89		2318.94	0.001178	1.94	106.53	100.48	0.31
95 TO GOWAN	10518	Effective	192.00	2315.96	2318.84	2318.27	2318.90	0.001443	2.00	102.65	109.95	0.34
95 TO GOWAN	10485		Culvert									
95 TO GOWAN	10450	Effective	192.00	2315.54	2318.45		2318.58	0.005306	3.08	68.85	111.51	0.63
95 TO GOWAN	10399	Effective	169.00	2316.00	2318.51	2316.55	2318.52	0.000087	0.82	206.78	235.02	0.09
95 TO GOWAN	10295	Effective	169.00	2316.00	2318.39		2318.49	0.001694	2.66	73.00	83.98	0.38
95 TO GOWAN	10075	Effective	169.00	2316.00	2317.22	2317.16	2317.61	0.012006	4.98	33.92	38.42	0.93
95 TO GOWAN	9918	Effective	169.00	2316.00	2316.58		2316.63	0.003210	1.75	96.40	195.13	0.44
95 TO GOWAN	9796	Effective	169.00	2314.00	2316.45		2316.46	0.000674	0.86	196.92	360.55	0.20
95 TO GOWAN	9566	Effective	215.00	2314.00	2316.30		2316.32	0.000592	1.06	217.39	342.52	0.21
95 TO GOWAN	9512	Effective	215.00	2314.00	2316.21		2316.26	0.002455	1.80	123.20	236.16	0.40
95 TO GOWAN	9472	Effective	215.00	2314.00	2316.13		2316.17	0.002086	1.66	148.90	421.05	0.37

HEC-RAS Plan 1 River: RANCHO ROAD Reach: 95 TO GOWAN Profile: Effective (Continued)

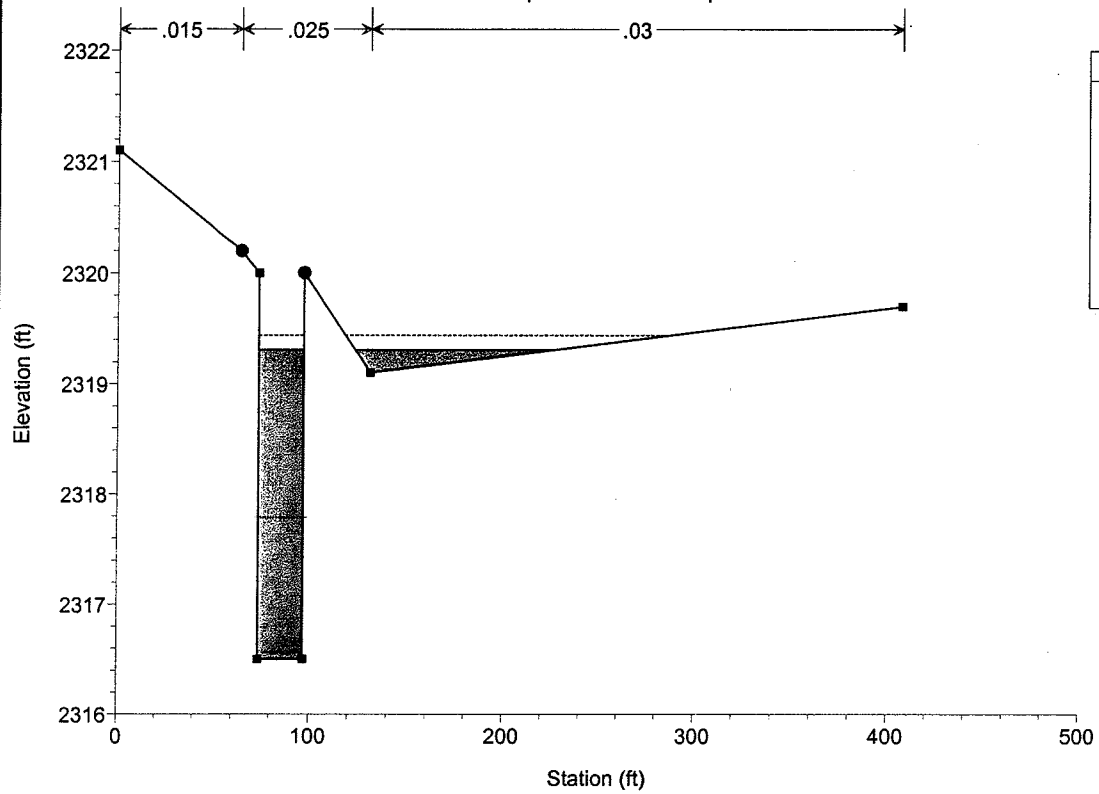
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
95 TO GOWAN	9376	Effective	180.00	2314.00	2315.63	2315.20	2315.73	0.006068	2.49	72.29	139.01	0.61
95 TO GOWAN	9324	Effective	180.00	2314.00	2315.39	2315.20	2315.44	0.004846	1.84	97.94	251.46	0.52
95 TO GOWAN	9205	Effective	180.00	2313.70	2314.41	2313.78	2314.55	0.014500	3.00	59.96	167.85	0.89
95 TO GOWAN	9114	Effective	180.00	2313.20	2314.19	2313.71	2314.21	0.001497	1.24	144.70	276.72	0.30
95 TO GOWAN	9060	Effective	180.00	2312.90	2314.11	2313.50	2313.83	0.006888	1.33	138.95	286.62	0.31
95 TO GOWAN	8950	Effective	180.00	2312.40	2313.71	2311.09	2311.29	0.011817	2.74	65.74	116.60	0.64
95 TO GOWAN	8668	Effective	180.00	2310.00	2309.35	2309.23	2309.46	0.006352	3.64	49.52	93.99	0.88
95 TO GOWAN	8476	Effective	180.00	2308.30	2308.72	2308.64	2308.94	0.011127	2.65	68.00	129.08	0.64
95 TO GOWAN	8410	Effective	180.00	2307.70	2307.57	2307.51	2307.74	0.007511	3.76	47.87	85.19	0.88
95 TO GOWAN	8277	Effective	180.00	2306.50	2306.59	2306.58	2306.78	0.009514	3.32	54.20	87.16	0.74
95 TO GOWAN	8155	Effective	180.00	2305.40	2304.16	2303.97	2304.42	0.013235	3.55	50.73	97.20	0.87
95 TO GOWAN	7939	Effective	180.00	2302.20	2301.12		2301.28	0.006304	4.10	43.95	75.35	0.95
95 TO GOWAN	7578	Effective	198.00	2299.90	2300.21	2300.21	2300.42	0.013134	3.22	61.51	100.96	0.73
95 TO GOWAN	7478	Effective	198.00	2298.90	2299.23	2299.12	2299.36	0.004622	3.66	54.05	113.33	0.93
95 TO GOWAN	7373	Effective	198.00	2297.90	2298.51	2298.51	2298.74	0.012699	2.85	69.36	102.61	0.61
95 TO GOWAN	7280	Effective	198.00	2295.50	2295.87	2295.91	2296.06	0.008244	3.84	51.50	120.10	1.03
95 TO GOWAN	7016	Effective	158.00	2294.60	2295.17	2295.21	2295.42	0.008623	3.48	45.37	170.94	1.19
95 TO GOWAN	6934	Effective	158.00	2293.60	2294.62	2294.63	2294.83	0.003838	4.05	39.03	121.35	1.26
95 TO GOWAN	6815	Effective	230.00	2288.87	2289.85	2290.80	2293.65	0.120566	3.70	42.72	82.87	0.91
95 TO GOWAN	6763	Effective	230.00	2288.40	2291.34	2291.24	2292.11	0.010515	15.64	14.71	15.00	2.78
95 TO GOWAN	6691	Effective	230.00	2287.91	2291.13	2289.81	2291.48	0.003134	7.05	32.63	18.02	0.92
95 TO GOWAN	6609	Effective	230.00	2287.91	2291.13	2289.81	2291.48	0.003134	4.76	48.28	15.00	0.47
95 TO GOWAN	6572		Culvert									
95 TO GOWAN	6535	Effective	230.00	2287.21	2290.67	2289.13	2290.97	0.002303	4.40	53.21	18.91	0.42
95 TO GOWAN	6468	Effective	230.00	2286.70	2290.57		2290.81	0.002015	3.97	59.06	26.09	0.42
95 TO GOWAN	6404	Effective	230.00	2286.17	2290.51	2288.10	2290.69	0.001223	3.50	68.41	31.31	0.30
95 TO GOWAN	6362		Culvert									
95 TO GOWAN	6321	Effective	230.00	2285.53	2290.11	2287.44	2290.25	0.000736	3.07	83.95	49.83	0.25
95 TO GOWAN	6260	Effective	230.00	2288.00	2289.80	2289.80	2290.13	0.007136	4.55	50.50	74.27	0.97
95 TO GOWAN	6161	Effective	230.00	2287.30	2288.27	2288.39	2288.79	0.028984	5.91	40.34	82.12	1.36
95 TO GOWAN	6012	Effective	230.00	2286.00	2286.88	2286.88	2287.19	0.015127	4.50	51.11	169.64	1.02
95 TO GOWAN	5808	Effective	230.00	2282.20	2283.89	2283.32	2283.94	0.001815	1.88	122.21	145.08	0.36
95 TO GOWAN	5518	Effective	230.00	2282.00	2282.44	2282.44	2282.68	0.023546	3.91	58.87	163.34	1.15
95 TO GOWAN	5382	Effective	147.00	2278.00	2278.25	2278.33	2278.53	0.047562	4.25	34.61	140.28	1.51
95 TO GOWAN	5264	Effective	147.00	2273.01	2277.36	2274.40	2277.36	0.000045	0.58	255.63	110.64	0.07
95 TO GOWAN	4550		Culvert									
95 TO GOWAN	3836	Effective	1353.00	2264.48	2272.35		2272.48	0.002827	2.90	466.00	426.79	0.49
95 TO GOWAN	3756	Effective	1340.00	2268.00	2272.02		2272.24	0.003108	-3.68	363.75	263.08	0.55
95 TO GOWAN	3666	Effective	1319.00	2269.50	2271.48	2271.21	2271.86	0.005354	4.92	267.83	197.07	0.74

