MKE

McLaughlin Kmetty Engineers, Ltd.

3501 North 16th Street Phoenix, Arizona 85016-6419 (602) 248-7702 Fax (602) 248-7851

GEZA E. KMETTY
RONALD C. McLAUGHLIN
LEO M. EISEL

FRANK E. BROWN

ROBERT E. CONSONI
ROBERT J. STAVER

CHARLES L. JOY
RONALD E. HAUGHT

October 21, 1996

Mr. Hasan Mushtaq
Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009

Re: Rio Verde South
Revised Floodplain Submittal Package (Not for FEMA)
MKE Job No. 89-407.003

Dear Hasan:

This letter culminates work that you requested to modify the FEMA-approved floodplains through the review and use of elevation certificate data. At our last meeting, we decided that this information would not be forwarded to FEMA, but rather would be used for FCDMC's floodplain management purposes. Some of the drawings being transmitted to you look very similar to the FEMA-approved maps; therefore **it is imperative that this information not be confused with the FEMA-approved drawings.** As a result of the completion of this review of elevation certificates, we are transmitting to you the following items:

GENERAL DISCUSSION

The reason for this work is that the District wanted to verify finished floor elevations for certain homes that were near or in the floodplain. Obtaining finished floor elevations is not a normal part of a Floodplain Delineation Study, and was not necessary for McLaughlin Kmetty Engineers to complete the Rio Verde South Floodplain Delineation Study. The floodplain maps are based upon 2 foot contour intervals and therefore would not be accurate enough to obtain finished floor elevation data.

The enclosed maps show the houses color-coded according to the following scheme:

Green-shaded house = finished floor elevation above the 100-year floodplain, even if the house is within the floodplain.

Red-shaded house = finished floor elevation below the 100-year floodplain.

G:\P\89407003\WP\elcert.#1

WASH 9

- Calculation sheet 1 of 1 concluding that the floodplain should be shown on the south side of the house on Lot 1383.

- 11 x 17 photocopy from Sheet 3 Floodplain Map with purple line showing revised floodplain and approximate floodway, with houses color-coded.

- 11 x 17 splice of elevation certificates showing revised floodplain and approximate floodway for Lot 1382, 1383, and 1384, with houses color-coded.

Wash 9 Discussion

Elevation Certificates were obtained by the District for Lots 1382, 1383 and 1384 along Leather Lane. These homes are located between River Mile 1.60 and 1.70, on the right bank of Wash 9. The home on Lot 1384 was built since the aerial flight date of 12-22-93 and is not shown on the revised floodplain map. The floodplain was revised to completely encompass the house on Lot 1383, with the 100-year water surface about 0.5 feet above the finished floor elevation. A one page handwritten calculation sheet concludes that the floodplain should be shown encompassing the house, due to the low finished floor elevation.

The FEMA-approved HEC-2 analysis has a cross section going through the house (Cross Section 1.665), and the GR coding included the effects of a house at this location. Therefore, the HEC-2 model does not need to be revised and the water surface elevation of 1632.93 is still applicable. The floodplain is revised simply to show the floodplain in relation to the finished floor elevation. In this case, the finished floor is below the floodplain.

The FEMA-approved HEC-2 floodway analysis is still valid. The floodway on the FEMA-approved map was an interpolation between cross sections. Utilizing data from the Elevation Certificates, the floodway is re-interpolated and is shown as revised.

WASH 10

- Computer disks with AutoCAD file of revised Sheet 5 Floodplain Map showing revised floodplain due to flow change, Disk 1 of 2 and 2 of 2. A photocopy of the disk labels is provided. The revised filename is FCDMCSH5.DWG. (The filename from the FEMA-approved map is SHEET5.DWG.)

- Computer disk with HEC-2 file named FCDMCW10.IH2.

- 11 x 17 from Sheet 5 Floodplain Map showing revised floodplain due to flow change, with houses color-coded.

- Full-size plot of Sheet 5 Floodplain Map showing revised floodplain due to flow change.

- HEC-2 printout showing revised flowrate from River Mile 0.895 to 1.096.

Wash 10 Discussion

On 3 June 1996, you requested via a letter that MKE investigate revising the 100-year discharge between River Mile 0.895 and 1.096 to better reflect the impact of the tributary emanating from subbasin 510E. We agree that it would be better to show a flowrate of 1430 cfs through this area, until the full impact of the tributary is felt at River Mile 0.851. In addition, Cross Section 1.034 was removed, as it is not necessary for the floodplain model to operate correctly. An interpolated water surface elevation at River Mile 1.034 yields the same as the FEMA-approved study. The enclosed HEC-2 analysis contains these revisions. At our meeting on 15 August 1996, Pedro Calza indicated that the final floodplain maps must be the same as those approved by FEMA. Therefore, this revision is supplemental to the FEMA-approved maps.

The Elevation Certificates were used, along with the revised HEC-2 model, to portray the revised floodplain. The revised floodplain is shown on the full size plot of Sheet 5. The 11 x 17 photocopy contains color-coded houses. It was not necessary to annotate the elevation certificates; thus, this submittal package does not contain annotated Elevation Certificates for Wash 10.

SUMMARY

In summary, these revisions were requested by the District and are supplemental to the Rio Verde South Floodplain Delineation Study that was approved by FEMA. To assist District personnel in differentiating between two similar-looking floodplain maps, the revised maps contain an Engineer's Statement, and a seal bearing today's date.

Very truly yours,
McLAUGHLIN KMETTY ENGINEERS, Ltd.

Frank Edward Brown

Frank Edward Brown, P.E.
Project Engineer

G:\P\89407003\WP\elcert.#1

WASH 9 DATA

MKE McLaughlin Kmetty Engineers, Ltd.

Project Title _____ Project No. 89-407.003 Date 14 Aug 96

Subject Rio Verde South - Wash 9 Designed KB Page 1/1

Floodplain @ RM 1.655 using Surveyed spot elev. + FF EL

There is an apparent break out point near the cross Section @ RM 1.655. Questions:

1. Can the flood waters spread laterally quickly enough to flow in street?
2. If yes, what is flow rate down street?

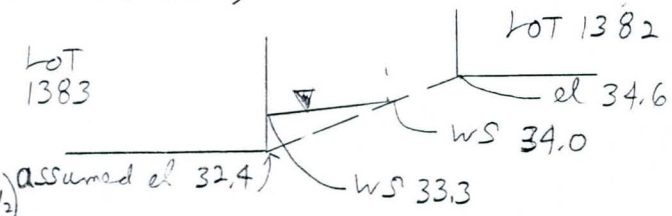
Discussion: I think the floodwaters will not be able to spread @ 90° to the flow direction quick enough to enter the street. But check the flow rate anyway, check magnitude if there is a problem.

Calculations:

weir length approx. 25 ft sloping @ 5.55 % (34.6-32.4 ÷ 40)

water surface sloping @ 1.73 % (38.38 - 32.93 ÷ 311)

Depth on weir varies from 0.9 ft to 0.0 ft
use avg of 0.45 ft



$Q = CLH^{3/2}$ $Q = 2.5(25)(0.45^{3/2})$

$Q = 19$ cfs . [Q total = 760 cfs]

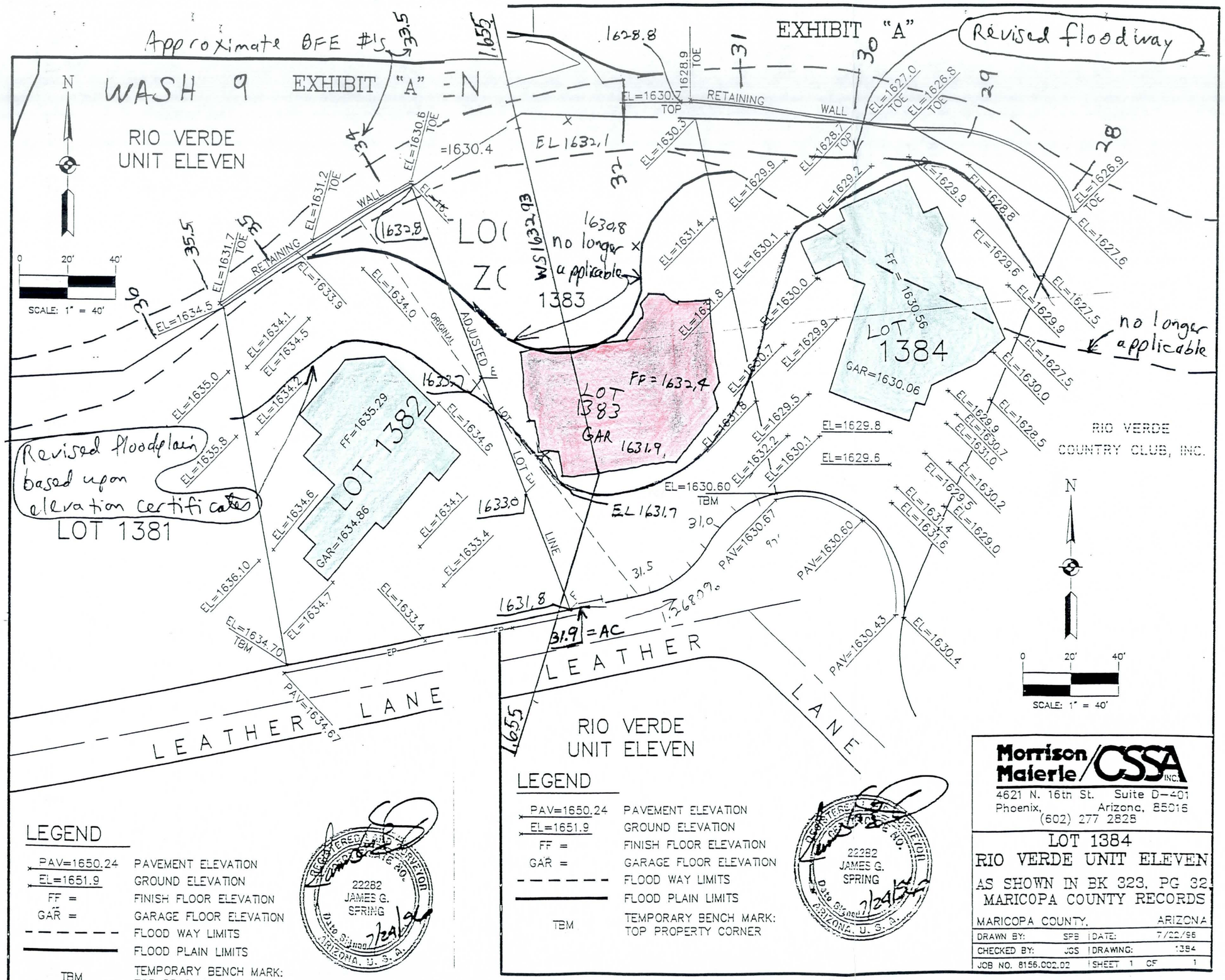
using simplified weir shape, ignoring slopes.

CONCLUSION: This area will be wet during a 100 year flood, and some flow may actually escape down the street, but this is not the main flow path. Therefore, show flood plain on far side of house on Lot 1383 (south side of house) due to low FF EL.

ENGINEER'S STATEMENT FOR WASH 9

The revised floodplain and floodway between River Mile 1.60 and 1.70 represent engineering judgement. The FEMA-approved HEC-2 analysis was utilized in conjunction with the FEMA Elevation Certificates to revise the floodplain and floodway.

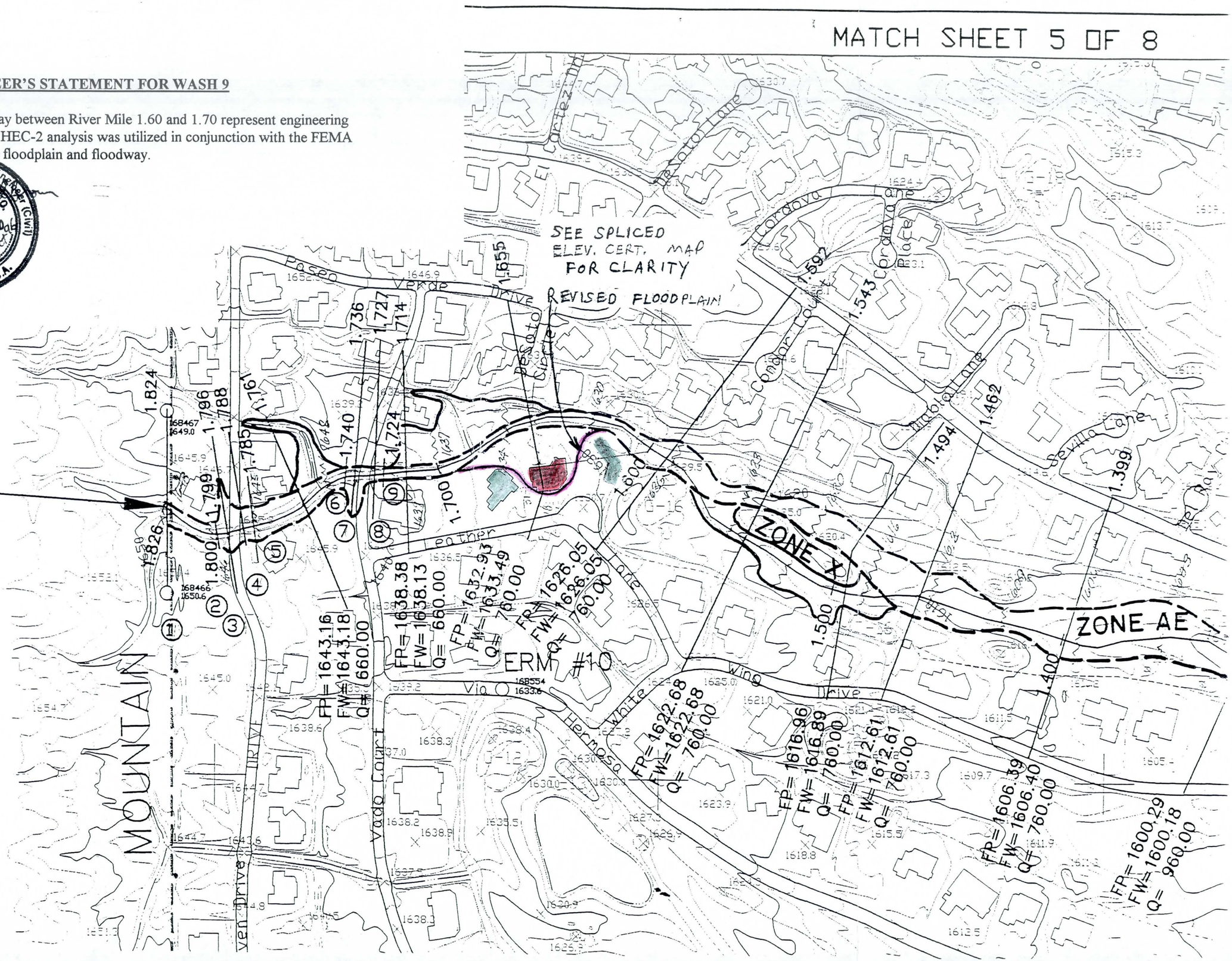
Registered Professional Engineer (Civil)
CERTIFICATE NO. 23969
FRANK EDWARD BROWN
Date Signed 7-24-96
ARIZONA, U.S.A.



ENGINEER'S STATEMENT FOR WASH 9

The revised floodplain and floodway between River Mile 1.60 and 1.70 represent engineering judgement. The FEMA-approved HEC-2 analysis was utilized in conjunction with the FEMA Elevation Certificates to revise the floodplain and floodway.

Registered Professional Engineer (Civil)
CERTIFICATE NO. 23969
FRANK EDWARD BROWN
Date Signed 21 Oct 96
ARIZONA, U.S.A.



WASH 10 DATA

G:\P\89407003\WP\elcert.#1

Disk 1 of 2 Rio Verde South
FCD No. 93-07
FCDMCSH5.ZIP
8-20-96
89407003 WASH 10
Revised floodplain near RM 1.0
due to decreased flowrate.
Job # Do not confuse this with
the FEMA-approved floodplain

MKE McLaughlin Kmetty Engineers,Ltd
3501 N. 16th St. Phoenix, AZ 85016 (602) 248-7702

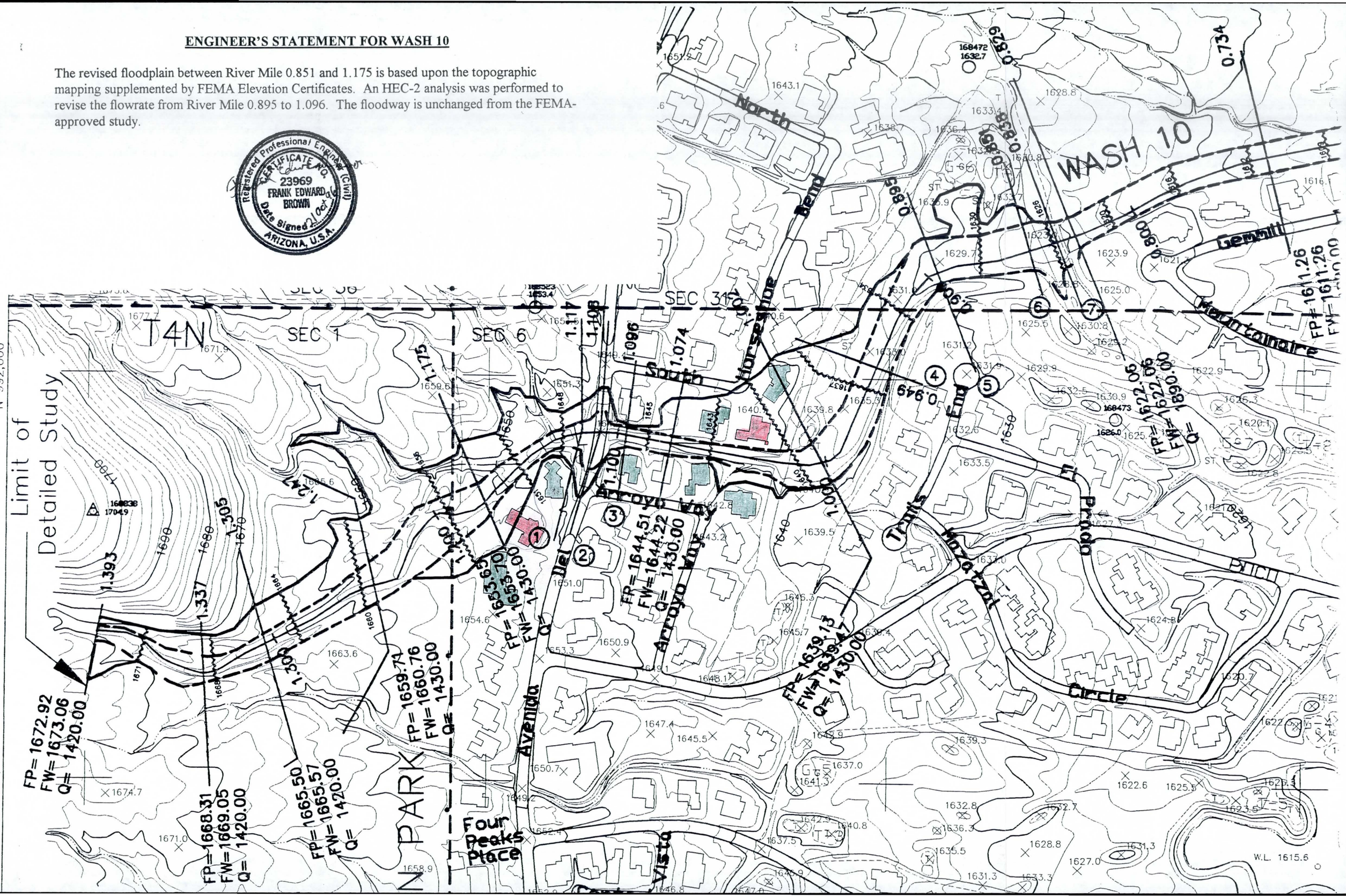
Disk 2 of 2 Rio Verde South
FCD No. 93-07
FCDMCSH5.ZIP
8-20-96
89407003. WASH 10
Revised floodplain near RM 1.0
due to decreased flowrate.
Job # Do not confuse this with
the FEMA-approved floodplain.

MKE McLaughlin Kmetty Engineers,Ltd
3501 N. 16th St. Phoenix, AZ 85016 (602) 248-7702

ENGINEER'S STATEMENT FOR WASH 10

The revised floodplain between River Mile 0.851 and 1.175 is based upon the topographic mapping supplemented by FEMA Elevation Certificates. An HEC-2 analysis was performed to revise the flowrate from River Mile 0.895 to 1.096. The floodway is unchanged from the FEMA-approved study.

Registered Professional Engineer (Civil)
CERTIFICATE NO. 23969
FRANK EDWARD BROWN
Date Signed 2 Oct 06
ARIZONA, U.S.A.



FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY
2801 West Durango Street
Phoenix, Arizona 85009

(602) 506-1501

LETTER OF TRANSMITTAL

DATE 8/1/96	JOB NO.
ATTENTION FRANK BROWN	
RE RIO VERDE SOUTH FDS	

TO FRANK BROWN
MKE
3501 N. 16TH ST.
PHOENIX, ARIZONA 85016

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☒ PLOT PLANS

COPIES	DATE	NO.	DESCRIPTION
3	8/1/96	1	PLOT PLANS FOR LOTS 1382, 1383, 1389.

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

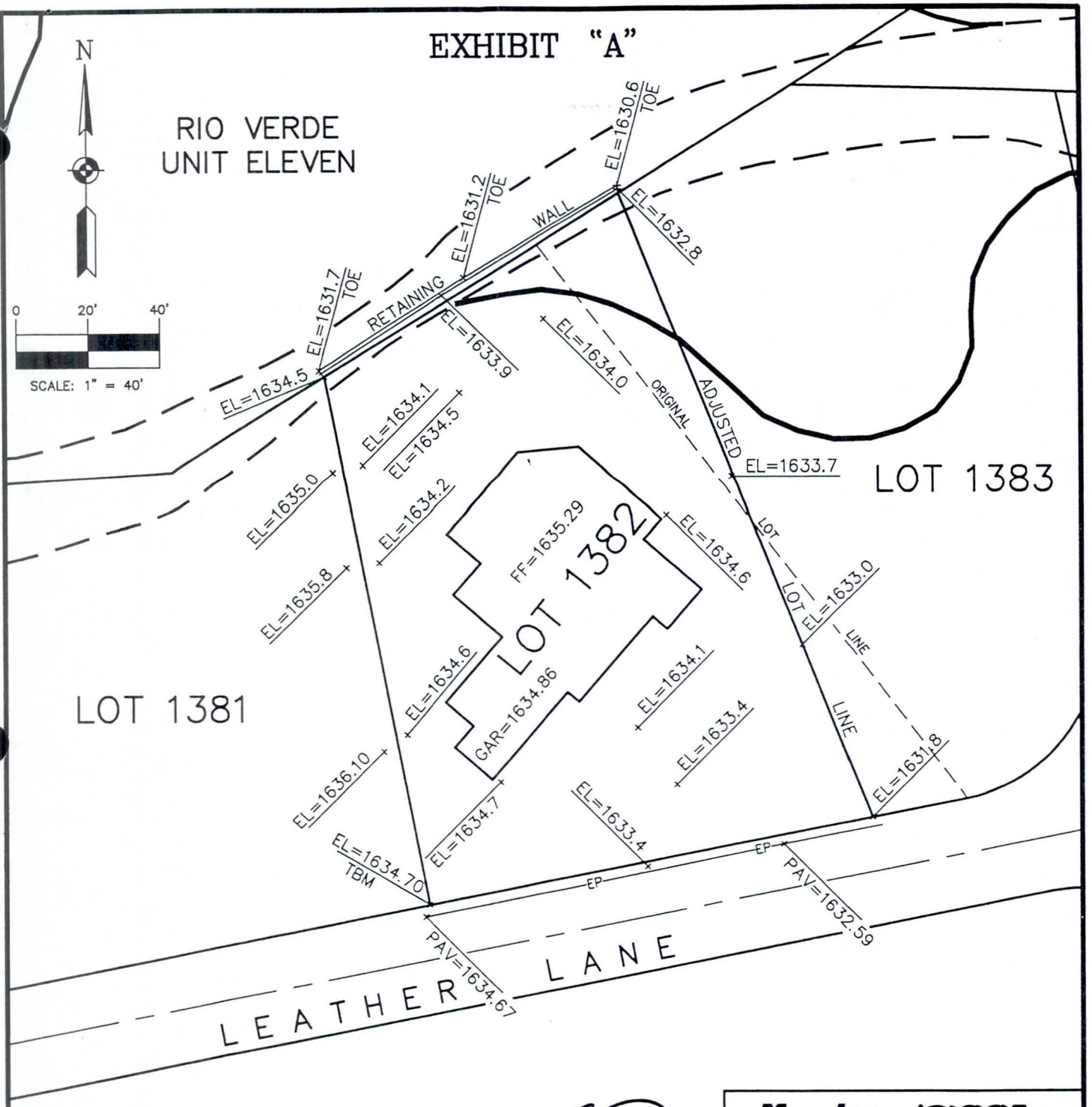
COPY TO PAC.

SIGNED: [signature]

6910-009 R8-93

If enclosures are not as noted, kindly notify us at once.

EXHIBIT "A"



LEGEND

PAV=1650.24	PAVEMENT ELEVATION
EL=1651.9	GROUND ELEVATION
FF =	FINISH FLOOR ELEVATION
GAR =	GARAGE FLOOR ELEVATION
- - - - - -	FLOOD WAY LIMITS
———	FLOOD PLAIN LIMITS
TBM	TEMPORARY BENCH MARK: TOP PROPERTY CORNER

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
22282
JAMES G.
SPRING
Date Signed 7/24/96
ARIZONA, U.S.A.

Morrison Maierle/CSSA INC.
4621 N. 16th St. Suite D-401
Phoenix, Arizona, 85016
(602) 277 2828

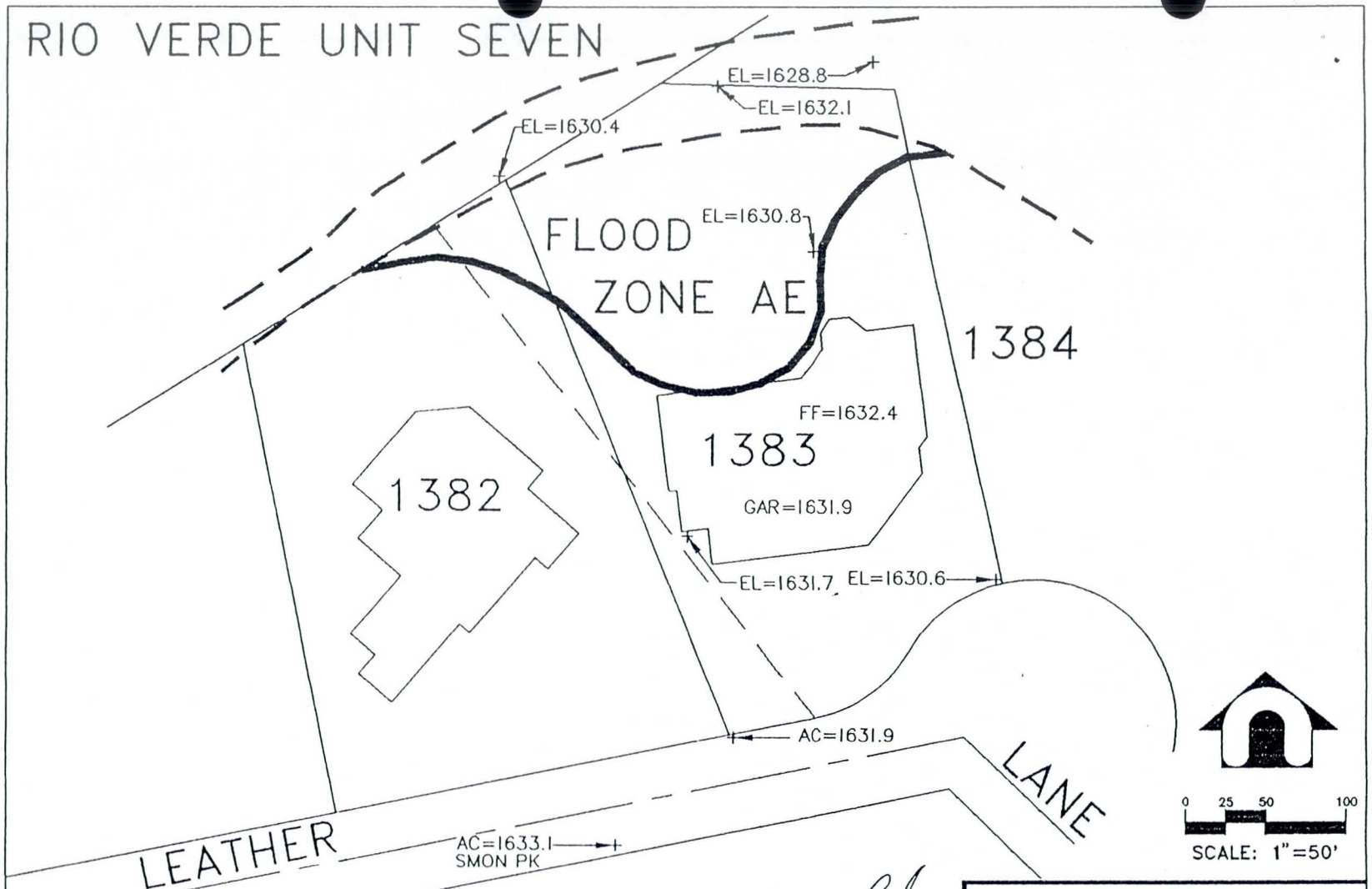
LOT 1382
RIO VERDE UNIT ELEVEN

AS SHOWN IN BK 323, PG 32
MARICOPA COUNTY RECORDS

MARICOPA COUNTY, ARIZONA

DRAWN BY:	SPB	DATE:	7/22/96
CHECKED BY:	JGS	DRAWING:	1382
JOB NO. 8156.002.02		SHEET 1 OF 1	

RIO VERDE UNIT SEVEN



LEGEND

AC = ASPHALT PAVEMENT ELEVATION
EL = GROUND SHOT ELEVATION
FF = FINISH FLOOR ELEVATION
GAR = GARAGE FINISH FLOOR ELEVATION
FLOOD WAY LIMITS
FLOOD PLAIN LIMITS

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
14959
THOMAS J.
LUTE
Date Signed 4/22/96
ARIZONA, U.S.A.

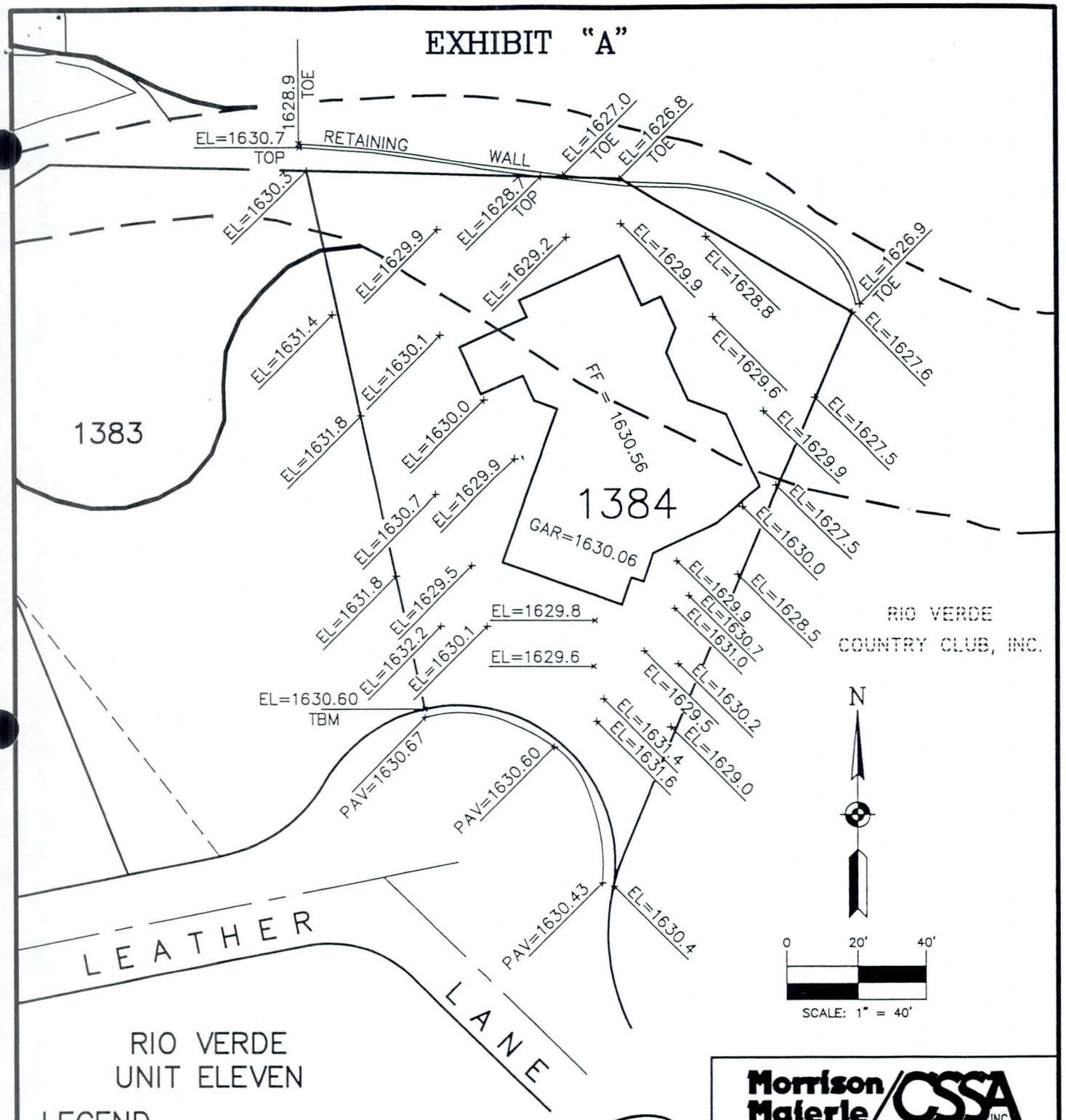
DAVID EVANS AND ASSOCIATES, INC.
ENGINEERS, SURVEYORS, PLANNERS, LANDSCAPE ARCHITECTS
2929 E. CAMELBACK RD., STE 240, PHOENIX, AZ 85016
(602) 956-9850

EXHIBIT "A"
LOT 1383
RIO VERDE UNIT ELEVEN
BK. 323, PG. 32, M.C.R.

SECTION: 6	TWNSHP: 4 N	RANGE: 7 E
DRAWN BY: SJSA	DATE: 04/22/1996	
CHECKED BY:	DRAWING NO.: MA101383	
JOB NO.: MARI0010	SHEET 1 OF 1	

MARI0010 PH03704/22/96 08:58:56 SJS S:\SVY\MARI0010\MA101383

EXHIBIT "A"



RIO VERDE
UNIT ELEVEN

LEGEND

PAV=1650.24	PAVEMENT ELEVATION
EL=1651.9	GROUND ELEVATION
FF =	FINISH FLOOR ELEVATION
GAR =	GARAGE FLOOR ELEVATION
- - - - -	FLOOD WAY LIMITS
———	FLOOD PLAIN LIMITS
TBM	TEMPORARY BENCH MARK: TOP PROPERTY CORNER

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
22282
JAMES G.
SPRING
Date Signed 7/29/96
ARIZONA, U.S.A.

Morrison Maierle/CSSA INC.
4621 N. 16th St. Suite D-401
Phoenix, Arizona, 85016
(602) 277 2828

LOT 1384
RIO VERDE UNIT ELEVEN

AS SHOWN IN BK 323, PG 32, MARICOPA COUNTY RECORDS

MARICOPA COUNTY, ARIZONA

DRAWN BY:	SPB	DATE:	7/22/96
CHECKED BY:	JGS	DRAWING:	1384
JOB NO. 8156.002.02		SHEET 1 OF	1

FLOOD CONTROL DISTRICT
of
Maricopa County

2801 West Durango Street • Phoenix, Arizona 85009
Telephone (602) 506-1501
Fax (602) 506-4601
TT (602) 506-5859

BOARD OF DIRECTORS
Betsey Bayless
Ed King
Tom Rawles
Don Stapley
Mary Rose Garrido Wilcox

JUL 25 1996

Frank E. Brown, P.E.
McLaughlin Kmetty Engineers, Ltd.
3501 North 16th Street
Phoenix, Arizona 85016-6419

SUBJECT : Rio Verde South FDS : Request to revise floodplain delineation on SHEETS 3 and 5.