HEC-RAS Plan: Plan 1 River: RANCHO ROAD Reach: 95 TO GOWAN Profile: Effective (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
95 TO GOWAN	3479	Effective	1302.00	2268.00	2270.52	2270.32	2270.73	0.006427	3.75	347.60	412.87	0.72
95 TO GOWAN	3145	Effective	1229.00	2264.42	2269.09		2269.23	0.003358	3.02	406.78	415.98	0.54
95 TO GOWAN	2801	Effective	891.00	2266.10	2267.57	2267.57	2268.08	0.003405	5.74	155.35	217.81	0.97
95 TO GOWAN	2549	Effective	680.00	2264.30	2265.51	2265.80	2266.49	0.022700	7.94	85.63	132.41	1.74
95 TO GOWAN	2280	Effective	631.00	2258.23	2263.25	2261.91	2263.31	0.001078	1.91	329.95	280.95	0.31
95 TO GOWAN	2206	Effective	631.00	2262.00	2262.92	2262.92	2263.13	0.006501	3.60	175.23	230.71	0.73
95 TO GOWAN	1932	Effective	594.00	2260.00	2261.60	2260.77	2261.66	0.001078	1.93	308.41	264.79	0.31
95 TO GOWAN	1823	Effective	461.00	2260.00	2261.08	2261.08	2261.41	0.008259	4.65	99.05	146.76	1.00
95 TO GOWAN	1625	Effective	323.00	2258.60	2259.35	2259.52	2259.76	0.008300	5.13	62.90	128.58	1.29
95 TO GOWAN	1456	Effective	270.00	2258.00	2258.63	2258.63	2258.90	0.008766	4.16	64.85	123.71	1.01
95 TO GOWAN	1403	Effective	293.00	2256.00	2257.81	2256.96	2257.83	0.000204	1.27	231.51	248.28	0.23
95 TO GOWAN	1220	Effective	293.00	2255.10	2257.69		2257.76	0.000917	2.13	137.42	124.00	0.36
95 TO GOWAN	983	Effective	269.00	2253.29	2257.12		2257.17	0.012318	1.75	154.08	111.42	0.26
95 TO GOWAN	743	Effective	170.00	2250.90	2257.06	2252.94	2257.07	0.000065	0.72	235.09	156.04	0.10
95 TO GOWAN	485	Culvert										
95 TO GOWAN	226	Effective	1426.00	2248.65	2256.27		2256.43	0.000852	3.55	459.73	336.96	0.37
95 TO GOWAN	179	Effective	1346.00	2254.00	2256.27		2256.37	0.000686	2.43	531.34	383.41	0.31
95 TO GOWAN	95	Effective	1196.00	2253.70	2256.28		2256.33	0.000174	1.92	673.86	389.42	0.24
95 TO GOWAN	52	Effective	1073.00	2253.59	2256.22		2256.32	0.000324	2.83	450.89	289.33	0.33
95 TO GOWAN	0	Effective	966.00	2253.85	2255.79	2255.79	2256.25	0.002451	5.65	195.63	217.49	0.82