Dear Mr. Brown :

Please find attached plot plans of the properties that have been surveyed as a part of the elevation certification for individual owners. These plot plans are certified by approriate registered land surveyor and are required to make the suggested modifications per district recommendation via a letter, dated May 31, 1996.

If you have further questions, please do not hesitate to contact me at 506-1501.

Sincerely,

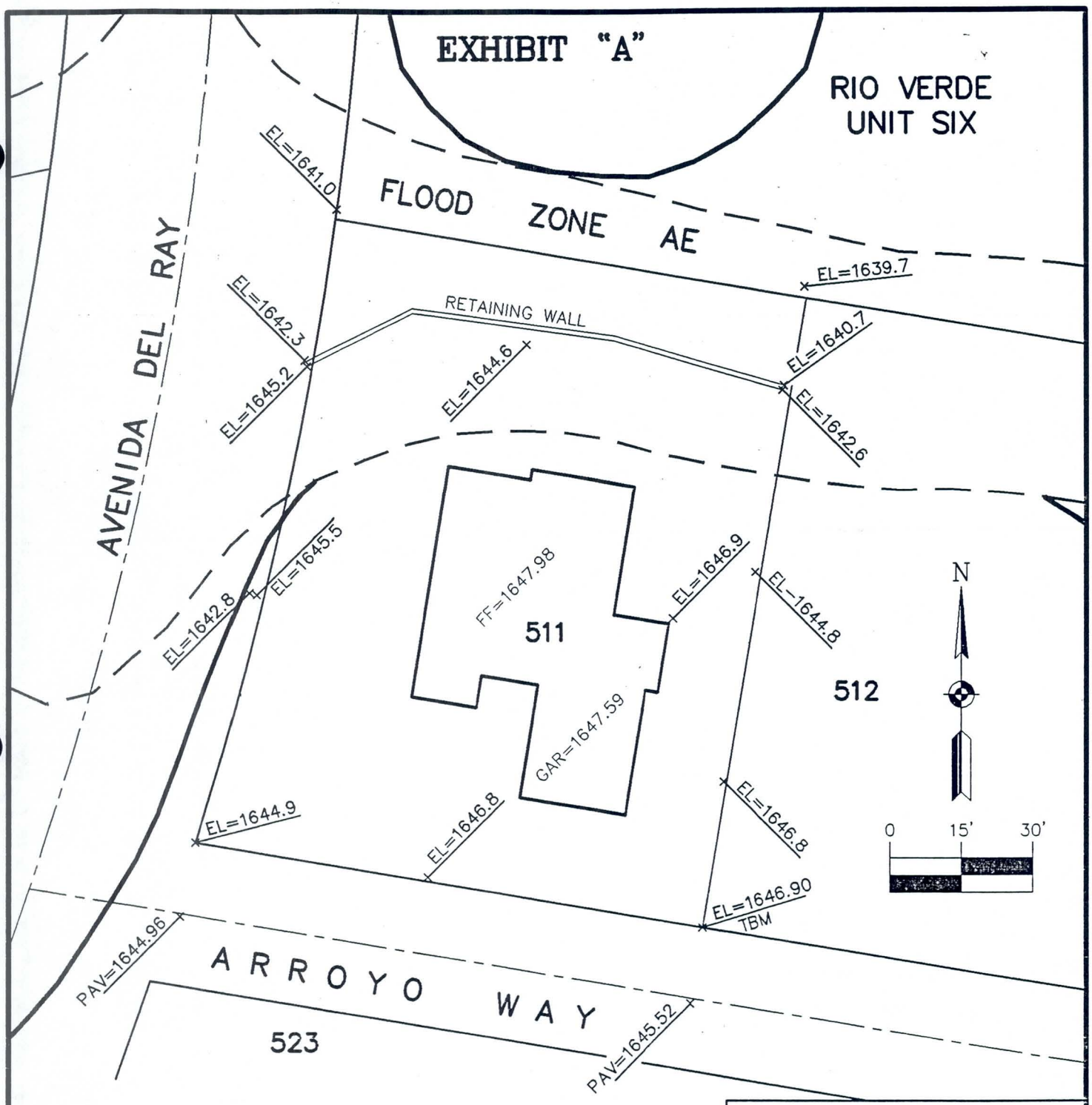
Hasan Mushtaq, P.E.
Engineering Division

Coord : [redacted] HM

Info : HM

EXHIBIT "A"

RIO VERDE UNIT SIX



LEGEND

PAV=1650.24	PAVEMENT ELEVATION
EL=1651.9	GROUND ELEVATION
FF =	FINISH FLOOR ELEVATION
GAR =	GARAGE FLOOR ELEVATION
— — —	FLOOD WAY LIMITS
═══	FLOOD PLAIN LIMITS
TBM	TEMPORARY BENCH MARK TOP PROPERTY CORNER

REGISTERED LAND SURVEYOR
22232
JAMES G.
SPRING
5/7/96
ARIZONA, U.S.A.

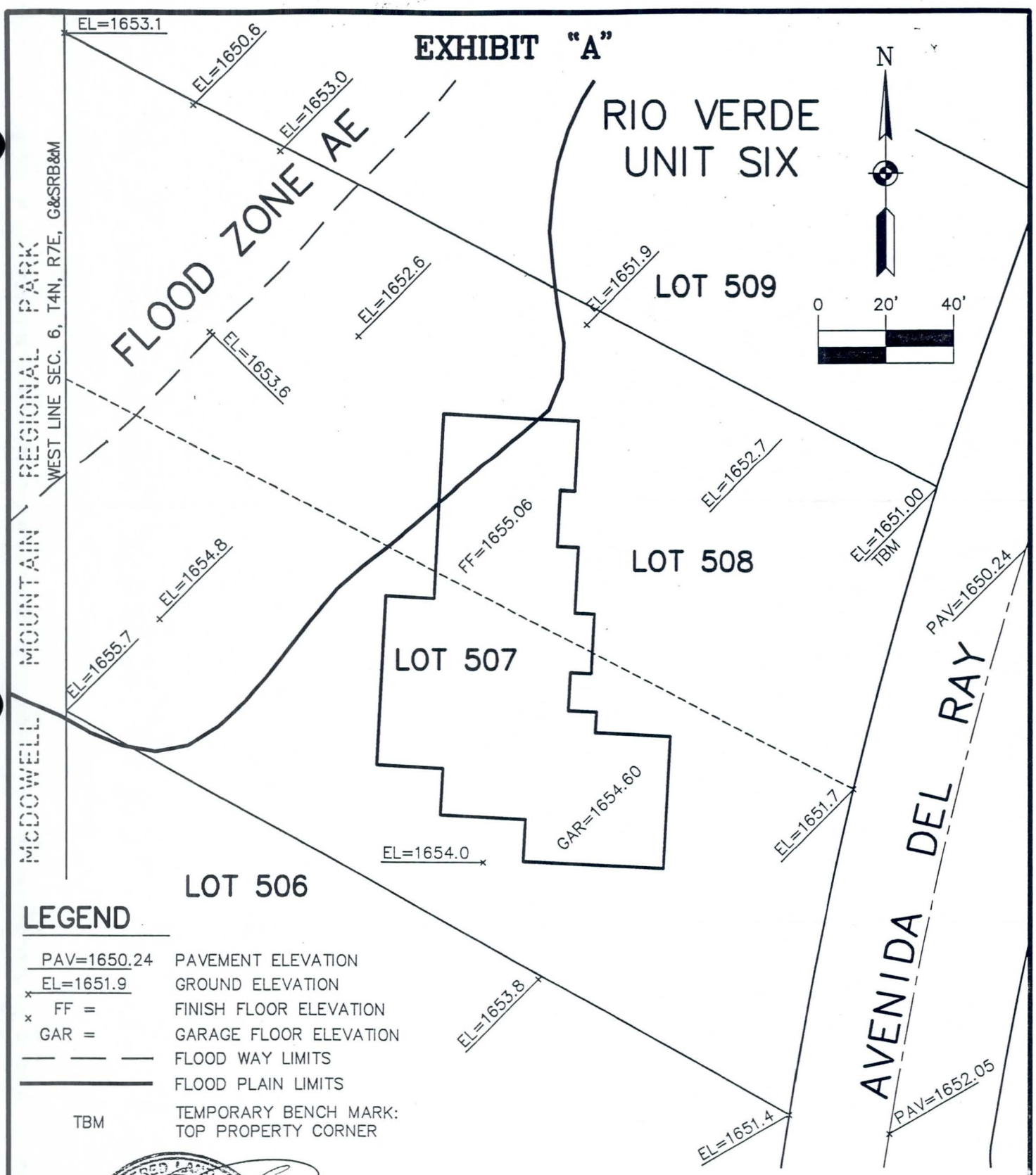
Morrison Maierle/CSSA INC.
4621 N. 16th St. Suite D-401
Phoenix, Arizona, 85016
(602) 277 2828

LOT 511
RIO VERDE UNIT SIX
M.C.R. BOOK 192, PAGE 12
SEC 6, T4N, R7E, G&SRB&M

MARICOPA COUNTY, ARIZONA

DRAWN BY:	SPS	DATE:	5/13/96
CHECKED BY:	JGS	DRAWING:	511
JOB NO. 8156.002.02		SHEET 1 OF 1	

EXHIBIT "A"



LEGEND

PAV=1650.24	PAVEMENT ELEVATION
EL=1651.9	GROUND ELEVATION
FF =	FINISH FLOOR ELEVATION
GAR =	GARAGE FLOOR ELEVATION
— — —	FLOOD WAY LIMITS
═══	FLOOD PLAIN LIMITS
TBM	TEMPORARY BENCH MARK: TOP PROPERTY CORNER

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
22282
JAMES G. SPRING
5/17/00
ARIZONA, U.S.A.

Morrison Maierle/CSSA INC.
4621 N. 16th St. Suite D-401
Phoenix, Arizona, 85016
(602) 277 2828

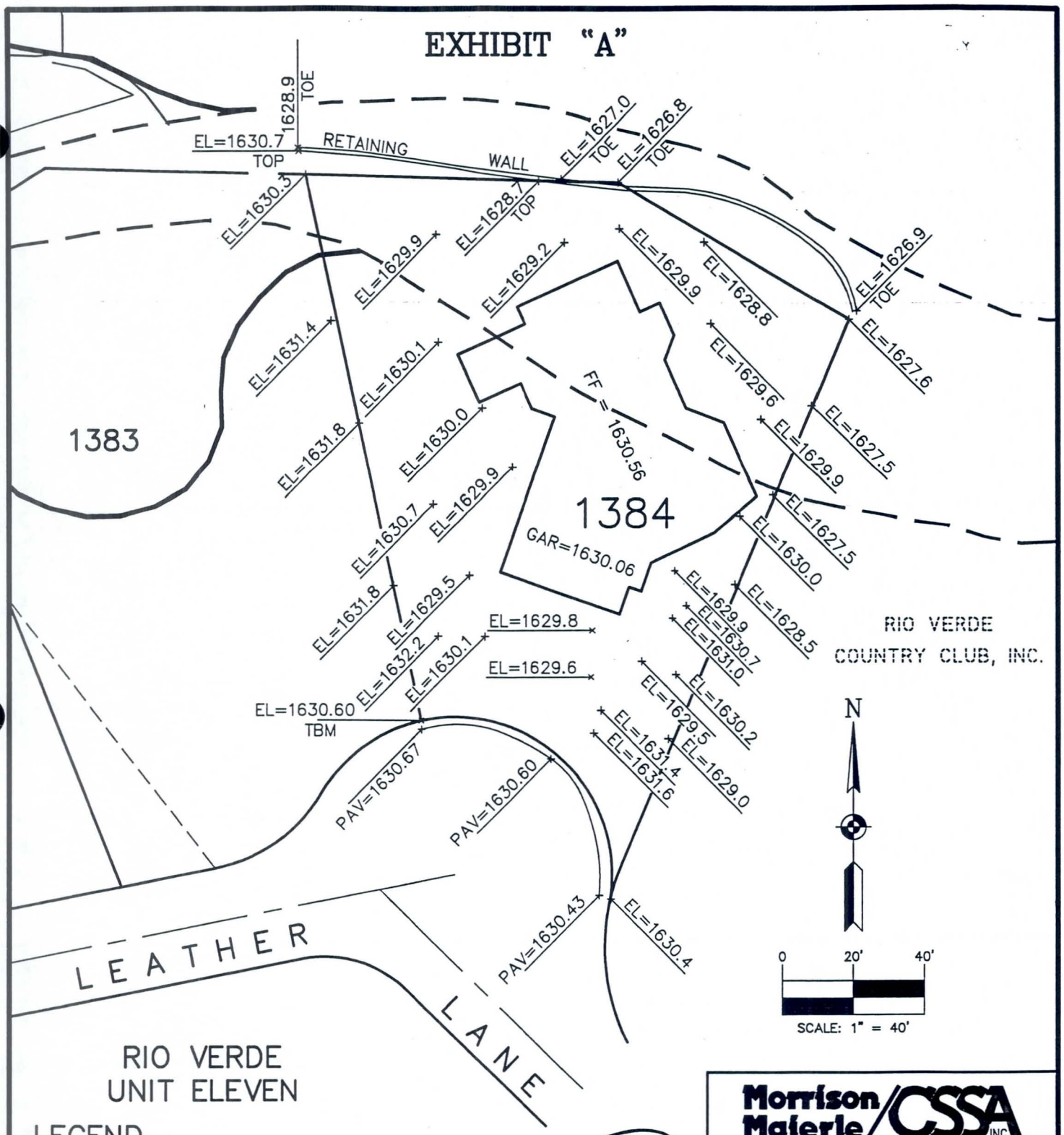
LOTS 507 & 508
RIO VERDE UNIT SIX

M.C.R. BOOK 192, PAGE 12
SEC 6, T4N, R7E, G&SRB&M

MARICOPA COUNTY, ARIZONA

DRAWN BY: SFB	DATE: 5/13/00
CHECKED BY: JGS	DRAWING: 508
JOB NO. 8156.002.02	SHEET 1 OF 1

EXHIBIT "A"



RIO VERDE UNIT ELEVEN

LEGEND

PAV=1650.24	PAVEMENT ELEVATION
EL=1651.9	GROUND ELEVATION
FF =	FINISH FLOOR ELEVATION
GAR =	GARAGE FLOOR ELEVATION
- - - - -	FLOOD WAY LIMITS
———	FLOOD PLAIN LIMITS
TBM	TEMPORARY BENCH MARK: TOP PROPERTY CORNER

REGISTERED LAND SURVEYOR CERTIFICATE NO. 22282 JAMES G. SPRING Date Signed 7/24/96 ARIZONA, U. S. A.

Morrison Maierle/CSSA INC.
4621 N. 16th St. Suite D-401
Phoenix, Arizona, 85016
(602) 277 2828

LOT 1384
RIO VERDE UNIT ELEVEN

AS SHOWN IN BK 323, PG 32, MARICOPA COUNTY RECORDS

MARICOPA COUNTY, ARIZONA

DRAWN BY:	SPB	DATE:	7/22/96
CHECKED BY:	JGS	DRAWING:	1384
JOB NO. 8156.002.02		SHEET 1 OF	1

FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

2801 West Durango Street · Phoenix, Arizona 85009
Telephone: (602) 506-1501
Fax: (602) 506-4601
TT: (602) 506-5897

COVER SHEET

TO: FRANK BROWN, P.E.

Company or Department: McLAUGHLIN KMETTY ENGINEERS, LTD. **Fax #** 9-1-602-248-7851

FROM: HASAN MUSHTAQ

Number of pages being sent including Cover Sheet: 3 (THREE).

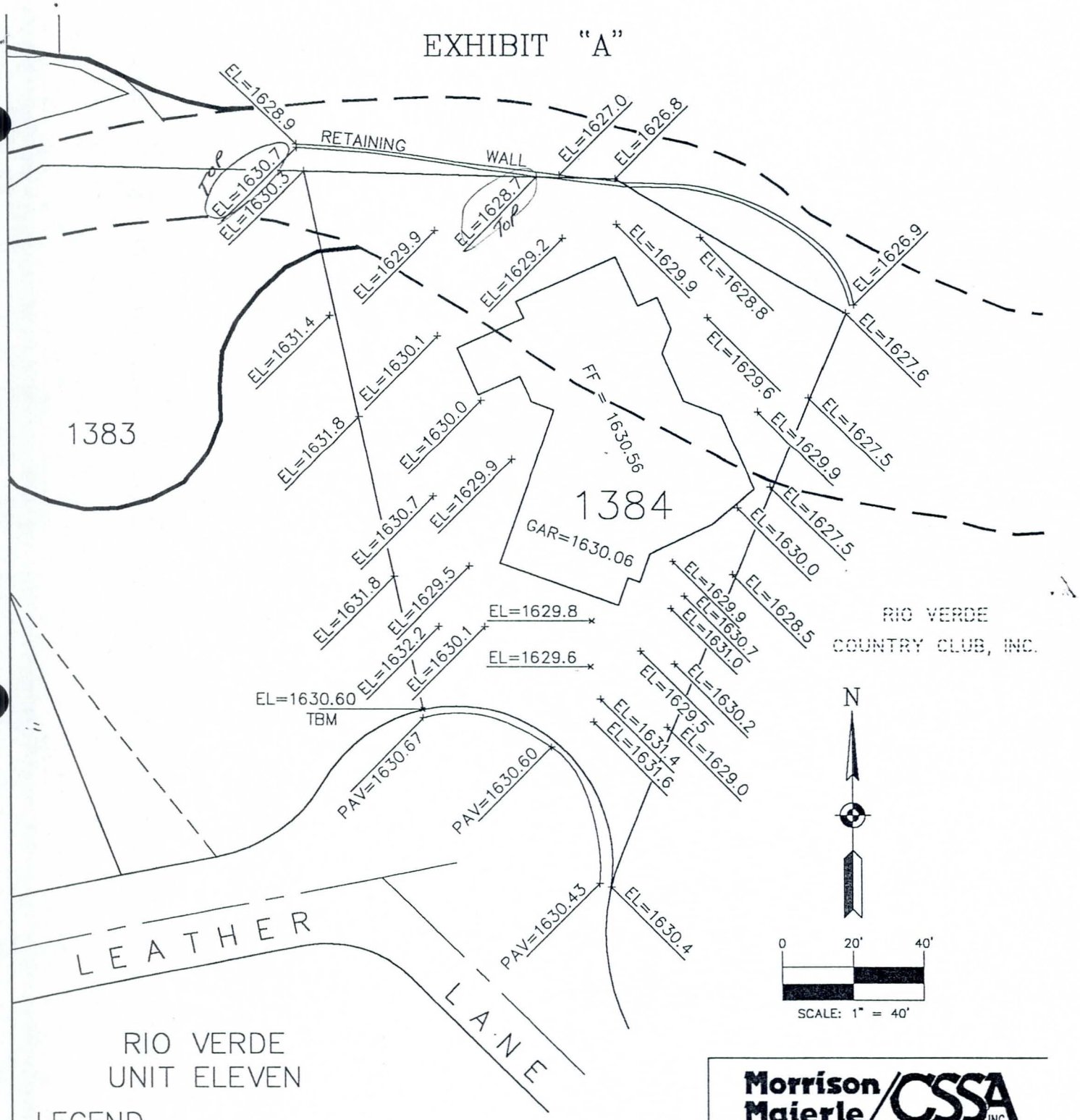
Comments:

PLEASE GIVE ME A CALL WHEN YOU RECEIVE THIS FAX.

THANKS.

HMushtaq

EXHIBIT "A"



RIO VERDE
UNIT ELEVEN

LEGEND

PAV=1650.24	PAVEMENT ELEVATION
EL=1651.9	GROUND ELEVATION
FF =	FINISH FLOOR ELEVATION
GAR =	GARAGE FLOOR ELEVATION
- - - - - -	FLOOD WAY LIMITS
———	FLOOD PLAIN LIMITS
TBM	TEMPORARY BENCH MARK: TOP PROPERTY CORNER

Morrison Maierle / CSSA INC.
4621 N. 16th St. Suite D-401
Phoenix, Arizona, 85016
(602) 277 2828

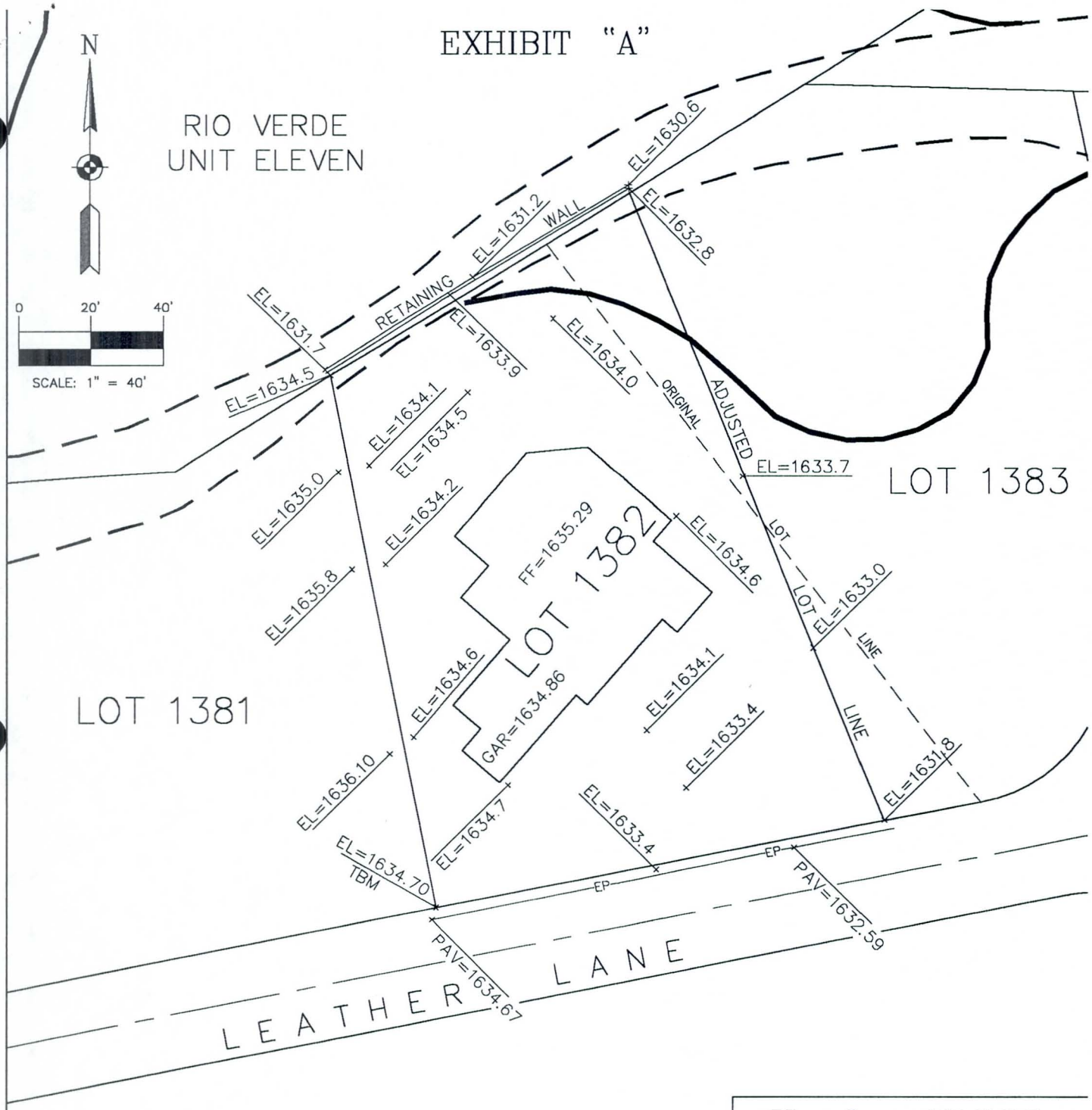
LOT 1384
RIO VERDE UNIT ELEVEN

AS SHOWN IN BK 323, PG 32
MARICOPA COUNTY RECORDS

MARICOPA COUNTY, ARIZONA

DRAWN BY:	SPB	DATE:	7/22/96
CHECKED BY:	JGS	DRAWING:	1384
JOB NO. 8156.002.02		SHEET 1 OF	1

EXHIBIT "A"



LEGEND

PAV=1650.24	PAVEMENT ELEVATION
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GAR =	GARAGE FLOOR ELEVATION
- - - - - -	FLOOD WAY LIMITS
———	FLOOD PLAIN LIMITS
TBM	TEMPORARY BENCH MARK: TOP PROPERTY CORNER

Morrison Maierle / CSSA INC.
4621 N. 16th St. Suite D-401
Phoenix, Arizona, 85016
(602) 277 2828

LOT 1382
RIO VERDE UNIT ELEVEN
AS SHOWN IN BK 323, PG 32
MARICOPA COUNTY RECORDS

MARICOPA COUNTY,			ARIZONA
DRAWN BY:	SPB	DATE:	7/22/96
CHECKED BY:	JGS	DRAWING:	1382
JOB NO. 8156.002.02		SHEET 1 OF 1	

****
*** ACTIVITY REPORT ***
****

TRANSMISSION OK

TX/RX NO.	9696
CONNECTION TEL	916022487851
CONNECTION ID	
START TIME	07/24 12:28
USAGE TIME	01'21
PAGES	3
RESULT	OK

no date

Frank E. Brown, P.E.
McLaughlin Kmetty Engineers, Ltd.
3501 North 16th Street
Phoenix, Arizona 85016-6419

SUBJECT : Rio Verde South FDS : Request to revise floodplain delineation on SHEET 5.

Dear Mr. Brown :

We are recommending a revision of the delineated floodplain in Wash 10 between cross-sections **0.895** and **1.096**. It is found that the higher discharge of **1890.0 cfs.** is carried upstream, for delineation purposes, up to cross-section **1.096**. Alternatively, it is argued that the subwatershed 510E contributes, through a defined channel, to the concentration point **CP543** (approximately downstream of cross-section **0.895**). So, the lower discharge of **1430.0 cfs.** (at cross-section **1.108**) may be carried downstream, for delineation purposes, up to cross-section **0.895** in the HEC-2 modeling.

Therefore, it is requested that the area in concern be re-analyzed and the floodplain be revised accordingly. If you have further questions, please do not hesitate to contact me at 506-1501.
Sincerely,

Hasan Mushtaq
Hydrologist

Coord : AMM JT PAC DRJ EAR HM

Info : HM

P= 1653.63
FW= 1653.70
Q= 1430.00
FP= 1644.99
FW= 1644.87
Q= 1890.00
FP= 1642.03
FW= 1642.07
Q= 1890.00
FP= 1622.05
FW= 1622.05
Q= 1890.00
FP= 1611.26
1611.26
SEC 6
SEC 31
ERM #8
Ray
Horseshoe
Bend
Trails
Lembitu
1.200
1.117
1.108
1.100
1.086
1.074
1.034
1.000
0.949
0.900
0.895
0.861
0.838
0.829
0.800
0.734
1652
1650
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1642
1640
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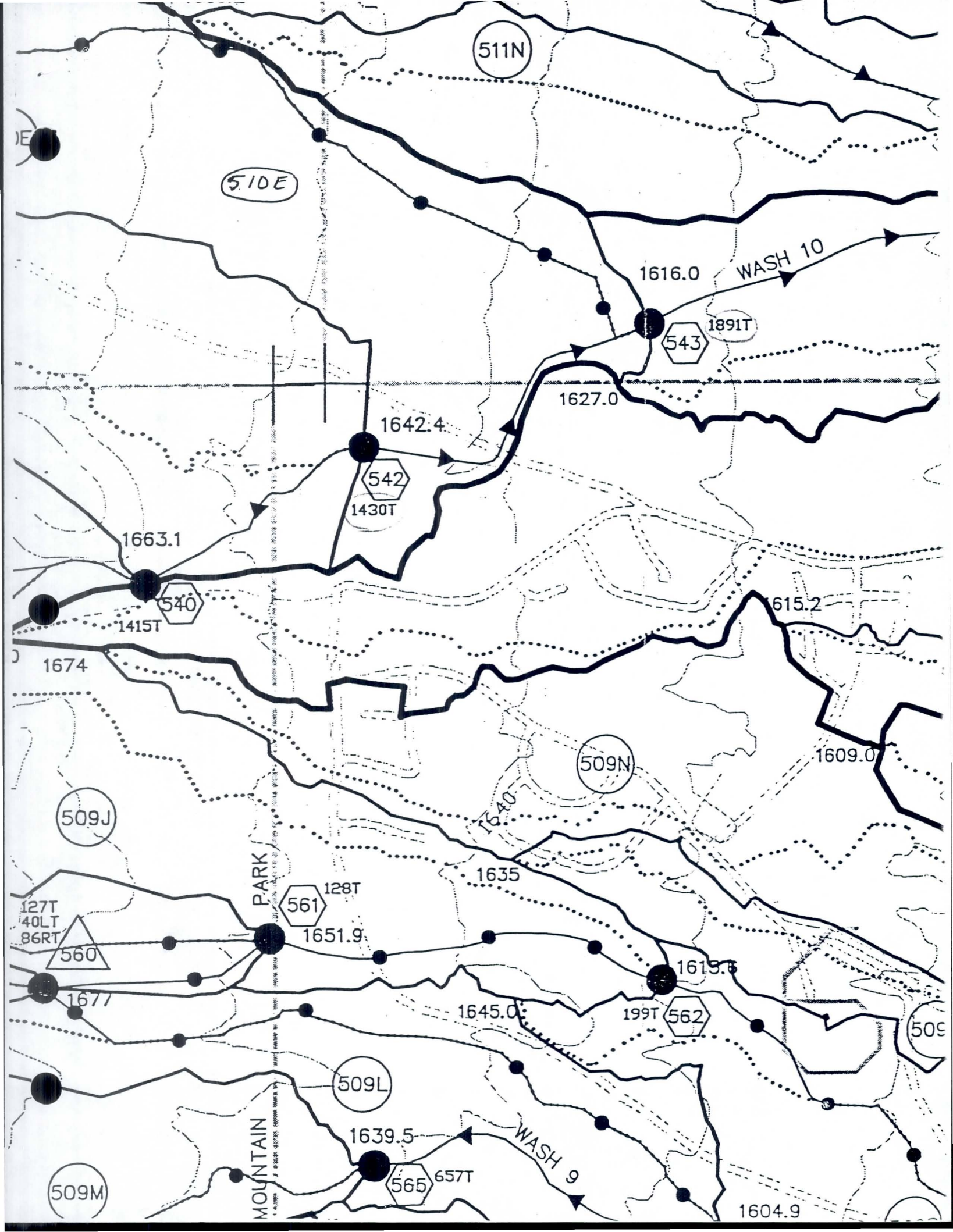
1616
1612
1609


511N
510E
1616.0
WASH 10
1891T
543
1627.0
1642.4
542
1430T
1663.1
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1415T
1674
615.2
509N
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1640
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PARK
561
128T
127T
40LT
86RT
560
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1677
1615.5
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199T
562
509
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WASH 9
565
657T
509M
MOUNTAIN
1604.9

FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY
2801 West Durango Street
Phoenix, Arizona 85009

(602) 506-1501

LETTER OF TRANSMITTAL

DATE 5/8/96	JOB NO.
ATTENTION JAMES G. SPRING, P.L.S. / JOHN J. HEINECKE, P.E.	
RE: RIO VERDE SOUTH FDS	

TO JAMES G. SPRING, P.L.S. / JOHN J. HEINECKE, P.E.
MORRISON MAIERLE, INC / MM / SSA.
1621 N. 16TH ST. # D-101
PHOENIX, AZ 85016.

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ DISKS

COPIES	DATE	NO.	DESCRIPTION
1	5/8/96	1	TWO 3½" DISKS w/ SHEETS INFORMATION, TOPOGRAPHY,
			APPROXIMATE FLOODPLAIN, AND DETAILED FLOODPLAIN & FLOODWAY

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

COPY TO PAC / RPH

SIGNED: Anne Stag

6910-009 R8-93

If enclosures are not as noted, kindly notify us at once.

Date: May 8, 1996

Subject: Rio Verde Floodplain Elevation Certification Survey

The following survey and related work is being requested done for residences shown colored on the Rio Verde South Floodplain Study Maps:

1) Locate and reference the nearest NGVD (or other District approved) Benchmark(s) w/respect to the properties for which surveying is requested.

2) Provide on-lot T.B.M.'s and spot elevations for each residence, including the following information:

A. Lowest floor elevations, including basements
B. High and low points on lot.
C. Lowest grade adjacent to the residence
D. Lot corner elevations
E. Any additional field elevations which are field-identified as pertinent

3) Provide and 8 & ½" x 11" Plot Plan for each residence showing the above elevations and the following information:

A. Location of the residence w/respect to property lines.
B. Labeled Floodplain boundary delineation.
C. Legal Description
D. Legend, including map scale and north arrow.
E. Engineer's or Surveyor's seal.

4) Provide a completed elevation certification form for each site, appropriately sealed or signed.

This work should be competed and submitted to the District within one week of the Notice-to-Proceed.

The District will provide the consultant with necessary location maps, residence address/phone numbers (when possible, otherwise the Homeowners Assn. may provide), etc. Elevation certification forms are available from the District's Floodplain Representatives, James Stewart or Shanna Yeager. Base Flood Elevations will be completed by the District's Floodplain Study Manager, Hasan Mushtaq. The consultant will be expected to notify homeowners regarding the survey work both in writing, and by phone at least 24 hours in advance.