Effective Plan: 11/16/2010
RS = 10758 Upstream Side of Triple 6' x 2.5' RCB's



CORRECTED EFFECTIVE MODEL

HEC-RAS Plan 1 River: RANCHO ROAD Reach: 95 TO GOWAN Profile: Corrected Effect

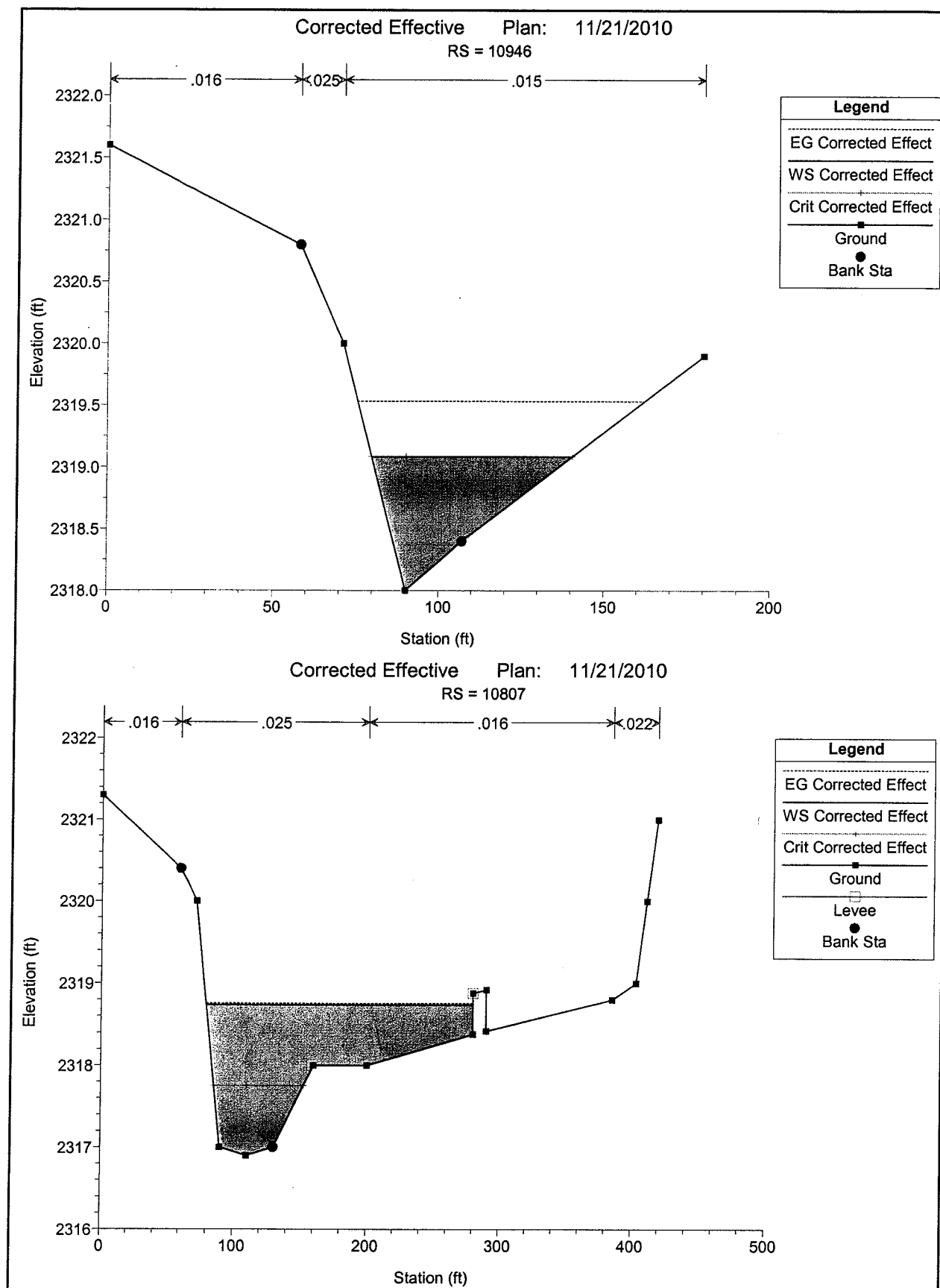
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Cnl
95 TO GOWAN	13266	Corrected Effect	192.00	2324.00	2324.80	2324.71	2324.89	0.005881	2.56	77.36	213.40	0.61
95 TO GOWAN	13036	Corrected Effect	192.00	2323.20	2324.72		2324.73	0.000413	1.03	175.00	266.27	0.18
95 TO GOWAN	12852	Corrected Effect	192.00	2322.60	2324.63	2324.21	2324.68	0.000916	1.98	113.15	192.96	0.32
95 TO GOWAN	12677	Corrected Effect	192.00	2322.00	2323.64	2323.64	2324.15	0.011939	5.68	33.78	41.09	1.10
95 TO GOWAN	12430	Corrected Effect	192.00	2322.00	2323.33	2322.76	2323.37	0.000622	1.63	121.71	161.79	0.27
95 TO GOWAN	12355	Corrected Effect	192.00	2322.00	2323.32		2323.33	0.000255	1.08	201.82	347.92	0.17
95 TO GOWAN	12295	Corrected Effect	155.00	2320.35	2323.31		2323.32	0.000082	0.79	227.13	267.84	0.10
95 TO GOWAN	12280	Corrected Effect	155.00	2322.68	2323.30		2323.32	0.000300	0.51	147.66	245.54	0.13
95 TO GOWAN	12284	Corrected Effect	155.00	2321.80	2323.30		2323.31	0.000153	0.85	179.31	227.01	0.13
95 TO GOWAN	12145	Corrected Effect	190.00	2320.30	2323.28		2323.30	0.000117	1.02	206.35	182.41	0.13
95 TO GOWAN	12111	Corrected Effect	190.00	2319.81	2322.91	2321.67	2323.25	0.002351	4.72	40.24	13.00	0.47
95 TO GOWAN	12036	Corrected Effect	Culvert									
95 TO GOWAN	11961	Corrected Effect	161.00	2319.46	2322.12		2322.46	0.002626	4.65	34.60	13.00	0.50
95 TO GOWAN	11897	Corrected Effect	161.00	2320.00	2322.03		2322.22	0.003502	3.56	45.25	48.43	0.62
95 TO GOWAN	11748	Corrected Effect	161.00	2319.30	2321.97		2322.02	0.000513	1.87	86.26	52.53	0.26
95 TO GOWAN	11683	Corrected Effect	161.00	2319.00	2321.95		2321.99	0.000371	1.64	98.36	57.21	0.22
95 TO GOWAN	11653	Corrected Effect	161.00	2318.84	2321.64	2320.50	2321.94	0.002275	4.43	36.33	13.00	0.47
95 TO GOWAN	11621	Corrected Effect	Culvert									
95 TO GOWAN	11590	Corrected Effect	161.00	2318.86	2320.81		2321.44	0.006701	6.37	25.29	13.00	0.80
95 TO GOWAN	11538	Corrected Effect	161.00	2318.00	2321.10		2321.15	0.000688	1.85	91.45	97.86	0.29
95 TO GOWAN	11438	Corrected Effect	161.00	2318.70	2321.01		2321.07	0.000862	2.16	82.37	105.34	0.32
95 TO GOWAN	11167	Corrected Effect	161.00	2318.30	2320.35	2320.04	2320.56	0.003544	3.73	45.09	58.45	0.63
95 TO GOWAN	10946	Corrected Effect	161.00	2318.00	2319.09	2319.09	2319.53	0.005090	5.86	32.16	60.75	1.19
95 TO GOWAN	10807	Corrected Effect	192.00	2316.90	2318.74	2317.75	2318.76	0.000213	1.18	191.73	200.45	0.17
95 TO GOWAN	10758	Corrected Effect	192.00	2316.50	2318.70	2317.78	2318.74	0.000412	1.82	129.58	115.59	0.22
95 TO GOWAN	10667	Corrected Effect	Culvert									
95 TO GOWAN	10575	Corrected Effect	192.00	2316.09	2318.67		2318.70	0.000248	1.43	133.28	104.68	0.24
95 TO GOWAN	10547	Corrected Effect	192.00	2316.00	2318.64	2317.57	2318.69	0.000661	1.82	101.90	99.38	0.27
95 TO GOWAN	10518	Corrected Effect	192.00	2315.96	2318.60	2317.85	2318.66	0.001284	1.78	96.74	99.35	0.34
95 TO GOWAN	10485	Corrected Effect	Culvert									
95 TO GOWAN	10450	Corrected Effect	192.00	2315.54	2318.47		2318.49	0.000156	1.01	171.49	130.09	0.20
95 TO GOWAN	10399	Corrected Effect	169.00	2315.20	2318.48	2315.98	2318.48	0.000003	0.29	592.58	245.92	0.03
95 TO GOWAN	10295	Corrected Effect	169.00	2316.00	2318.36		2318.47	0.001801	2.73	70.54	82.16	0.39
95 TO GOWAN	10075	Corrected Effect	169.00	2316.00	2317.26	2317.16	2317.62	0.010788	4.79	35.25	39.02	0.89
95 TO GOWAN	9918	Corrected Effect	169.00	2316.00	2316.57		2316.62	0.003463	1.80	93.97	193.85	0.46
95 TO GOWAN	9796	Corrected Effect	169.00	2314.00	2316.45		2316.46	0.000687	0.86	195.69	360.17	0.21
95 TO GOWAN	9566	Corrected Effect	215.00	2314.00	2316.29		2316.31	0.000611	1.07	214.89	340.97	0.21
95 TO GOWAN	9512	Corrected Effect	215.00	2314.00	2316.20		2316.25	0.002592	1.83	120.85	233.63	0.41
95 TO GOWAN	9472	Corrected Effect	215.00	2314.00	2316.11		2316.16	0.002386	1.74	140.60	418.21	0.39
95 TO GOWAN	9376	Corrected Effect	180.00	2314.00	2315.63		2315.73	0.006168	2.51	71.82	138.41	0.61
95 TO GOWAN	9324	Corrected Effect	180.00	2314.00	2315.40	2315.20	2315.45	0.004341	1.77	101.71	254.46	0.49
95 TO GOWAN	9205	Corrected Effect	180.00	2313.70	2314.42		2314.56	0.013151	2.91	61.76	167.98	0.85

HEC-RAS Plan 1 River: RANCHO ROAD Reach: 95 TO GOWAN Profile: Corrected Effect (Continued)

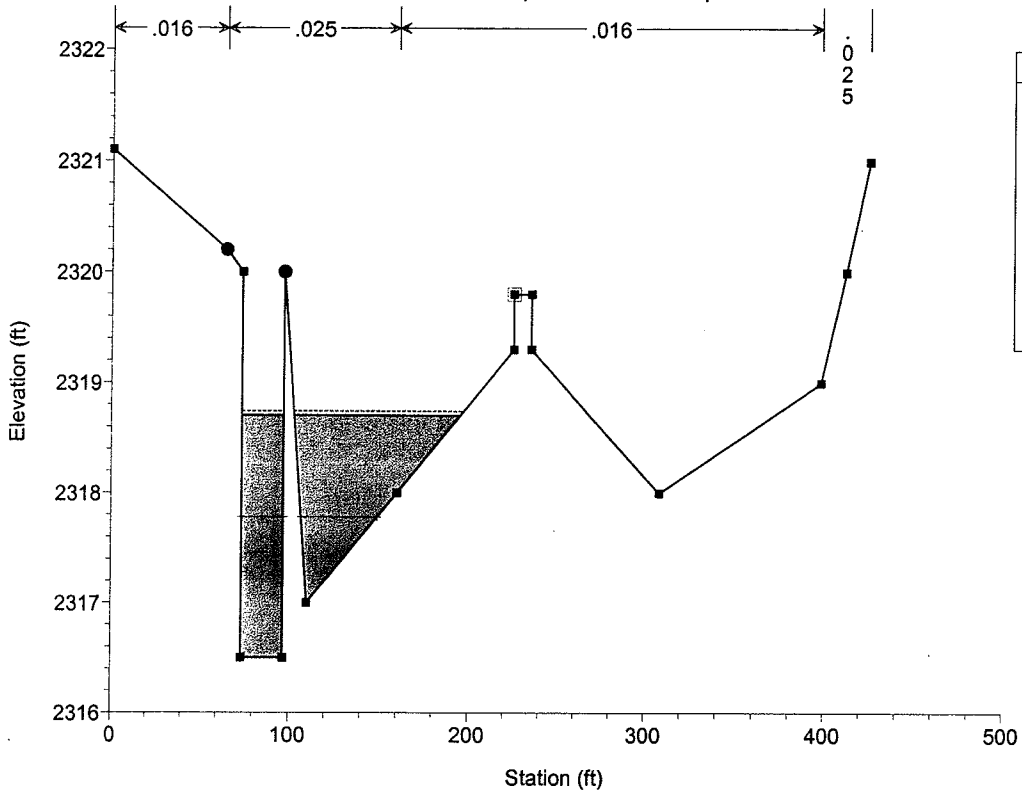
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
95 TO GOWAN	9114	Corrected Effect	180.00	2313.20	2314.19	2313.78	2314.21	0.001529	1.25	143.76	276.47	0.31
95 TO GOWAN	9060	Corrected Effect	180.00	2312.90	2314.11	2313.71	2314.14	0.001573	1.35	137.27	285.70	0.31
95 TO GOWAN	8950	Corrected Effect	180.00	2312.40	2313.73		2313.84	0.006197	2.65	67.81	118.98	0.62
95 TO GOWAN	8668	Corrected Effect	180.00	2310.00	2311.05	2311.03	2311.29	0.014134	3.88	46.34	90.50	0.96
95 TO GOWAN	8476	Corrected Effect	180.00	2308.30	2309.34		2309.46	0.006885	2.70	66.75	127.89	0.66
95 TO GOWAN	8410	Corrected Effect	180.00	2307.70	2308.72	2308.72	2308.94	0.011358	3.79	47.55	85.02	0.89
95 TO GOWAN	8277	Corrected Effect	180.00	2305.50	2307.57	2307.49	2307.74	0.007242	3.28	54.84	87.61	0.73
95 TO GOWAN	8155	Corrected Effect	180.00	2305.40	2306.59	2306.58	2306.78	0.009566	3.55	50.63	97.11	0.87
95 TO GOWAN	7939	Corrected Effect	180.00	2302.20	2304.16	2303.97	2304.42	0.013421	4.11	43.75	75.13	0.95
95 TO GOWAN	7578	Corrected Effect	180.00	2299.90	2301.12		2301.28	0.006304	3.22	61.51	100.96	0.73
95 TO GOWAN	7478	Corrected Effect	180.00	2298.90	2300.21	2300.21	2300.42	0.013134	3.66	54.05	113.33	0.93
95 TO GOWAN	7373	Corrected Effect	180.00	2298.00	2299.23	2299.12	2299.36	0.004622	2.85	69.36	102.61	0.61
95 TO GOWAN	7280	Corrected Effect	180.00	2297.90	2298.51	2298.51	2298.74	0.012699	3.84	51.50	120.10	1.03
95 TO GOWAN	7016	Corrected Effect	158.00	2295.50	2295.87	2295.91	2296.06	0.008244	3.48	45.37	170.94	1.19
95 TO GOWAN	6934	Corrected Effect	158.00	2294.60	2295.16	2295.21	2295.42	0.009193	3.51	44.95	84.99	0.85
95 TO GOWAN	6815	Corrected Effect	158.00	2293.60	2294.64	2294.63	2294.83	0.003349	16.20	11.42	15.00	3.27
95 TO GOWAN	6783	Corrected Effect	185.00	2288.87	2289.63	2290.55	2293.71	0.0175121	7.05	26.26	16.92	1.00
95 TO GOWAN	6691	Corrected Effect	185.00	2288.40	2290.97	2290.97	2291.75	0.012635	4.41	41.93	15.00	0.47
95 TO GOWAN	6609	Corrected Effect	185.00	2287.91	2290.71	2289.59	2291.01	0.003075				
95 TO GOWAN	6572	Culvert										
95 TO GOWAN	6535	Corrected Effect	185.00	2287.21	2290.44	2288.89	2290.67	0.001881	3.80	49.08	17.59	0.37
95 TO GOWAN	6468	Corrected Effect	185.00	2286.70	2290.35		2290.54	0.001706	3.48	53.65	24.15	0.39
95 TO GOWAN	6404	Corrected Effect	185.00	2286.17	2290.31	2287.83	2290.44	0.000941	2.97	63.21	22.65	0.26
95 TO GOWAN	6362	Culvert										
95 TO GOWAN	6321	Corrected Effect	185.00	2285.53	2290.00	2287.23	2290.09	0.000539	2.58	78.63	40.75	0.22
95 TO GOWAN	6260	Corrected Effect	185.00	2288.00	2289.63	2289.63	2289.98	0.008861	4.75	38.98	60.55	1.04
95 TO GOWAN	6161	Corrected Effect	185.00	2287.30	2288.44	2288.31	2288.63	0.007723	3.55	53.74	93.45	0.75
95 TO GOWAN	6012	Corrected Effect	185.00	2286.00	2286.79	2286.79	2287.06	0.015877	4.20	44.03	151.01	1.00
95 TO GOWAN	5908	Corrected Effect	185.00	2282.20	2283.76	2283.23	2283.81	0.001757	1.76	105.08	134.52	0.35
95 TO GOWAN	5518	Corrected Effect	185.00	2282.00	2282.44	2282.44	2282.60	0.015234	3.14	58.87	163.34	0.92
95 TO GOWAN	5382	Corrected Effect	147.00	2278.00	2278.20	2278.33	2278.66	0.107119	5.44	27.04	139.14	2.17
95 TO GOWAN	5264	Corrected Effect	147.00	2273.01	2277.36	2274.40	2277.36	0.000045	0.58	255.63	110.64	0.07
95 TO GOWAN	4550	Culvert										
95 TO GOWAN	3836	Corrected Effect	1353.00	2264.48	2272.35		2272.48	0.002827	2.90	466.00	426.79	0.49
95 TO GOWAN	3756	Corrected Effect	1340.00	2268.00	2272.03		2272.24	0.003106	3.68	363.82	263.10	0.55
95 TO GOWAN	3666	Corrected Effect	1319.00	2268.50	2271.48	2271.21	2271.86	0.005379	4.93	267.45	197.05	0.75
95 TO GOWAN	3479	Corrected Effect	1302.00	2268.00	2270.52	2270.32	2270.74	0.006368	3.73	348.71	413.30	0.72
95 TO GOWAN	3145	Corrected Effect	1229.00	2264.42	2269.09		2269.23	0.003272	3.00	410.24	416.80	0.53
95 TO GOWAN	2801	Corrected Effect	891.00	2268.10	2267.57	2267.57	2268.08	0.003405	5.74	155.35	217.81	0.97
95 TO GOWAN	2549	Corrected Effect	680.00	2264.30	2265.51	2265.80	2266.49	0.022700	7.94	85.63	132.41	1.74
95 TO GOWAN	2280	Corrected Effect	680.00	2258.23	2263.25	2262.00	2263.32	0.001246	2.06	330.63	281.44	0.33
95 TO GOWAN	2206	Corrected Effect	631.00	2262.00	2262.92	2262.92	2263.13	0.006501	3.60	175.23	230.71	0.73