Wash 9

No.	Name	Address	Lot no.	Parcel	Phone	Survey	FIRM	Study
1	Silva, Anthony & Dee	18914 White Wing Dr.	1186	219-55-011	471-7305	No	Yes	No
2	Heckert, Helen & Jack	18826 White Wing Dr.	1190	219-55-015	471-2599	No	Yes	No
3	Faulkner, Lee & Ruth	18820 White Wing Dr.	1191	219-55-016	471-2624	No	Yes	No
4	McDonald, Jim & Jane	18814 White Wing Dr.	1192	219-55-017		No	Yes	No
5	May, Jean & Robert	18808 White Wing Dr.	1193	219-55-018	471-1486	No	Yes	No
6	Eastman, Robert	18802 White Wing Dr.	1194	219-55-019	471-7364	No	Yes	No
7	Bergan, Leonard	18716 White Wing Dr.	1400	219-55--236	471-2006	No	Yes	No
8	Bruns, Judson & Ginny	18708 White Wing Dr.	1399	219-55-235	471-1245	No	Yes	No
9	Weber, Sylvester	18648 White Wing Dr.	1398	219-55-234	471-2329	No	Yes	No
10	DeSchane, Dave & Mary	18636 White Wing Dr.	1397	219-55-238	471-2107	No	Yes	No
11	Gallagher, Patrick & Marilyn	18526 Leather Ln.	1383	219-55-219A	471-0912	Yes	Yes	Susp.
12	Mehalic, Leon & Bonnie	18518 Leather Ln.	1382	219-55-218A	471-2143	No	Yes	No
13	Galoute, Joseph	18510 Leather Ln.	1381	219-55-217	471-1416	No	Yes	No
14	Tindall, Billy E.	18502 Leather Ln.	1380	219-55-216	471-7712	No	Yes	No
15	Elken, John & Connie	25233 N Quail Haven Dr.	1352	219-55-215A	471-1314	Yes	Yes	Yes
16	Guillod, Lu & Rich	25401 N Quail Haven Dr.	581	219-43-499	471-2408	Yes	Yes	No
17	** **NOT FOUND** **	25417 Vado Court				No	No	No
18	** **NOT FOUND** **	18538 Paseo Verde Dr.				No	Yes	No

Wash 10

No.	Name	Address	Lot no.	Parcel	Phone	Survey	FIRM	Study
1	Rangitsch, Lorraine & Glenn	26402 Avenida Del Ray	507 508	219-43-420 219-43-421	471-7071	No	No	Susp.
2	Hearne, Ted & Marjorie	26410 Avenida Del Ray	509	219-43-422	471-7419	Yes	Yes	Susp.
3	Larsen, Corrine	26418 Avenida Del Ray	510	219-43-423	471-7344	Yes	Yes	Susp.
4	Evans, Merry J.	26449 Arroyo Way	511	219-43-424		No	Yes	Susp.
5	Bus, Betty & Richard	26441 Arroyo Way	512	219-43-425	471-7474	Yes	Yes	Susp.
6	Lindgren, Glen & Pat	26433 Arroyo Way	513	219-43-426	471-7420	Yes	Yes	Susp.
7	McNally, Juanie & Jim	26425 Arroyo Way	514	219-43-427	471-9117	Yes	Yes	Susp.
8	Engel, Jack & Doris	26418 Trails End	495	219-43-408	471-7021	No	Yes	No
9	Schiel, Muriel & Frank	26426 Trails End	494	219-43-407	471-2043	No	Yes	No
10	Yuhas, Ron & Jackie	18610 Gemmill Dr.	1427	219-14-027	471-2060	No	Yes	No
11	Ghrist, Jo & Tom	18616 Gemmill Dr.	1426	219-14-026	471-3006	No	Yes	No
12	Sumner, Gordon	18702 Gemmill Dr.	1425	219-14-025	471-7187	No	Yes	No
13	Hamman, paul & Caryl	18712 Gemmill Dr.	1424	219-14-024	471-1512	No	Yes	No
14	Browne, Alvida M.	18724 Gemmill Dr.	1423	219-14-023	471-7224	No	Yes	No
15	Gillman, Dave & Donna	26441 Heron Ln.	1419	219-14-019	471-1189	No	Yes	No
16	Steitzer, Paul & Mavis	18517 Horseshoe Bend S	532	219-43-447	471-1731	Yes	No	No
17	Johnson, Arthur & Ann	18511 Horseshoe Bend S	531	219-43-446	471-2103	Yes	No	Yes
18	Hoeffel, Peter & Judy	18507 Horseshoe Bend S	530	219-43-445	471-1709	Yes	No	Yes
19	Wilson, Rod & Georgia	18503 Horseshoe Bend S	529	219-43-444A	471-1704	Yes	No	Yes

WASH 9

1 18914 WHITE WING DR.
SILVA, TONY & DEE

2 18826 WHITE WING DR
HECKERT, HELEA & JACK

3 18820 WHITE WING DR
FAULKNER, LEE & RUTH

4 18814 WHITE WING DR.
McDONALD, JIM & JANE

5 MAYS, JEAN & BOB
18808, WHITE WING DR.

6 EASTMAN
18802, WHITE WING DR. (?)

7 18716, WHITE WING DR.

8 BRUNS, JUDD & GINNY
18708 WHITE WING DR.

9
18648 WHITE WING DR.

10 DE SCHANE, DAVE & MARY
18636 WHITE WING DR.

11 (1383) 18526 LEATHER LN.

12 (1382) 18518 LEATHER LN.
MEHALIC, LEON & BONNIE.

13 (1381) 18502 LEATHER LN.

14 25233 N. QUAIL DR.
ELKEN, JOHN & CONNIE.

15 (581) 25401 N. QUAIL HAVEN DR.
R.V. 85263
GUILLOD, LU, & RICH

16 25417 VADO COURT

17 18533 DE SOTON CIR CLE
OR
PASEO VERDE DR.

WASH 10

1 RANGITSCH, LORRAINE & GLENN
26402 AVENIDA DEL RAY

2 (509) 26410 AVENIDA DEL RAY
HEARNE, TED & MARJORIE

3 (510) 26518 AVENIDA DEL RAY
26418

M.J. EVANS
4 26449, ARROYO WAY

5
26441 ARROYO WAY

6 (513) 26433 ARROYO WAY
LINDGREN, GLEN & PAT

7 (514) 26425 ARROYO WAY
McNALLY, JUANIE & JIM

8 ENGEL, JACK & DORIS
26418 TRAILS END

9 SCHIELS, MURIEL & FRANK
26426 TRAILS END

10 YUHAS, RON & JACKIE
18610 GEMMILL DR.

11 GHRIST, JO & TOM
18616 GEMMILL DR.

12 SUMNER
18702 GEMMILL DR.

13 HAMMAD, PAUL & CARY L
18712 GEMMILL DR.

14
18724 GEMMILL DR.

15 GILMAN, DAVE & DONNA.
26441 HERON LN.

(16) — See list

17 (531) 18511 HORSESHOE BEND SOUTH
JOHNSON, ART & ANN

18 (530) 18507 HORSESHOE BEND SOUTH
HOEFFEL, PETER & JUDY

19 (529)
18503 HORSESHOE BEND SOUTH

Wash 9

No.	Name	Address	Lot no.	Parcel	Phone	Survey	FIRM	Study
1	Silva, Anthony Tony & Dee	18914 White Wing Dr.	1186	219-55-011	471-7305	No	Yes	No
2	Heckert, Helen & Jack	18826 White Wing Dr.	1190	219-55-015	471-2599	No	Yes	No
3	Faulkner, Lee & Ruth	18820 White Wing Dr.	1191	219-55-016	471-2624	No	Yes	No
4	McDonald, Jim & Jane	18814 White Wing Dr.	1192	219-55-017		No	Yes	No
5	Mays, Jean & Bob Robert	18808 White Wing Dr.	1193	219-55-018	471-1486	No	Yes	No
6	Eastman, Robert	18802 White Wing Dr.	1194	219-55-019	471-7364	No	Yes	No
7	Bergan, Leonard	18716 White Wing Dr.	1400	219-55-236	471-2006	No	Yes	No
8	Bruns, Judd Judson & Ginny	18708 White Wing Dr.	1399	219-55-235	471-1215	No	Yes	No
9	Weber, Sylvester	18648 White Wing Dr.	1398	219-55-234	471-2329	No	Yes	No
10	DeSchane, Dave & Mary	18636 White Wing Dr.	1397	219-55-233	471-2107	No	Yes	No
11	Gallagher, Patrick & Marilyn	18526 Leather Ln.	1383	219-55-219A	471-0912	Yes	Yes	Susp.
12	Mehalic, Leon & Bonnie	18518 Leather Ln.	1382	219-55-218A	471-2143	No	Yes	No
13	Tindall, Billy E.	18502 Leather Ln.	~~1381~~ 1380	219-55-216	471-7712	No	Yes	No
14	Elken, John & Connie	25233 N Quail Haven Dr.	1352	219-55-215A	471-1314	Yes	Yes	Yes
15	Guillod, Lu & Rich	25401 N Quail Haven Dr.	581	219-43-499	471-2408	Yes	Yes	No
16		25417 Vado Court				No	No	No
17		~~18538 DeSoton Cir. OR~~ 18538 Paseo Verde Dr.				No	Yes	No

Galante, Joseph 18510 Leather Ln 1381 219-55-217 471-1416 NO Yes No.

~~18526 is 219-43-514 James Swenson~~

16 Herbert L. Bacon ~~18444 E. Four Peaks Blvd.~~ 471-2096

421

Wash 10

No.	Name	Address	Lot no.	Parcel	Phone	Survey	FIRM	Study
1	Rangitsch, Lorraine & Glenn	26402 Avenida Del Ray	507 508	219-43-420 219-43-421	471-7071	No	No	Yes
2	Hearne, Ted & Marjorie	26410 Avenida Del Ray	509	219-43-422	471-7419	Yes	Yes	Susp.
3	Larsen, Corrine	26518 Avenida Del Ray, OR 26418 Avenida Del Ray	510	219-43-423	471-7344	Yes	Yes	Susp.
4	Evans, M. J. Mary J.	26449 Arroyo Way	511	219-43-424		No	Yes	Susp.
5	Bus, Betty & Richard	26441 Arroyo Way	512	219-43-425	471-7474	Yes	Yes	Susp.
6	Lindgren, Glen & Pat	26433 Arroyo Way	513	219-43-426	471-7420	Yes	Yes	Susp.
7	McNally, Juanie & Jim	26425 Arroyo Way	514	219-43-427	471-9117	Yes	Yes	Susp.
8	Engel, Jack & Doris	26418 Trails End	495	219-43-408	471-7021	No	Yes	No
9	Schiel, Muriel & Frank	26426 Trails End	494	219-43-407	471-2043	No	Yes	No
10	Yuhas, Ron & Jackie	18610 Gemmill Dr.	1427	219-14-027	471-2060	No	Yes	No
11	Ghrist, Jo & Tom	18616 Gemmill Dr.	1426	219-14-026	471-3006	No	Yes	No
12	Sumner, Gordon	18702 Gemmill Dr.	1425	219-14-025	471-7187	No	Yes	No
13	Hamman, paul & Caryl	18712 Gemmill Dr.	1424	219-14-024	471-1512	No	Yes	No
14	Browne, Alvida M.	18724 Gemmill Dr.	1423	219-14-023	471-7224	No	Yes	No
15	Gillman, Dave & Donna	26441 Heron Ln.	1419	219-14-019	471-1189	No	Yes	No
16	Steitzer, Paul & Mavis	18517 Horseshoe Bend S	532	219-43-447	471-1731	Yes	No	No
17	Johnson, Art & Ann Arthur H.	18511 Horseshoe Bend S	531	219-43-446	471-2103	Yes	Yes	Yes
18	Hoeffel, Peter & Judy	18507 Horseshoe Bend S	530	219-43-445	471-1709	Yes	Yes	Yes
19	Wilson, Richard & Georgia Rod	18503 Horseshoe Bend S	529	219-43-444A	471-1704	Yes	Yes	Yes

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
CONTRACT FCD 94-51
RIO VERDE ELEVATION CERTIFICATES
DEA JOB NO. MARI0010

	NO.	PARCEL NO.	OWNER	ADDRESS	PHONE	DATE CONTACTED
509	1.	219-43-422	HEARNE, TED & MARJ	26410 AVENIDA DEL REY	471-7419	2/3/96
510	2.	219-43-423	LARSEN, CORRINE	26518 AVENIDA DEL REY (26418)	471-7344	2/3/96
512	3.	219-43-425	BUS, BETTY & RICHARD ROY	26441 ARROYO WAY	471-7474	2/9/96 LETTER
513	4.	219-43-426	LINDGREN, GLEN & PAT	26433 ARROYO WAY	471-7420	2/3/96
519	5.	219-43-427	McNALLY, JAMES	26425 ARROYO WAY	471-9117	2/4/96
529	6.	219-43-444A	WILSON, RICHARD & GEORGIA	18503 HORSESHOE BEND S.		2/9/96 LETTER
530	7.	219-43-445	HOEFFEL, PETER & JUDITH	18507 HORSESHOE BEND S.	471-1709	2/9/96 LETTER
531	8.	219-43-446	JOHNSON, ANN	18511 HORSESHOE BEND S.		2/9/96 LETTER
532	9.	219-43-447	STEITZER, PAUL & MAVIS	18517 HORSESHOE BEND	471-1731	2/4/96
581	10.	219-43-499	GUILLOD, RICHARD & LUCILLE	25401 N. QUAIL HAVEN DR.		2/9/96 LETTER
1352	11.	219-55-215A	ELKEN, JOHN	25233 N. QUAIL HAVEN DR	471-1314	2/4/96
1383	12.	219-55-219A	GALLAGHER, PATRICK & MARILYNN	18526 LEATHER LN.	471-0912	2/9/96
	13.	219-43-420	RANGITSCH, GLENN & LORRAINE	26248 N. AVENIDA DEL REY	471-7071	NOT YET CONTACTED

C:\MARI10.DOC

Rio Verde Services Inc
PO Box 31001
Rio Verde, AZ 85263

Rio Verde Land Inc
PO Box 1
Scottsdale, AZ 85252

Rio Verde Development, Inc.
PO Box 31002
Rio Verde, AZ 85263

Rio Verde Country Club Inc
PO Box 31432
Rio Verde, AZ 85263

Rio Verde Community Assn
18816 E Four Peaks Blvd
Rio Verde, AZ 85263

Silva
PO Box 31476
Rio Verde, AZ 85263

Restated ?
1320 Elm Cir NE
Fargo, ND 58102

MINNESOTA TITLE CO
1637 Quail Ridge Rd
Saint Paul, MN 55125

MINNESOTA TITLE CO
333 E Osborn Rd #230
Phoenix, AZ 85012

Rio Verde Country Club Inc
PO Box 1
Scottsdale, AZ 85252

E L H A TRADING SERVICE
18510 E Leather Ln
Rio Verde, AZ 85263

De Witts Construction Corp
18523 E Parada Cir
Rio Verde, AZ 85263

ALEXANDER & SONS INC
18934 E Avenida Del Ray
Rio Verde, AZ 85263

ALEXANDER & SONS INC
PO Box 2002
Scottsdale, AZ 85252

Ulrich
18830 E White Wing Dr
Rio Verde, AZ 85263

Beverly Jean Allison
18727 E Avenida Del Ray
Rio Verde, AZ 85263

Roger & Clara Lee Anderson
27001 N Agua Verde Dr
Rio Verde, AZ 85263

Herbert & Laura May Bacon
855 25 Rd
Grand Junction, CO 81505

Gustave & Sharon Bailly
19455 Ironwood Ln
Huntington Beach, CA 92648

William & Gloria Baumann
76-382 Sweet Pea Way
Palm Desert, CA 92260

Leonard Beebe
3226 Walnut St #B
Los Alamos, NM 87544

Leonard & Jacqueline Bergan
18716 E White Wing Dr
Rio Verde, AZ 85263

T Curtis Beverly
1112 Regis Way
Tustin, CA 92680

Jerome & Audry Briggs
6713 Rosemary Ln
Edina, MN 55439

James & Margaret Brinkerhoff
4512 Cottonwood Dr
Ann Arbor, MI 48108

Jack & Mary Brown
20355 NW Rock Creek Blvd
Portland, OR 97229

Alvida Browne
19001 E Poco Rio Dr
Rio Verde, AZ 85263

J[illegible]on & Virginia Bruns Jr.
5[illegible] S Clinton St
Englewood, CO 80111

Michael & Donna Budnick
16511 Walnut Rail Rd
Chesterfield, MO 63005

Betty Bus
240 Wimbledon Ct
West Seneca, NY 14224

Herbert & Mary Susan Bush
25443 N Diablo Ln
Rio Verde, AZ 85263

Kristin Carlson

,

Gary & Guyneth Casey
3002 Tam O Shanter Dr
Hays, KS 67601

Frank & Beverly Davey
3717 Western Pine Dr NE
Cedar Rapids, IA 52402

David & Mary Deschane
84 Paseo Esplendido
Camarillo, CA 93010

Lawrence & Donna DeWitt
28090 Woodside Rd
Shorewood, MN 55331

Family Trust - Dickson
26441 N Arroyo Way
Rio Verde, AZ 85263

Robert & Anne Eastman
18802 E White Wing Dr
Rio Verde, AZ 85263

Robert & Geraldine Edwards
18622 E White Wing Dr
Rio Verde, AZ 85263

John Elken
124 53rd St
Des Moines, IA 50312

Doris Engel
1110 N Jordan Ave
Liberal, KS 67901

Family Trust - Farkouh
PO Box 31211
Rio Verde, AZ 85263

M Jane Ferring
18925 E Latigo Ln
Rio Verde, AZ 85263

George & Elaine Foley
847 Sunrise Blvd
Waterloo, IA 50701

Patrick & Marilynn Gallagher
Rr 1 Box 121
Pequot Lakes, MN 56472

Luigi & Antonietta Galli
18609 E Amarado Cir
Rio Verde, AZ 85263

Thomas & Joan Ghrist
3550 Lincoln Place Dr
Des Moines, IA 50312

Donald & Anna Louise Gibbs
10010 Main St #A109
Bellevue, WA 98004

David & Donna Gillman
26235 N Bravo Ln
Rio Verde, AZ 85263

Harold & Kenneth Griffiths
13337 Holasek Ln
Eden Prairie, MN 55346

Richard & Lucile Guillod
30745 Ivy Glen Ct
Bingham Farms, MI 48025

Paul & Caryl Hamman
PO Box 31267
Rio Verde, AZ 85263

Ted & Marjorie Hearne
PO Box 150
Springerville, AZ 85938

Jackson & Helen Heckert
PO Box 31235
Rio Verde, AZ 85263

Per & Louise Hermanson
25409 N Quail Haven Dr
Rio Verde, AZ 85263

R Leslie & Mary Hilbun
18909 E Latigo Ln
Rio Verde, AZ 85263

Guy Hollenbeck
25436 E Condor Ct
Rio Verde, AZ 85263

William & Ellen Hoover
9[illegible] Fairway Dr
Manhattan, KS 66502

Warren Howland
13025 E Shangri La Rd
Scottsdale, AZ 85259

Margaret Huey
520 Vernon Dr SE
Cedar Rapids, IA 52403

Richard & Barbara Hungerford
18817 E Avenida Del Ray
Rio Verde, AZ 85263

George & Sylvia Ireland
PO Box 146
Prescott, AZ 86302

John Johnsen
5435 Old Pond Way
West Bloomfield, MI 48323

Ann Johnson
PO Box 1396
Fort Dodge, IA 50501

Donald & Donna Kehoe
20095 Inverness Ct
Olympia Fields, IL 60461

John & Mary Killmister
White Lodge Rd St Sa
Wellington,

Edwin & Dixie Kraght
11119 248th Ave NE
Redmond, WA 98053

John & Charlotte Kuhn
25437 E Condor Ct
Rio Verde, AZ 85263

Dean & Mary Jane Kurtz
6149 Timberline Rd W
Rapid City, SD 57702

Corrine Larson
26418 N Avenida Del Ray
Rio Verde, AZ 85263

Gregory & Rebecca Lecy
18508 E Agua Verde Dr
Rio Verde, AZ 85263

Betty Lennox
18719 E Agua Verde Dr
Rio Verde, AZ 85263

Glen & Patricia Anne Lindgren
PO Box 31326
Rio Verde, AZ 85263

Francis & Helen Matthews
101 S 108th Ave
Omaha, NE 68154

Robert & Jean May
18808 E White Wing Dr
Rio Verde, AZ 85263

Carl & Dorothy Mayhugh
18517 E Paseo Verde Dr
Rio Verde, AZ 85263

William & Judith Maze Jr.
1040 Essex Cir
Kalamazoo, MI 49008

James & Doris McDonnel
PO Box 31372
Rio Verde, AZ 85263

Robert McKenzie
1480 Cherry Hill Rd
Mendota Heights, MN 55118

Richard & Mary McKillip
PO Box 823
Fraser, CO 80442

James & Juanell McNally
12 Via Candelaria
Coto De Caza, CA 92679

Peter Leon & Bonnie Mehalic
PO Box 39
Barrington, IL 60011

Dennis & Terri Meyers
17502 E Cayuga Ln
Fountain Hill, AZ 85268

Riley & Mary Meyers
1020 Bertram Dr
Freeport, IL 61032

James & Laura Miles
3790 Northome Rd
Wayzata, MN 55391

James & Marlene Miller
16517 E Gunsight Dr #6
Fountain Hill, AZ 85268

Thomas & Jean Miller
PO Box 17688
Fountain Hill, AZ 85269

William & Elizabeth Neish
20429 N Trails End
Rio Verde, AZ 85263

Richard Neslund
578 Harrington Rd
Wayzata, MN 55391

Richard & Marianne Nordholm
25437 N Diablo Ln
Rio Verde, AZ 85263

Robert Norris
614 Marion Ave
Saint Charles, IL 60174

Carola Palm
26410 N Trails End
Rio Verde, AZ 85263

Rolland & Mary Patenge
5438 Park Lake Rd
East Lansing, MI 48823

John & Joanne Podjasek Jr.
413 Deer Trail Hl
Barrington, IL 60010

Verl Ray & Donna Pummill
11071 E Running Deer Trl
Scottsdale, AZ 85255

Edward & Rosalia Quiroz
357 E Monte Vista Rd
Phoenix, AZ 85004

Glenn & Lorraine Rangitsch
26402 N Avenida Del Ray
Rio Verde, AZ 85263

Julian & Virginia Raper Jr.
8518 E De La O Rd
Scottsdale, AZ 85255

Susan Reed
3200 W Calhoun Pky #202
Minneapolis, MN 55416

James Riley Jr.
18629 E Avenida Del Ray
Rio Verde, AZ 85263

William & Betty Ritchie
18549 E Paseo Verde Dr
Rio Verde, AZ 85263

Alan & Doris Robertson
10114 W Riviera Dr
Sun City, AZ 85351

Henry & Betty Sausen
3005 Rolaine Pky
Hartford, WI 53027

Frank & Muriel Schiel
26426 N Trails End
Rio Verde, AZ 85263

Austin & Therese Schill
PO Box 32100
Rio Verde, AZ 85263

Eric Schuster
18713 E Picacho Rd
Rio Verde, AZ 85263

Theodore & Edith Scolman
198 El Viento St
Los Alamos, NM 87544

L W Shortell
18841 E Latigo Ln
Rio Verde, AZ 85263

Ronnie Sonnenburg
5 Windy Pt
Rock Island, IL 61201

David & Carolyn Sorlie
4180 Enchanted Ln
Minnetrista, MN 55364

Gordon & Gail Sumner
5313 Old Stump Dr NW
Gig Harbor, WA 98332

Gilbert Thompson
1413 Burning Wood Way
Madison, WI 53704

John & Elaine Thompson
3917 Overlook Dr
Bloomington, MN 55437

Family Trust -Tindall
PO Box 31496
Rio Verde, AZ 85263

Sylvester & Anna Weber
65345 E Canyon Dr
Tucson, AZ 85739

Donald White
11745 S Holmes Ave
Palos Park, IL 60464

Glenn & Margaret Wilson
18849 E Latigo Ln
Rio Verde, AZ 85263

Richard & Georgia Wilson
9[illegible] Newcomb Ave
Whittier, CA 90603

Fred & Antonia Winckler
2489 Hickory Glen Dr
Bloomfield Hills, MI 48304

Ronald & Jacqueline Yuhas
19373 Peachtree Cir
Huntington Beach, CA 92648

Rio Verde South 30 April 96

NAME	PHONE	AFFILIATION
HASAN MUSHTAQ	506-1501	FCD
Frank Brown	248-7702	MKE, Ltd
Ron Kleuitt		FCD
Dave Johnson		FCD
PEDRO CALZA		FCD

1. Field Trip w/ Ron
2. Finalize # of houses and/or plats to be surveyed.
3. Survey Information
4. Provide survey info. to Frank.

CERTIFICATE OF PERFORMANCE OF ENGINEERING CONTRACT

AND PAYMENT OF ALL CLAIMS

LARRY J. WOODLAIN hereby certifies to the Flood Control District of Maricopa County (DISTRICT) that all lawful claims for labor, rental of equipment, material used, and any other claims by Burgess & Niple, Inc. or its subcontractors in connection with the project described in DISTRICT Contract FCD 93-06 have been paid.

Burgess & Niple, Inc. understands that with receipt of payment for previously invoiced amounts plus any retained funds, that this is a settlement of all claims of every nature and kind against the DISTRICT arising out of the performance of the DISTRICT's **Contract FCD 93-06, for the Rio Verde North Floodplain Delineation Study**, relating to the material, equipment, and work covered in and required by the contract.

The undersigned hereby certifies that to his/her knowledge, no contractual disputes exist in regard to this contract and that he/she has no knowledge of any pending or potential claims in regard to this contract.

Upon submission of this document and a separate invoice for any retained funds to the DISTRICT, invoice processing will be completed within forty-five (45) calendar days.

State of Arizona)
)ss.
County of Maricopa)

Signed this 22nd day of April, 1996.

Larry J. Woodlain
Signature

Title: PRESIDENT

SUBSCRIBED AND SWORN TO before me this 22nd day of April, 1996.

Peggy Russman
Notary Public

My Commission Expires: Nov. 19, 1996

OFFICIAL SEAL
PEGGY RUSSMAN
NOTARY PUBLIC - ARIZONA
MARICOPA COUNTY
My Comm. Expires 11/19/96

FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY
2801 West Durango Street
Phoenix, Arizona 85009

(602) 506-1501

LETTER OF TRANSMITTAL

DATE 1/11/96	JOB NO.
ATTENTION THOMAS J. LUTE.	
RE: RIO VERDE SOUTH	

TO THOMAS J. LUTE, R.L.S.
DEA

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	1/11/96		3 3½" DISK w/ RIO VERDE SOUTH TOPO INFORMATION
1	1/11/96		1 3½ " w/ PKZIP PROGRAM.

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

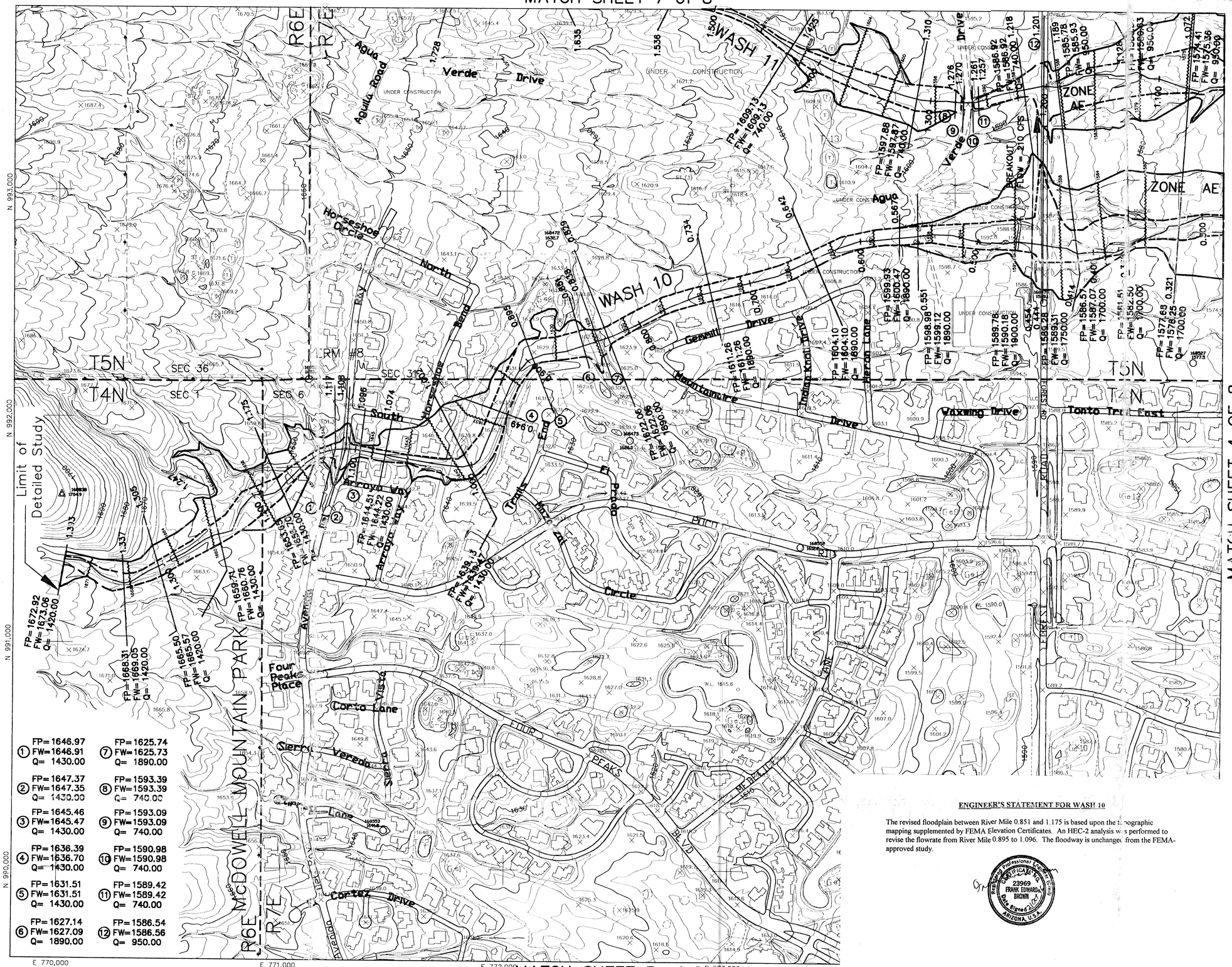
COPY TO RPH

SIGNED: [signature]

6910-009 R8-93

If enclosures are not as noted, kindly notify us at once.

MATCH SHEET 7 of 8



MATCH SHEET 3 of 8

MATCH SHEET 4 OF 8

AERIAL MAPPING COMPANY, INC.
SURVEYING AND PHOTOGRAMMETRY
FLIGHT DATE: 12-22-1993 & 08-22-94

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS
1"= 200' HORIZONTAL SCALE AND 2' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY
DATA PROVIDED BY BURGESS AND NIPLE, INC. AND ALCOCER LAND SURVEYORS

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF

RIO VERDE SOUTH

F.C.D. CONTRACT NO. 93-07

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE & RIVER MILE	2.0
CROSS SECTION	FP=100 Yr WSEL; FW=Floodway WSEL; Q=100 Yr Flow; 5.519
ELEVATION REFERENCE MARK	ERM #2
BASE FLOOD ELEVATIONS	1221
ZONE DESIGNATIONS	ZONE AE
INDIAN RESERVATION LIMITS	
SECTION LINE	

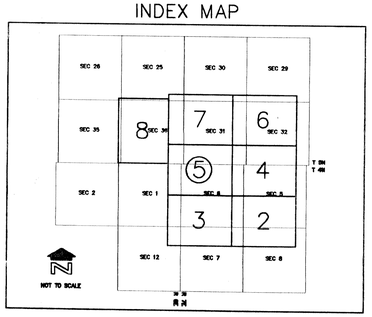
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

I.D. NUM.	ELEV. (FT)	DESCRIPTION/LOCATION
ERM#8	1654.130	THIS STATION IS LOCATED AT THE SOUTHEAST CORNER OF SECTION 36 T5N, R6E. THE MARK IS A G.L.O. BRASS CAP.

NOTES

INDEX MAP



200 0' 200 400
SCALE: 1"= 200'
CONTOUR INTERVAL = 2' FEET

ENGINEER'S STATEMENT FOR WASH 10

The revised floodplain between River Mile 0.851 and 1.175 is based upon the topographic mapping supplemented by FEMA Elevation Certificates. An HEC-2 analysis was performed to revise the flowrate from River Mile 0.895 to 1.096. The floodway is unchanged from the FEMA-approved study.

Registered Professional Engineer (Civil) CERTIFICATE NO. 23969 FRANK EDWARD BROWN Date Signed 4-7-95 ARIZONA, U.S.A.

McLAUGHLIN KMETTY ENGINEERS, LTD.

	BY	DATE
DESIGN	FEB	7/94
DESIGN CHK.	FCDMC	8/94
PLANS	BKE,RLP	9/95
PLANS CHK.	FEB	9/95
SUBMITTED BY:		DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 5 OF 8

Dwg. Name: \P.89407003\ACAD\SHEET5.dwg
Date: REV. SEPT. 26, 1995 11:19 am

```
1*****************************************
 *  HEC-2 WATER SURFACE PROFILES          *
 *                                        *
 *  Version   4.6.2;  May 1991            *
 *                                        *
 *  RUN DATE    21OCT96    TIME   15:07:13 *
 *****************************************
```

```
*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  HYDROLOGIC ENGINEERING CENTER    *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616-4687     *
*          (916) 756-1104           *
*************************************
```

This is not the FEMA-approved study. The flowrate from River Mile 0.895 to 1.096 has been modified. See 21 October 96 letter from McLaughlin Kmetty Engineers to FCDMC (Hasan Mushtaq).
Starting WSEL based upon Cross section 0.551

```
X     X  XXXXXXX   XXXXX            XXXXX
X     X  X        X    X           X    X
X     X  X        X                     X
XXXXXXX  XXXX     X         XXXXX   XXXXX
X     X  X        X                X
X     X  X        X    X           X
X     X  XXXXXXX   XXXXX            XXXXXXX
```

1

21OCT96 15:07:13 PAGE 1

THIS RUN EXECUTED 21OCT96 15:07:13

```
*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************
```

```
T1   *  Rio Verde South FIS, Wash 10                    File:FCDMCW10.IH2
T2   *  For: FCDMC #       93-07     By:   MKE, Ltd.    FB,EEK,CLJ 8-23-94
T3   *  Wash 10,100-Yr Floodplain              Revised:   6-21-96 AND 10-21-96
T4   *  GR data taken from stereo model; received on 9-7-94 from AMC
T5   *  200 scale 2 ft CI mapping flown by AMC on 12-22-93 and 8-22-94
T6   *  with survey control by Burgess & Niple on 10-21-93; 11-9-93; 12-9-93
T7   *  supplemental cross section data (GR & BT) surveyed by ALS as noted.
T8   *  Source of 100-Yr flowrate from HEC-1 Analysis by GVSCE. Table F-3
T9   *                              Subcritical analysis.
T9   *  Main Hec-2 analysis for Wash 10.
T9   *
T9   *
T9   *  See comment records for Cross section 0.551
```