HEC-RAS Plan: Plan 1 River: RANCHO ROAD Reach: 95 TO GOWAN Profile: Corrected Effect (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
95 TO GOWAN	1932	Corrected Effect	594.00	2260.00	2261.60	2260.77	2261.66	0.001078	1.93	308.41	264.79	0.31
95 TO GOWAN	1823	Corrected Effect	461.00	2260.00	2261.08	2261.08	2261.41	0.008259	4.65	99.05	146.76	1.00
95 TO GOWAN	1625	Corrected Effect	323.00	2258.60	2259.35	2259.52	2259.76	0.008300	5.13	62.90	128.58	1.29
95 TO GOWAN	1456	Corrected Effect	270.00	2258.00	2258.63	2258.63	2258.90	0.008766	4.16	64.85	123.71	1.01
95 TO GOWAN	1403	Corrected Effect	293.00	2256.00	2257.77	2256.96	2257.80	0.000226	1.32	222.68	243.51	0.24
95 TO GOWAN	1220	Corrected Effect	293.00	2255.10	2257.64		2257.71	0.001039	2.23	131.26	121.11	0.38
95 TO GOWAN	983	Corrected Effect	269.00	2253.29	2257.12		2257.17	0.012374	1.75	153.94	111.40	0.26
95 TO GOWAN	743	Corrected Effect	170.00	2250.90	2257.06	2252.94	2257.07	0.000065	0.72	234.90	156.03	0.10
95 TO GOWAN	485		Culvert									
95 TO GOWAN	226	Corrected Effect	1426.00	2248.65	2256.27		2256.43	0.000852	3.55	459.56	336.95	0.37
95 TO GOWAN	179	Corrected Effect	1346.00	2254.00	2256.27		2256.37	0.000687	2.43	531.16	383.41	0.31
95 TO GOWAN	95	Corrected Effect	1196.00	2253.70	2256.28		2256.33	0.000175	1.92	673.67	389.42	0.24
95 TO GOWAN	52	Corrected Effect	1073.00	2253.59	2256.22		2256.32	0.000324	2.83	450.68	289.33	0.33
95 TO GOWAN	0	Corrected Effect	966.00	2253.85	2255.79	2255.79	2256.25	0.002451	5.65	195.63	217.49	0.82



Corrected Effective Plan: 11/21/2010
 RS = 10758 Upstream Side of Triple 6' x 2.5' RCB's



Legend	
EG Corrected Effect	—
WS Corrected Effect	—
Crit Corrected Effect	—
Ground	—
Levee	—
Bank Sta	●