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	2	0	0	0	0	0	0	1598.98	0

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1	0	-1	0	0	0	-1	0	0	0

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

150 200

START Hydraulically Similar Reach 10B

GR records removed from station 9814.0 to station 9944.6
and from station 10058.3 to station 10237.1
to restrict flow to effective area without X3 records.

```
QT        2       1890       1890

ET                           9.1                                                    9965.69    10034.71

NC    0.055       0.05       0.03       0.1        0.3

1
   21OCT96      15:07:13                                                                          PAGE    2

        This is not the FEMA-approved study.  The flowrate from River Mile
        0.895 to 1.096 has been modified.  See 21 October 96 letter
        from McLaughlin Kmetty Engineers to FCDMC (Hasan Mushtaq).
       Starting WSEL based upon Cross section 0.551

        START Hydraulically Similar Reach 10B
        GR records removed from station  9814.0   to station     9944.6
                and from station 10058.3   to station    10237.1
                to restrict flow to effective area without X3 records.
X1    0.551        12     9965.7    10034.7        515        515     516.47
GR   1598.9    9944.6     1596.3     9961.7     1598.9     9965.7     1598.7     9974.1     1594.8     9981.5
GR   1594.1    9999.9     1594.1    10000.0     1594.4    10014.8     1598.8    10020.9     1599.1    10034.7
GR   1595.9   10038.8     1599.1    10058.3

          Cross section 0.567 has been added in order to include the end
          of the channel wall which contains flow in the wash. The
          information was obtained from topo data.

ET                           9.1                                                    9957.29    10030.41

          Cross section 0.567 has been added in order to include the end
          of the channel wall which contains flow in the wash. The GR
          information was obtained from topo data.
X1    0.567         9     9957.3    10030.4         90         90      82.3
GR   1600.7    9896.4      1600     9930.7      1600     9957.3      1596     9957.4       1596     9969.7
GR   1595.5     10000      1596    10030.3      1600    10030.4      1602    10090.7

ET                           9.1                                                    9957.89    10029.21

X1    0.642        39     9957.9    10029.2        410        390       400
GR   1610.7    9747.6     1611.6     9759.7     1612.3     9772.8     1611.4     9787.4     1610.4     9798.9
GR   1609.2    9812.7     1609.3     9823.9     1609.8     9838.6     1610.6     9854.8     1611.0     9862.2
GR   1611.4    9870.6     1611.0     9890.3     1608.1     9904.1     1607.7     9916.0     1605.9     9924.6
GR   1605.0    9932.3     1606.6     9941.7     1607.2     9951.4     1607.2     9957.9     1601.6     9960.6
GR   1600.9    9998.0     1600.7    10000.0     1601.2    10024.0     1607.4    10029.2     1607.5    10038.0
GR   1608.7   10048.8     1609.1    10058.1     1607.9    10066.5     1607.7    10146.7     1607.5    10169.5
GR   1607.2   10173.1     1607.5    10184.9     1607.2    10196.1     1607.6    10213.5     1606.9    10233.0
GR   1606.2   10248.4     1607.2    10262.7     1607.2    10294.5     1606.6    10312.1        0.0        0.0

ET                           9.1                                                    9962.69    10037.71

X1    0.734        36     9962.7    10037.7        475        495     486.51
GR   1620.4    9733.4     1620.0     9758.2     1619.4     9783.0     1619.3     9798.5     1619.2     9809.2
GR   1618.9    9825.8     1618.7     9841.7     1618.3     9865.2     1618.0     9889.8     1617.4     9903.9
GR   1616.7    9910.5     1614.9     9914.7     1615.1     9918.7     1617.0     9921.8     1617.5     9927.8
GR   1617.6    9940.7     1617.2     9955.5     1616.5     9962.7     1609.0     9968.9     1608.1     9987.1
GR   1607.9   10000.0     1608.2    10015.4     1608.7    10032.8     1615.1    10037.7     1615.8    10054.5
GR   1616.1   10065.3     1616.3    10135.8     1616.8    10146.4     1617.8    10158.5     1616.9    10164.8
GR   1616.3   10167.8     1616.7    10180.4     1616.7    10193.2     1616.1    10213.8     1616.2    10237.9
GR   1616.2   10238.2        0.0        0.0        0.0        0.0        0.0        0.0        0.0        0.0

1
   21OCT96      15:07:13                                                                          PAGE    3
```

```
QT       2      1890      1890

ET                         9.1                                                    9961.99   10038.51

X1    0.829        32      9962   10038.5       505       480    499.88
GR   1629.3    9595.4    1629.1    9638.9    1629.1    9682.5    1627.8    9722.1    1627.5    9763.8
GR   1627.1    9790.3    1625.8    9812.8    1626.1    9846.5    1626.4    9882.1    1625.5    9919.1
GR   1624.8    9945.0    1624.6    9962.0    1622.0    9966.7    1618.4    9967.2    1618.8    9987.5
GR   1619.8   10000.0    1619.8   10012.8    1619.5   10031.5    1619.0   10035.9    1619.3   10037.9
GR   1624.0   10038.5    1623.8   10050.2    1623.5   10076.2    1623.9   10116.8    1624.8   10152.7
GR   1624.6   10176.7    1625.5   10213.5    1625.0   10243.2    1625.1   10280.0    1627.0   10303.0
GR   1626.6   10329.4    1626.4   10334.6       0.0       0.0       0.0       0.0       0.0       0.0

    START Hydraulically Similar Reach 10C

ET                         9.1                                                    9947.4    10063.71

NC    0.065    0.065      0.03

         START Hydraulically Similar Reach 10C
X1    0.838        18    9947.4   10063.7        46        46     46.26
GR   1628.3    9777.9    1627.4    9796.9    1628.1    9833.3    1627.4    9867.4    1626.0    9899.6
GR   1626.2    9925.7    1625.6    9947.4    1624.1    9959.4    1623.6    9969.5    1623.5    9997.0
GR   1623.3   10000.0    1622.8   10031.0    1623.8   10046.5    1625.8   10063.7    1627.2   10089.1
GR   1627.8   10120.0    1628.0   10156.6    1626.7   10176.3       0.0       0.0       0.0       0.0

ET                         9.1                                                    9932.49   10043.12

X1    0.851        17    9932.5   10043.1        70        73     71.26
GR   1631.0    9779.3    1630.9    9811.4    1630.9    9834.6    1629.9    9849.4    1628.6    9865.1
GR   1627.1    9902.0    1626.8    9932.5    1624.9    9954.0    1624.7    9983.5    1624.6   10000.0
GR   1624.7   10028.8    1626.1   10043.1    1628.0   10058.4    1629.3   10073.6    1629.0   10094.0
GR   1628.7   10116.7    1628.9   10117.4       0.0       0.0       0.0       0.0       0.0       0.0

    HEC-1 Concentration Point C543      (upstream of tributary)

QT       2      1430      1430

         GR records removed from station 10049.3   to station    10256.4
                 to restrict flow to effective area without X3 records.

ET                         9.1                                                    9900.89   10029.12

         HEC-1 Concentration Point C543 (upstream of tributary)
         This flowrate has been revised from the FEMA-approved study
1
   21OCT96      15:07:13                                                                    PAGE    4

         in order to better reflect the tributary inflow.  See 21 Oct 96 letter
         GR records removed from station 10049.3   to station    10256.4
                 to restrict flow to effective area without X3 records.
X1    0.895        14    9900.9   10029.1       234       230    232.15
GR   1634.8    9789.8    1634.4    9822.0    1634.2    9842.8    1632.6    9859.7    1632.0    9884.1
GR   1632.1    9900.9    1630.3    9922.2    1629.4    9944.7    1630.0    9977.1    1629.4   10000.0
GR   1629.5   10019.2    1631.3   10029.1    1633.3   10039.8    1633.6   10049.3

         GR records removed from station 10043.7   to station    10130.1
                 to restrict flow to effective area without X3 records.
           GR station 10043.71 added to allow for ET station.

ET                         9.1                                                    9967.59   10043.71

         GR records removed from station 10043.7   to station    10130.1
                 to restrict flow to effective area without X3 records.
```

```
          GR station 10043.71 added to allow for ET station.
X1    0.949        14     9967.6    10043.7       320       260     284.12
GR   1642.6    9798.1    1638.9     9817.5    1637.2    9831.0     1636.3    9846.0    1636.6    9871.0
GR   1636.3    9886.4    1635.7     9908.8    1635.2    9925.7     1634.5    9940.7    1634.6    9967.6
GR   1633.6   10000.0    1634.7    10027.0    1637.7   10043.7     1637.7   10043.71

        GR records removed from station  9636.4   to station    9909.6
                       and from station 10077.4   to station   10427.8
                 to restrict flow to effective area without X3 records.


ET                          9.1                                                          9952.89   10056.12

        GR records removed from station  9636.4   to station    9909.6
                       and from station 10077.4   to station   10427.8
                 to restrict flow to effective area without X3 records.
X1    1.002        15     9952.9    10056.1       260       300     278.57
GR   1640.2    9909.6    1639.4     9915.4    1638.2    9919.0     1637.9    9928.6    1638.0    9940.3
GR   1637.7    9952.9    1637.1     9967.1    1637.2    9995.7     1637.1   10000.0    1637.1   10024.6
GR   1636.9   10037.1    1638.5    10049.1    1639.7   10056.1     1640.6   10064.0    1640.9   10077.4

        GR records removed from station  9820.4   to station    9864.6
                 to restrict flow to effective area without X3 records.


ET                          9.1                                                          9980.99   10027.41

        GR records removed from station  9820.4   to station    9864.6
                 to restrict flow to effective area without X3 records.
X1    1.074        17     9981      10027.4       364       364     382.98
GR   1645.5    9864.6    1644.4     9879.6    1643.9    9903.1     1643.7    9922.3    1643.9    9946.8
GR   1643.7    9966.4    1643.0     9981.0    1641.5    9991.6     1640.7   10000.0    1640.5   10015.3
GR   1641.3   10027.4    1644.1    10028.9    1646.3   10044.3     1648.1   10113.9    1647.4   10132.5
GR   1646.2   10148.0    1646.1    10169.9
```



```
ET                          9.1                                                          9985.99   10024.71

X1    1.096        20      9986     10024.7       115       112     113.64
GR   1648.4    9823.7    1649.0     9848.3    1648.7    9863.9     1648.2    9884.7    1648.3    9899.3
GR   1648.1    9914.6    1647.7     9975.7    1645.2    9986.0     1643.9    9991.2    1642.4    9993.9
GR   1641.2   10000.0    1641.2    10012.2    1641.7   10024.2     1645.8   10024.7    1646.8   10041.9
GR   1648.2   10055.7    1648.8    10112.4    1648.4   10128.8     1647.5   10147.3    1647.2   10168.4

    HEC-1 Concentration Point C542


QT        2       1430       1430

    Dip Crossing at Avenida Del Ray

ET                          9.1                                                          9941.83   10097.09

NC    0.022      0.022      0.022

        HEC-1 Concentration Point C542
        Dip Crossing at Avenida Del Ray
X1    1.108        21     9989.9    10034.3        70        70      66.20
GR   1650.2    9733.5    1650.2     9763.0    1649.9    9797.2     1649.5    9827.1    1649.3    9848.3
GR   1648.5    9866.6    1646.8     9895.4    1644.8    9920.2     1643.8    9943.0    1643.1    9966.0
GR   1642.9    9989.9    1642.6    10000.0    1642.9   10034.3     1643.1   10065.3    1643.9   10094.9
GR   1645.5   10123.8    1646.5    10148.2    1648.1   10181.6     1649.4   10209.2    1650.4   10238.2
GR   1650.6   10265.5       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0

    START Hydraulically Similar Reach 10D
```

```
ET                          9.1                                                                  9980.69    10041.12

NC    0.065       0.055       0.045

          START Hydraulically Similar Reach 10D
X1    1.117          39     9980.7    10041.1         48         45      46.62
GR   1650.3      9729.0     1650.3     9747.1     1650.6     9766.5     1650.8     9784.5     1649.8     9798.9
GR   1650.3      9812.8     1650.6     9834.5     1650.5     9853.1     1649.9     9869.3     1649.5     9888.4
GR   1647.7      9906.4     1647.5     9917.4     1647.3     9932.6     1646.5     9948.0     1646.2     9969.5
GR   1646.0      9980.7     1643.1     9983.3     1643.1    10000.0     1643.5    10024.9     1643.4    10034.8
GR   1646.0     10041.1     1647.5    10055.4     1647.9    10062.7     1646.2    10070.9     1647.7    10085.0
GR   1650.7     10104.2     1650.5    10118.9     1650.7    10138.0     1650.6    10159.9     1650.8    10178.2
GR   1650.7     10191.2     1649.7    10204.8     1650.9    10214.7     1651.5    10223.1     1651.3    10238.8
GR   1650.7     10249.6     1650.9    10261.0     1652.9    10277.6     1652.9    10280.6       0.0        0.0

        GR records removed from station  9956.8   to station    10138.7
                to restrict flow to effective area without X3 records.
          GR station 9956.79  added to allow for ET station.

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ET                          9.1                                                                  9956.79    10023.21

        GR records removed from station  9956.8   to station    10138.7
                to restrict flow to effective area without X3 records.
          GR station 9956.79  added to allow for ET station.
X1    1.175          16     9956.8    10023.2        310        290      303.54
GR   1653.1     9956.79     1653.1     9956.8     1652.8     9965.2     1650.9     9975.1     1650.9     9994.8
GR   1650.7     10000.0     1650.4    10015.1     1652.6    10023.2     1652.8    10034.3     1652.5    10049.2
GR   1652.5     10065.6     1652.9    10083.8     1652.8    10103.3     1653.5    10121.5     1655.0    10131.7
GR   1655.1     10138.7

        GR records removed from station 10090.5   to station    10404.3
                to restrict flow to effective area without X3 records.


ET                          9.1                                                                   9940.3    10035.41

        GR records removed from station 10090.5   to station    10404.3
                to restrict flow to effective area without X3 records.
X1    1.247          27     9975.5    10035.4        330        353      381.10
GR   1665.0      9649.0     1665.4     9664.2     1664.3     9689.1     1663.9     9714.2     1663.4     9744.3
GR   1662.8      9770.5     1661.4     9787.3     1661.2     9809.1     1659.8     9828.4     1657.9     9843.4
GR   1656.9      9854.0     1656.6     9862.4     1658.8     9874.3     1659.1     9885.3     1658.1     9898.6
GR   1657.3      9911.4     1658.0     9926.3     1658.9     9940.3     1659.0     9960.3     1659.0     9975.5
GR   1658.5      9989.8     1657.1    10000.0     1657.3    10018.9     1659.7    10035.4     1659.9    10053.9
GR   1660.2     10070.4     1661.3    10090.5

    HEC-1 Concentration Point C540

        GR records removed from station 10054.1   to station    10334.4
                to restrict flow to effective area without X3 records.


QT        2        1420        1420

ET                          9.1                                                                  9985.19    10041.61

        HEC-1 Concentration Point C540
        GR records removed from station 10054.1   to station    10334.4
                to restrict flow to effective area without X3 records.
X1    1.305          17     9985.2    10041.6        310        300      304.75
GR   1671.2      9767.7     1670.0     9796.5     1669.0     9832.0     1667.8     9862.6     1665.8     9895.2
GR   1665.0      9926.5     1664.0     9955.0     1664.1     9971.8     1664.9     9985.2     1664.1     9993.1
GR   1661.7      9999.8     1662.0    10000.0     1661.6    10013.7     1661.9    10025.7     1666.0    10041.6
GR   1666.9     10053.8     1667.1    10054.1
```

```
        GR records removed from station 10227.3   to station    10278.4
                to restrict flow to effective area without X3 records.
          GR station 10057.31 added to allow for ET station.

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ET                          9.1                                                                  9964.29    10027.31

        GR records removed from station 10227.3   to station    10278.4
                to restrict flow to effective area without X3 records.
          GR station 10057.31 added to allow for ET station.
X1    1.337        17    9982.7   10027.3       162       172    172.96
GR   1675.3    9874.7    1672.5    9887.7    1668.8    9905.4    1666.1    9918.9    1665.4    9931.7
GR   1665.8    9948.2    1665.9    9955.1    1665.0    9963.0    1666.4    9970.0    1666.4    9982.7
GR   1664.4    9992.7    1664.3   10000.0    1664.1   10008.1    1667.9   10010.9    1667.1   10017.1
GR   1668.1   10027.3    1668.1   10027.31

          Photogrammetric cross-section 1.393 is truncated at 10164.3.


ET                          9.1                                                                  9989.69    10020.31

        Photogrammetric cross-section 1.393 is truncated at 10164.3.
X1    1.393        16    9989.7   10020.3       275       285    293.34
GR   1684.2    9939.5    1676.3    9960.1    1670.4    9977.4    1669.3    9989.7    1668.5    9996.5
GR   1668.2   10000.0    1668.7   10013.3    1671.2   10020.3    1672.7   10034.8    1673.0   10050.5
GR   1672.5   10068.9    1671.7   10089.0    1672.2   10108.7    1672.9   10130.5    1674.2   10151.5
GR   1675.6   10164.3


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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


 *PROF 1

 CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

 CCHV=     .100 CEHV=     .300
 *SECNO  .551

 3265 DIVIDED FLOW

 3280 CROSS SECTION       .55 EXTENDED       .12 FEET

 3720 CRITICAL DEPTH ASSUMED
        This is not the FEMA-approved study.  The flowrate from River Mile
        0.895 to 1.096 has been modified.  See 21 October 96 letter
        from McLaughlin Kmetty Engineers to FCDMC (Hasan Mushtaq).
       Starting WSEL based upon Cross section 0.551

        START Hydraulically Similar Reach 10B
        GR records removed from station  9814.0   to station     9944.6
                and from station 10058.3   to station    10237.1
                to restrict flow to effective area without X3 records.
     .551      4.92   1599.02   1599.02   1598.98   1600.11      1.10       .00       .00   1598.90
   1890.0      88.7    1676.9     124.3      29.9     189.5      35.8        .0        .0   1599.10
     .00      2.97      8.85      3.47      .055      .030      .050      .000   1594.10   9944.60
  .008073      515.      516.      515.         0         4         0       .00    109.25  10057.79
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*SECNO  .567

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.71

          Cross section 0.567 has been added in order to include the end
          of the channel wall which contains flow in the wash. The GR
          information was obtained from topo data.
      .567      4.42   1599.92   1598.53       .00   1600.53       .61       .36       .05   1600.00
    1890.0        .0    1890.0       .0        .0     301.2        .0        .5        .2   1600.00
       .00       .00      6.28       .00      .000      .030      .000      .000   1595.50   9957.30
   .002775       90.       82.       90.         2        14         0       .00     73.10  10030.40


*SECNO  .642
1
   21OCT96      15:07:13                                                                          PAGE    9

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .642      3.41   1604.11   1604.11       .00   1605.58      1.47      1.90       .26   1607.20
    1890.0        .0    1890.0       .0        .0     194.2        .0       2.8        .8   1607.40
       .02       .00      9.73       .00      .000      .030      .000      .000   1600.70   9959.39
   .009895      410.      400.      390.         0        15         0       .00     67.05  10026.44


*SECNO  .734
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .734      3.36   1611.26   1611.26       .00   1612.73      1.47      4.81       .00   1616.50
    1890.0        .0    1890.0       .0        .0     194.5        .0       5.0       1.6   1615.10
       .03       .00      9.72       .00      .000      .030      .000      .000   1607.90   9967.03
   .009864      475.      487.      495.         0         5         0       .00     67.73  10034.76


*SECNO  .829
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .829      3.66   1622.06   1622.06       .00   1623.47      1.41      5.08       .01   1624.60
    1890.0        .0    1890.0       .0        .0     198.6        .0       7.2       2.4   1624.00
       .04       .00      9.52       .00      .000      .030      .000      .000   1618.40   9966.58
   .010494      505.      500.      480.         0         8         0       .00     71.67  10038.25


*SECNO  .838
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
         START Hydraulically Similar Reach 10C
      .838      2.94   1625.74   1625.74       .00   1626.75      1.01       .48       .04   1625.60
    1890.0        .1    1889.9       .0        .4     234.7        .0       7.5       2.5   1625.80
       .05       .40      8.05       .00      .065      .030      .000      .000   1622.80   9942.23
   .010330       46.       46.       46.         0        16         0       .00    120.97  10063.21


*SECNO  .851
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .851      2.54   1627.14   1627.14       .00   1628.13       .99       .71       .00   1626.80
    1890.0       4.4    1879.3       6.3       5.9     234.7       4.4       7.9       2.7   1626.10
       .05       .74      8.01      1.44      .065      .030      .065      .000   1624.60   9900.96
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   .009600      70.      71.      73.       0      11       0     .00   150.54  10051.49


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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO  .895
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
        HEC-1 Concentration Point C543 (upstream of tributary)
        This flowrate has been revised from the FEMA-approved study
        in order to better reflect the tributary inflow.  See 21 Oct 96 letter
        GR records removed from station 10049.3   to station    10256.4
                 to restrict flow to effective area without X3 records.
     .895      2.11   1631.51   1631.51       .00   1632.33       .82      2.39       .02   1632.10
   1430.0        .0    1429.9       .1        .0     196.4        .1       9.0       3.4   1631.30
     .06       .00      7.28       .53      .000      .030      .065      .000   1629.40   9907.90
  .011376      234.     232.     230.         0        15         0       .00    122.31  10030.21


*SECNO  .949

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
        GR records removed from station 10043.7   to station    10130.1
                 to restrict flow to effective area without X3 records.
          GR station 10043.71 added to allow for ET station.
     .949      2.79   1636.39   1636.39       .00   1637.22       .83      3.07       .00   1634.60
   1430.0     285.2    1144.8        .0      97.6     142.5        .0      10.5       4.4   1637.70
     .07      2.92      8.03       .00      .065      .030      .000      .000   1633.60   9844.54
  .010003      320.     284.     260.         0        11         0       .00    163.28  10036.40


*SECNO 1.002
        GR records removed from station  9636.4   to station     9909.6
                     and from station 10077.4   to station    10427.8
                 to restrict flow to effective area without X3 records.
    1.002      2.23   1639.13   1639.06       .00   1639.88       .75      2.66       .01   1637.70
   1430.0     101.9    1328.1        .0      41.7     184.8        .0      12.0       5.3   1639.70
     .08      2.44      7.18       .00      .065      .030      .000      .000   1636.90   9916.20
  .009283      260.     279.     300.         2        15         0       .00    136.59  10052.79


*SECNO 1.074
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
        GR records removed from station  9820.4   to station     9864.6
1
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                 to restrict flow to effective area without X3 records.
    1.074      4.00   1644.50   1644.50       .00   1645.54      1.04      2.78       .09   1643.00
   1430.0     101.5    1323.9       4.6      69.8     155.8       3.3      13.9       6.6   1641.30
     .09      1.45      8.50      1.41      .065      .030      .065      .000   1640.50   9878.18
  .005879      364.     383.     364.         0        14         0       .00    153.54  10031.73


*SECNO 1.096

3301 HV CHANGED MORE THAN HVINS
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7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
     1.096      4.26   1645.46   1645.46       .00   1647.22      1.76       .86       .22   1645.20
    1430.0        .1    1429.9       .0        .1    134.3        .0      14.4       6.8   1645.80
       .10       .58     10.65       .00      .065      .030      .000      .000   1641.20   9984.92
   .010011      115.      114.      112.         0         8         0       .00     39.74  10024.66


*SECNO 1.108

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 10.02

         HEC-1 Concentration Point C542
         Dip Crossing at Avenida Del Ray
     1.108      4.77   1647.37   1644.53       .00   1647.42       .04       .02       .17   1642.90
    1430.0     477.2     384.9     567.9     307.1     205.5     369.5      15.2       7.1   1642.90
       .11      1.55      1.87      1.54      .022      .022      .022      .000   1642.60   9885.61
   .000100       70.       66.       70.         2        14         0       .00    280.91  10166.52


*SECNO 1.117

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .11

         START Hydraulically Similar Reach 10D
     1.117      3.87   1646.97   1646.04       .00   1647.61       .64       .01       .18   1646.00
    1430.0      39.0    1379.1      11.9      25.4     211.7       8.8      15.8       7.3   1646.00
       .11      1.54      6.51      1.35      .065      .045      .055      .000   1643.10   9938.88
   .007605       48.       47.       45.         3        14         0       .00    122.51  10078.17


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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO 1.175
3280 CROSS SECTION      1.17 EXTENDED       .55 FEET

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
         GR records removed from station  9956.8   to station    10138.7
                 to restrict flow to effective area without X3 records.
           GR station 9956.79  added to allow for ET station.
     1.175      3.25   1653.65   1653.65       .00   1654.36       .71      3.21       .02   1653.10
    1430.0        .0    1152.1     277.9        .0     156.9      86.4      17.5       8.3   1652.60
       .12       .03      7.34      3.22      .065      .045      .055      .000   1650.40   9956.79
   .015850      310.      304.      290.         0        12         0       .00    165.73  10122.52


*SECNO 1.247
         GR records removed from station 10090.5   to station    10404.3
                 to restrict flow to effective area without X3 records.
     1.247      3.11   1659.71   1659.35       .00   1660.07       .36      5.68       .03   1659.00
    1430.0     848.5     581.5        .0     209.4     100.6        .0      19.8       9.8   1659.70
       .14      4.05      5.78       .03      .065      .045      .055      .000   1656.60   9829.11
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   .015425      330.      381.      353.        4        12         0       .00    207.25  10036.36


*SECNO 1.305

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
        HEC-1 Concentration Point C540
        GR records removed from station 10054.1   to station    10334.4
                to restrict flow to effective area without X3 records.
    1.305      3.90   1665.50   1665.50       .00   1666.40       .90      4.93       .16   1664.90
   1420.0     221.1    1198.9       .0      70.9     146.7        .0      21.6      11.0   1666.00
      .15      3.12      8.17       .00      .065      .045      .000      .000   1661.60   9907.05
   .016764     310.      305.      300.        0        11         0       .00    132.60  10039.65


*SECNO 1.337
3280 CROSS SECTION      1.34 EXTENDED       .20 FEET

        GR records removed from station 10227.3   to station    10278.4
                to restrict flow to effective area without X3 records.
1
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          GR station 10057.31 added to allow for ET station.
    1.337      4.21   1668.31   1667.70       .00   1668.74       .44      2.30       .05   1666.40
   1420.0     743.6     676.4       .0     171.0     109.5        .0      22.6      11.5   1668.10
      .16      4.35      6.18       .03      .065      .045      .000      .000   1664.10   9907.91
   .011258     162.      173.      172.        1        12         0       .00    119.40  10027.31


*SECNO 1.393

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
        Photogrammetric cross-section 1.393 is truncated at 10164.3.
    1.393      4.72   1672.92   1672.92       .00   1673.83       .91      3.15       .14   1669.30
   1420.0     213.1    1060.6     146.3      47.0     123.5      62.0      24.3      12.4   1671.20
      .17      4.53      8.59      2.36      .065      .045      .055      .000   1668.20   9970.02
   .010754     275.      293.      285.        0         8         0       .00    153.44  10130.79


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T1   *  Rio Verde South FIS, Wash 10
T2   *  For: FCDMC #       93-07     By:   MKE, Ltd.
T3   *  Wash 10,100-Yr Floodway
T4   *  GR data taken from stereo model; received on 9-7-94 from AMC
T5   *  200 scale 2 ft CI mapping flown by AMC on 12-22-93 and 8-22-94
T6   *  with survey control by Burgess & Niple on 10-21-93; 11-9-93; 12-9-93
T7   *  supplemental cross section data (GR & BT) surveyed by ALS as noted.
T8   *  Source of 100-Yr flowrate from HEC-1 Analysis by GVSCE. Table F-3
T9   *                                Subcritical analysis.
T9   *  Main Hec-2 analysis for Wash 10.
T9   *
T9   *
T9   *
T9      Floodway Method 1


J1  ICHECK    INQ      NINV      IDIR      STRT     METRIC    HVINS     Q        WSEL       FQ

       0        3         0         0         0         0         0         0   1599.12         0
```