PROPOSED MODEL

HEC-RAS Plan: Plan 1 River: RANCHO ROAD Reach: 95 TO GOWAN Profile: Proposed

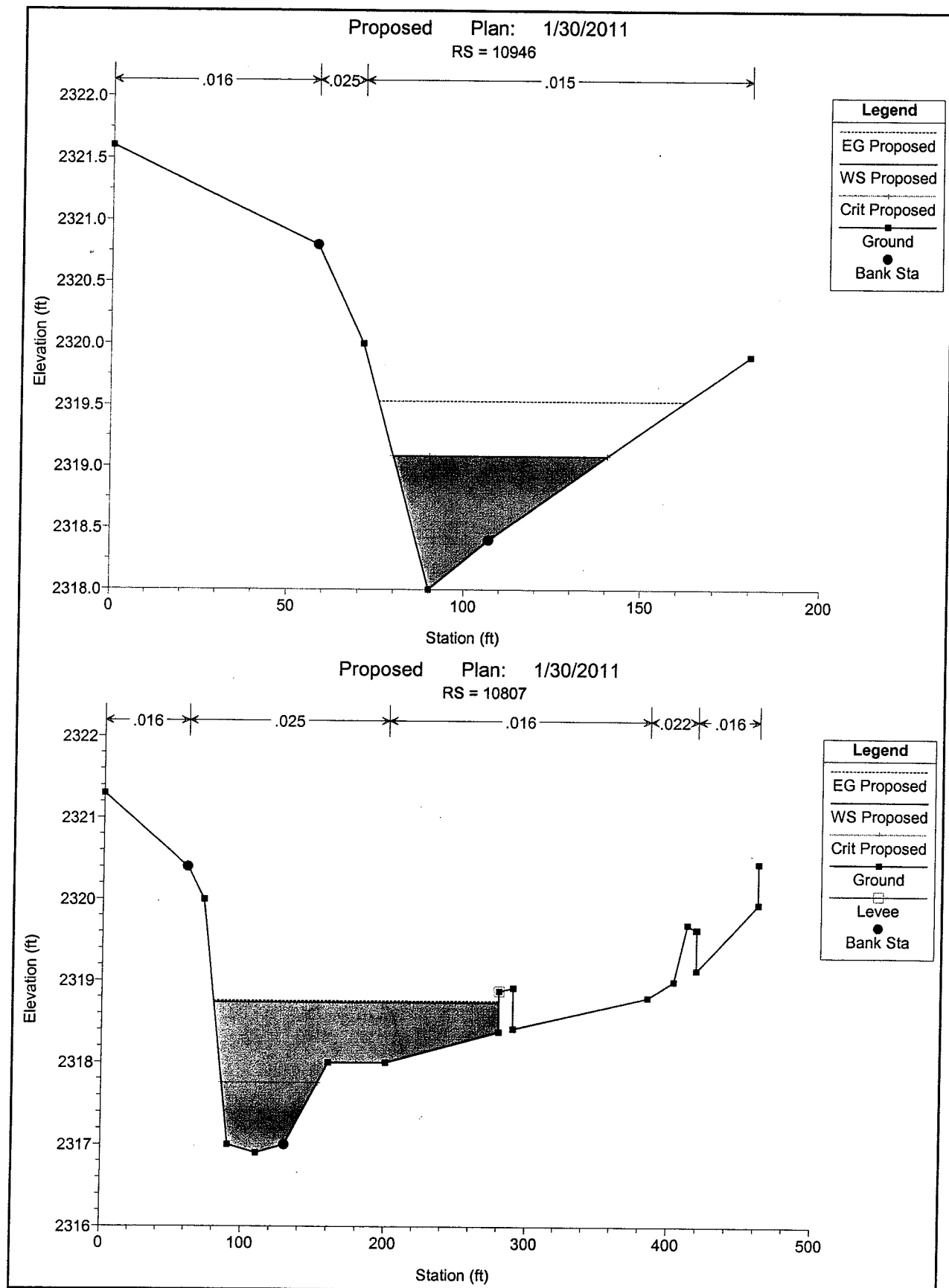
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
95 TO GOWAN	13266	Proposed	192.00	2324.00	2324.80	2324.71	2324.89	0.005881	2.56	77.36	213.40	0.61
95 TO GOWAN	13036	Proposed	192.00	2323.20	2324.72	2324.63	2324.73	0.000413	1.03	175.00	266.27	0.18
95 TO GOWAN	12852	Proposed	192.00	2322.60	2324.63	2324.21	2324.68	0.000916	1.98	113.15	192.96	0.32
95 TO GOWAN	12677	Proposed	192.00	2322.00	2323.64	2323.64	2324.15	0.011939	5.68	33.78	41.09	1.10
95 TO GOWAN	12430	Proposed	192.00	2322.00	2323.33	2322.76	2323.37	0.000622	1.63	121.71	161.79	0.27
95 TO GOWAN	12355	Proposed	192.00	2322.00	2323.32		2323.33	0.000255	1.08	201.82	347.92	0.17
95 TO GOWAN	12295	Proposed	155.00	2320.35	2323.31		2323.32	0.000082	0.79	227.13	267.84	0.10
95 TO GOWAN	12280	Proposed	155.00	2322.68	2323.30		2323.32	0.000300	0.51	147.66	245.54	0.13
95 TO GOWAN	12264	Proposed	155.00	2321.80	2323.30		2323.31	0.000153	0.85	179.31	227.01	0.13
95 TO GOWAN	12145	Proposed	190.00	2320.30	2323.28		2323.30	0.000117	1.02	206.35	182.41	0.13
95 TO GOWAN	12111	Proposed	190.00	2319.81	2322.91	2321.67	2323.25	0.002351	4.72	40.24	13.00	0.47
95 TO GOWAN	12036		Culvert									
95 TO GOWAN	11961	Proposed	161.00	2319.46	2322.12		2322.46	0.002626	4.65	34.60	13.00	0.50
95 TO GOWAN	11897	Proposed	161.00	2320.00	2322.03		2322.22	0.003502	3.56	45.25	46.43	0.62
95 TO GOWAN	11748	Proposed	161.00	2319.30	2321.97		2322.02	0.000513	1.87	86.26	52.53	0.26
95 TO GOWAN	11683	Proposed	161.00	2319.00	2321.95		2321.99	0.000371	1.64	98.36	57.21	0.22
95 TO GOWAN	11653	Proposed	161.00	2318.84	2321.64	2320.50	2321.94	0.002275	4.43	36.33	13.00	0.47
95 TO GOWAN	11621		Culvert									
95 TO GOWAN	11590	Proposed	161.00	2318.86	2320.81		2321.44	0.006701	6.37	25.29	13.00	0.80
95 TO GOWAN	11538	Proposed	161.00	2318.00	2321.10		2321.15	0.000688	1.85	91.45	97.86	0.29
95 TO GOWAN	11438	Proposed	161.00	2318.70	2321.01		2321.07	0.000862	2.16	82.37	105.34	0.32
95 TO GOWAN	11167	Proposed	161.00	2318.30	2320.35	2320.04	2320.56	0.003544	3.73	45.09	58.45	0.63
95 TO GOWAN	10946	Proposed	161.00	2318.00	2319.09	2319.09	2319.53	0.005090	5.86	32.16	60.75	1.19
95 TO GOWAN	10807	Proposed	192.00	2316.90	2318.74	2317.75	2318.76	0.000213	1.18	191.73	200.45	0.17
95 TO GOWAN	10758	Proposed	192.00	2316.50	2318.70	2317.78	2318.74	0.000412	1.82	129.58	115.59	0.22
95 TO GOWAN	10667		Culvert									
95 TO GOWAN	10575	Proposed	192.00	2316.09	2318.67		2318.70	0.000248	1.43	133.28	104.68	0.24
95 TO GOWAN	10547	Proposed	192.00	2316.00	2318.64	2317.57	2318.69	0.000661	1.82	101.90	99.38	0.27
95 TO GOWAN	10518	Proposed	192.00	2315.96	2318.60	2317.85	2318.66	0.001284	1.78	96.74	99.35	0.34
95 TO GOWAN	10485		Culvert									
95 TO GOWAN	10450	Proposed	192.00	2315.54	2318.47		2318.49	0.000156	1.01	171.49	130.09	0.20
95 TO GOWAN	10399	Proposed	169.00	2315.20	2318.48	2315.98	2318.48	0.000003	0.29	592.58	245.92	0.03
95 TO GOWAN	10295	Proposed	169.00	2316.00	2318.36		2318.47	0.001801	2.73	70.54	82.16	0.39
95 TO GOWAN	10075	Proposed	169.00	2316.00	2317.26	2317.16	2317.62	0.010788	4.79	35.25	39.02	0.89
95 TO GOWAN	9918	Proposed	169.00	2316.00	2316.57		2316.62	0.003463	1.80	93.97	193.85	0.46
95 TO GOWAN	9796	Proposed	169.00	2314.00	2316.45		2316.46	0.000687	0.86	195.69	360.17	0.21
95 TO GOWAN	9566	Proposed	215.00	2314.00	2316.29		2316.31	0.000611	1.07	214.89	340.97	0.21
95 TO GOWAN	9512	Proposed	215.00	2314.00	2316.20		2316.25	0.002592	1.83	120.85	233.63	0.41
95 TO GOWAN	9472	Proposed	215.00	2314.00	2316.11		2316.16	0.002386	1.74	140.60	418.21	0.39

HEC-RAS Plan: Plan 1 River: RANCHO ROAD Reach: 95 TO GOWAN Profile: Proposed (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
95 TO GOWAN	9376	Proposed	180.00	2314.00	2315.63		2315.73	0.006168	2.51	71.82	138.41	0.61
95 TO GOWAN	9324	Proposed	180.00	2314.00	2315.40	2315.20	2315.45	0.004341	1.77	101.71	254.46	0.49
95 TO GOWAN	9205	Proposed	180.00	2313.70	2314.42		2314.56	0.013151	2.91	61.76	167.98	0.85
95 TO GOWAN	9114	Proposed	180.00	2313.20	2314.19	2313.78	2314.21	0.001529	1.25	143.76	276.47	0.31
95 TO GOWAN	9060	Proposed	180.00	2312.90	2314.11	2313.71	2314.14	0.001573	1.35	137.27	285.70	0.31
95 TO GOWAN	8950	Proposed	180.00	2312.40	2313.73		2313.84	0.006197	2.65	67.81	118.98	0.62
95 TO GOWAN	8668	Proposed	180.00	2310.00	2311.05	2311.03	2311.29	0.014134	3.88	46.34	90.50	0.96
95 TO GOWAN	8476	Proposed	180.00	2308.30	2309.34		2309.46	0.006685	2.70	66.75	127.89	0.66
95 TO GOWAN	8410	Proposed	180.00	2307.70	2308.72	2308.72	2308.94	0.011358	3.79	47.55	85.02	0.89
95 TO GOWAN	8277	Proposed	180.00	2306.50	2307.57	2307.49	2307.74	0.007242	3.28	54.84	87.61	0.73
95 TO GOWAN	8155	Proposed	180.00	2305.40	2306.59	2306.58	2306.78	0.009566	3.55	50.63	97.11	0.87
95 TO GOWAN	7939	Proposed	180.00	2302.20	2304.16	2303.97	2304.42	0.013421	4.11	43.75	75.13	0.95
95 TO GOWAN	7578	Proposed	198.00	2299.90	2301.12		2301.28	0.006304	3.22	61.51	100.96	0.73
95 TO GOWAN	7478	Proposed	198.00	2298.90	2300.21	2300.21	2300.42	0.013134	3.66	54.05	113.33	0.93
95 TO GOWAN	7373	Proposed	198.00	2298.00	2299.24	2299.12	2299.36	0.004425	2.81	70.41	103.35	0.60
95 TO GOWAN	7280	Proposed	198.00	2297.90	2298.51	2298.51	2298.74	0.012699	3.84	51.50	120.10	1.03
95 TO GOWAN	7016	Proposed	199.00	2295.50	2295.91	2295.95	2296.13	0.008767	3.83	51.97	177.84	1.25
95 TO GOWAN	6934	Proposed	199.00	2294.60	2295.39	2295.27	2295.51	0.002598	2.81	70.87	155.01	0.73
95 TO GOWAN	6815	Proposed	199.00	2293.60	2294.62	2294.62	2294.95	0.005885	4.60	43.27	83.40	1.13
95 TO GOWAN	6763	Proposed	199.00	2288.87	2289.67	2290.63	2293.96	0.174278	16.63	11.97	15.00	3.28
95 TO GOWAN	6691	Proposed	199.00	2288.40	2291.06	2291.06	2291.86	0.012510	7.18	27.73	17.18	1.00
95 TO GOWAN	6609	Proposed	199.00	2287.91	2290.84	2289.67	2291.15	0.003109	4.54	43.88	15.00	0.47
95 TO GOWAN	6572	Culvert										
95 TO GOWAN	6535	Proposed	199.00	2287.21	2290.52	2289.01	2290.76	0.002016	4.00	50.38	18.01	0.39
95 TO GOWAN	6468	Proposed	199.00	2286.70	2290.42		2290.62	0.001807	3.64	55.34	24.77	0.40
95 TO GOWAN	6404	Proposed	199.00	2286.17	2290.37	2287.93	2290.52	0.001031	3.15	64.70	24.24	0.27
95 TO GOWAN	6362	Culvert										
95 TO GOWAN	6321	Proposed	199.00	2285.53	2290.03	2287.33	2290.14	0.000602	2.74	80.07	43.34	0.23
95 TO GOWAN	6260	Proposed	199.00	2288.00	2289.72	2289.72	2290.03	0.007384	4.48	44.45	67.41	0.97
95 TO GOWAN	6161	Proposed	199.00	2287.30	2288.51	2288.39	2288.69	0.006578	3.46	59.34	101.40	0.72
95 TO GOWAN	6012	Proposed	199.00	2286.00	2286.79	2286.79	2287.11	0.018371	4.52	44.03	151.01	1.07
95 TO GOWAN	5808	Proposed	199.00	2282.20	2283.79	2283.23	2283.84	0.001882	1.84	108.16	136.48	0.36
95 TO GOWAN	5518	Proposed	199.00	2282.00	2282.44	2282.44	2282.62	0.017627	3.38	58.87	163.34	0.99
95 TO GOWAN	5382	Proposed	84.00	2278.00	2278.11	2278.18	2278.60	0.243540	5.59	15.03	137.32	2.98
95 TO GOWAN	5264	Proposed	84.00	2273.01	2275.89	2273.93	2275.89	0.000115	0.71	118.72	75.57	0.10
95 TO GOWAN	4550	Culvert										
95 TO GOWAN	3836	Proposed	541.00	2264.48	2271.27		2271.39	0.002214	2.81	192.26	140.25	0.42
95 TO GOWAN	3756	Proposed	541.00	2268.00	2271.17		2271.26	0.001070	2.40	224.97	136.77	0.33
95 TO GOWAN	3666	Proposed	541.00	2269.50	2270.90		2271.08	0.004355	3.38	160.22	168.84	0.61

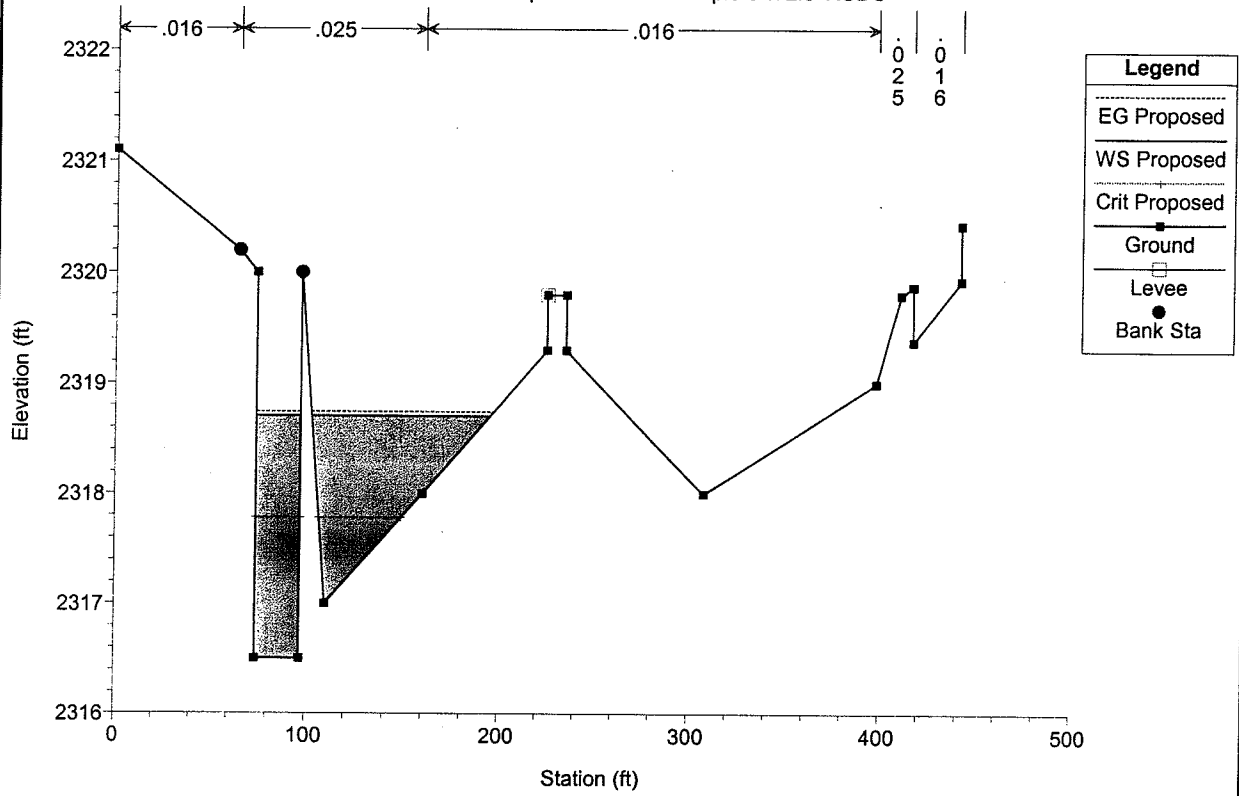
HEC-RAS Plan: Plan 1 River: RANCHO ROAD Reach: 95 TO GOWAN Profile: Proposed (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
95 TO GOWAN	3479	Proposed	541.00	2268.00	2270.04		2270.18	0.005785	3.01	179.68	270.80	0.65
95 TO GOWAN	3145	Proposed	541.00	2264.42	2268.64		2268.72	0.003685	2.35	230.53	359.84	0.52
95 TO GOWAN	2801	Proposed	428.00	2266.10	2267.16	2267.16	2267.46	0.003652	4.37	97.87	180.17	0.93
95 TO GOWAN	2549	Proposed	428.00	2264.30	2265.44	2265.44	2265.92	0.012432	5.57	76.82	128.08	1.27
95 TO GOWAN	2280	Proposed	428.00	2258.23	2262.99	2261.57	2263.03	0.000841	1.62	263.65	229.46	0.27
95 TO GOWAN	2206	Proposed	418.00	2262.00	2262.58	2262.58	2262.84	0.016244	4.13	101.26	197.55	1.02
95 TO GOWAN	1932	Proposed	418.00	2260.00	2261.53	2260.70	2261.57	0.000616	1.43	291.49	256.35	0.24
95 TO GOWAN	1823	Proposed	418.00	2260.00	2261.03	2261.03	2261.35	0.008414	4.54	92.01	143.16	1.00
95 TO GOWAN	1625	Proposed	418.00	2258.60	2259.76	2259.52	2259.94	0.002151	3.46	120.89	152.19	0.68
95 TO GOWAN	1456	Proposed	436.00	2258.00	2258.77	2258.77	2259.20	0.010679	5.26	82.96	130.00	1.16
95 TO GOWAN	1403	Proposed	279.00	2256.00	2257.69	2256.93	2257.72	0.000258	1.37	204.23	233.22	0.26
95 TO GOWAN	1220	Proposed	279.00	2255.10	2257.54		2257.63	0.001198	2.32	120.16	115.72	0.40
95 TO GOWAN	983	Proposed	171.00	2253.29	2257.19		2257.20	0.003917	1.06	161.45	113.03	0.16
95 TO GOWAN	743	Proposed	200.00	2250.90	2257.14	2253.15	2257.15	0.000076	0.81	247.04	156.69	0.11
95 TO GOWAN	485	Culvert										
95 TO GOWAN	226	Proposed	200.00	2248.65	2256.18		2256.19	0.000019	0.53	432.27	334.51	0.06
95 TO GOWAN	179	Proposed	1080.00	2254.00	2256.08		2256.17	0.000728	2.32	458.36	383.12	0.31
95 TO GOWAN	95	Proposed	1080.00	2253.70	2256.08		2256.13	0.000216	1.99	593.84	389.11	0.26
95 TO GOWAN	52	Proposed	1080.00	2253.59	2255.96		2256.11	0.000557	3.43	376.21	284.95	0.43
95 TO GOWAN	0	Proposed	761.00	2253.85	2255.55	2255.55	2256.02	0.002998	5.62	147.89	181.17	0.89



Proposed Plan: 1/30/2011

RS = 10758 Upstream Side of Triple 6' x 2.5' RCB's



**** Duplicate Receipt ****

City of Las Vegas

Development Services Center

731 South Fourth Street

Las Vegas, NV 89101

02/07/2011 12:19 Trn 162205
Cashier 890381

PRJ Permit # DS4512-1 \$100.00

Subtotal \$100.00

Tax \$0.00

Total \$100.00

Received CHECK \$100.00

Check # 6125

Change \$0.00

For questions related to this receipt call

702-PP9-6250