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J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15         0        -1         0         0         0        -1         0         0         0

1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV=     .100 CEHV=     .300
*SECNO  .551
3280 CROSS SECTION       .55 EXTENDED       .02 FEET

3470 ENCROACHMENT STATIONS=     9965.7   10034.7  TYPE=      1  TARGET=       69.020
        This is not the FEMA-approved study.  The flowrate from River Mile
        0.895 to 1.096 has been modified.  See 21 October 96 letter
        from McLaughlin Kmetty Engineers to FCDMC (Hasan Mushtaq).
       Starting WSEL based upon Cross section 0.551

        START Hydraulically Similar Reach 10B
        GR records removed from station  9814.0   to station     9944.6
                and from station 10058.3   to station    10237.1
                to restrict flow to effective area without X3 records.
     .551      5.02   1599.12   1599.10   1599.02   1600.56      1.44       .00       .00   1598.90
   1890.0        .0    1890.0        .0        .0     196.5        .0        .0        .0   1599.10
     .00       .03      9.62       .00      .000      .030      .000      .000   1594.10   9965.69
  .009789     515.      516.      515.         0         4         0       .00     69.01  10034.70

*SECNO  .567

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.31

3470 ENCROACHMENT STATIONS=     9957.3   10030.4  TYPE=      1  TARGET=       73.120
          Cross section 0.567 has been added in order to include the end
          of the channel wall which contains flow in the wash. The GR
          information was obtained from topo data.
     .567      4.97   1600.47   1598.53   1599.92   1600.95       .47       .29       .10   1600.00
   1890.0        .0    1890.0        .0        .0     342.2        .0        .5        .1   1600.00
     .00       .01      5.52       .00      .000      .030      .000      .000   1595.50   9957.29
  .001832      90.       82.       90.         2        14         0       .00     73.11  10030.40

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   21OCT96      15:07:13                                                                                    PAGE   16

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO  .642
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3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9957.9   10029.2  TYPE=      1  TARGET=      71.320
      .642      3.41   1604.10   1604.10   1604.11   1605.58      1.47      1.43       .30   1607.20
    1890.0        .0    1890.0       .0        .0     194.2        .0       3.0        .8   1607.40
       .02       .00      9.73       .00      .000      .030      .000      .000   1600.70   9959.39
   .009908      410.      400.      390.         0        19         0       .00     67.04  10026.44


*SECNO  .734
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9962.7   10037.7  TYPE=      1  TARGET=      75.020
      .734      3.36   1611.26   1611.26   1611.26   1612.73      1.46      4.81       .00   1616.50
    1890.0        .0    1890.0       .0        .0     194.6        .0       5.1       1.5   1615.10
       .03       .00      9.71       .00      .000      .030      .000      .000   1607.90   9967.03
   .009851      475.      487.      495.         0         5         0       .00     67.74  10034.76


*SECNO  .829
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9962.0   10038.5  TYPE=      1  TARGET=      76.520
      .829      3.66   1622.06   1622.06   1622.06   1623.47      1.41      5.08       .01   1624.60
    1890.0        .0    1890.0       .0        .0     198.6        .0       7.4       2.3   1624.00
       .04       .00      9.51       .00      .000      .030      .000      .000   1618.40   9966.58
   .010491      505.      500.      480.         0         8         0       .00     71.67  10038.25


*SECNO  .838
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9947.4   10063.7  TYPE=      1  TARGET=     116.310
        START Hydraulically Similar Reach 10C
      .838      2.93   1625.73   1625.73   1625.74   1626.75      1.02       .49       .04   1625.60
    1890.0        .0    1890.0       .0        .0     232.7        .0       7.6       2.4   1625.80
       .05       .00      8.12       .00      .000      .030      .000      .000   1622.80   9947.40
   .010627       46.       46.       46.         0        15         0       .00    115.66  10063.06


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   21OCT96      15:07:13                                                                          PAGE   17

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO  .851
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9932.5   10043.1  TYPE=      1  TARGET=     110.630
      .851      2.49   1627.09   1627.09   1627.14   1628.15      1.05       .75       .01   1626.80
    1890.0        .0    1890.0       .0        .0     229.3        .0       8.0       2.6   1626.10
       .05       .02      8.24       .02      .000      .030      .065      .000   1624.60   9932.49
   .010488       70.       71.       73.         0        15         0       .00    110.63  10043.12


*SECNO  .895
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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```
3470 ENCROACHMENT STATIONS=     9900.9   10029.1  TYPE=      1  TARGET=      128.230
        HEC-1 Concentration Point C543 (upstream of tributary)
        This flowrate has been revised from the FEMA-approved study
        in order to better reflect the tributary inflow.  See 21 Oct 96 letter
        GR records removed from station 10049.3   to station    10256.4
                 to restrict flow to effective area without X3 records.
     .895      2.11   1631.51   1631.51   1631.51   1632.33       .82      2.52       .02   1632.10
   1430.0        .0    1430.0        .0        .0     196.4        .0       9.1       3.2   1631.30
     .06       .00      7.28       .02      .000      .030      .000      .000   1629.40   9907.91
  .011383      234.      232.      230.         0        15         0       .00    121.21  10029.12


*SECNO  .949
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9967.6   10043.7  TYPE=      1  TARGET=       76.120
        GR records removed from station 10043.7   to station    10130.1
                 to restrict flow to effective area without X3 records.
          GR station 10043.71 added to allow for ET station.
     .949      3.10   1636.70   1636.70   1636.39   1637.88      1.18      3.05       .11   1634.60
   1430.0        .0    1430.0        .0        .0     163.9        .0      10.3       3.9   1637.70
     .07       .02      8.72       .00      .065      .030      .000      .000   1633.60   9967.59
  .010110      320.      284.      260.         0        14         0       .00     70.52  10038.11


*SECNO 1.002
1
   21OCT96      15:07:13                                                                          PAGE   18

    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=     9952.9   10056.1  TYPE=      1  TARGET=      103.230
        GR records removed from station  9636.4   to station     9909.6
                      and from station 10077.4   to station    10427.8
                 to restrict flow to effective area without X3 records.
    1.002      2.57   1639.47   1639.13   1639.13   1640.14       .67      2.21       .05   1637.70
   1430.0        .0    1430.0        .0        .0     217.9        .0      11.5       4.4   1639.70
     .08       .02      6.56       .00      .065      .030      .000      .000   1636.90   9952.89
  .006377      260.      279.      300.         1        19         0       .00    101.81  10054.70


*SECNO 1.074

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9981.0   10027.4  TYPE=      1  TARGET=       46.420
        GR records removed from station  9820.4   to station     9864.6
                 to restrict flow to effective area without X3 records.
    1.074      3.74   1644.24   1644.24   1644.50   1645.78      1.54      2.99       .26   1643.00
   1430.0        .0    1430.0        .0        .0     143.4        .0      13.1       5.1   1641.30
     .09       .02      9.97       .00      .065      .030      .000      .000   1640.50   9980.99
  .009809      364.      383.      364.         0        11         0       .00     46.41  10027.40


*SECNO 1.096
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
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3470 ENCROACHMENT STATIONS=     9986.0   10024.7  TYPE=      1  TARGET=       38.720
     1.096      4.27   1645.47   1645.47   1645.46   1647.22      1.75      1.12       .06   1645.20
    1430.0        .0    1430.0       .0        .0     134.5        .0      13.5       5.2   1645.80
       .09       .02     10.63       .00      .000      .030      .000      .000   1641.20   9985.99
   .009958      115.      114.      112.         0         8         0       .00     38.67  10024.66


*SECNO 1.108
1
   21OCT96      15:07:13                                                                          PAGE   19

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  8.10


3470 ENCROACHMENT STATIONS=     9941.8   10097.1  TYPE=      1  TARGET=      155.260
        HEC-1 Concentration Point C542
        Dip Crossing at Avenida Del Ray
     1.108      4.75   1647.35   1644.51   1647.37   1647.42       .07       .03       .17   1642.90
    1430.0     419.2     470.6     540.2     197.9     204.4     256.4      14.1       5.3   1642.90
       .10      2.12      2.30      2.11      .022      .022      .022      .000   1642.60   9941.83
   .000152       70.       66.       70.         2        14         0       .00    155.26  10097.09


*SECNO 1.117

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .13


3470 ENCROACHMENT STATIONS=     9980.7   10041.1  TYPE=      1  TARGET=       60.430
        START Hydraulically Similar Reach 100
     1.117      3.81   1646.91   1646.05   1646.97   1647.64       .74       .02       .20   1646.00
    1430.0        .0    1430.0       .0        .0     207.7        .0      14.6       5.4   1646.00
       .10       .02      6.88       .03      .065      .045      .055      .000   1643.10   9980.69
   .008705       48.       47.       45.         3        14         0       .00     60.43  10041.12


*SECNO 1.175
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9956.8   10023.2  TYPE=      1  TARGET=       66.420
        GR records removed from station  9956.8   to station    10138.7
                to restrict flow to effective area without X3 records.
          GR station 9956.79  added to allow for ET station.
     1.175      3.30   1653.70   1653.70   1653.65   1654.94      1.23      4.06       .15   1653.10
    1430.0        .0    1430.0       .0        .0     160.4        .0      15.9       5.9   1652.60
       .11       .03      8.91       .00      .065      .045      .000      .000   1650.40   9956.79
   .023199      310.      304.      290.         0        15         0       .00     66.41  10023.20


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   21OCT96      15:07:13                                                                          PAGE   20

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
```

```
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 1.247

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=     9940.3   10035.4  TYPE=      1  TARGET=       95.110
        GR records removed from station 10090.5   to station    10404.3
                 to restrict flow to effective area without X3 records.
     1.247      4.16   1660.76   1660.39   1659.71   1661.49       .73      6.50       .05   1659.00
    1430.0     235.2    1194.8        .0      62.7     163.1        .0      17.5       6.6   1659.70
       .13      3.75      7.33       .00      .065      .045      .000      .000   1656.60   9940.30
   .013325      330.      381.      353.         4        11         0       .00     95.10  10035.40


*SECNO 1.305

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     9985.2   10041.6  TYPE=      1  TARGET=       56.420
        HEC-1 Concentration Point C540
        GR records removed from station 10054.1   to station    10334.4
                 to restrict flow to effective area without X3 records.
     1.305      3.97   1665.57   1665.57   1665.50   1666.95      1.38      5.10       .19   1664.90
    1420.0        .0    1420.0        .0        .0     150.9        .0      18.8       7.1   1666.00
       .14       .03      9.41       .00      .065      .045      .000      .000   1661.60   9985.19
   .021580      310.      305.      300.         0         8         0       .00     54.75  10039.95


*SECNO 1.337
3280 CROSS SECTION      1.34 EXTENDED       .95 FEET


3470 ENCROACHMENT STATIONS=     9964.3   10027.3  TYPE=      1  TARGET=       63.020
        GR records removed from station 10227.3   to station    10278.4
                 to restrict flow to effective area without X3 records.
          GR station 10057.31 added to allow for ET station.
     1.337      4.95   1669.05   1668.56   1668.31   1669.97       .92      2.97       .05   1666.40
    1420.0     252.4    1167.6        .0      52.1     143.1        .0      19.5       7.3   1668.10
       .14      4.85      8.16       .00      .065      .045      .000      .000   1664.10   9964.29
   .014147      162.      173.      172.         1         8         0       .00     63.01  10027.30


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   21OCT96      15:07:13                                                                          PAGE   21

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO 1.393

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=     9989.7   10020.3  TYPE=      1  TARGET=       30.619
        Photogrammetric cross-section 1.393 is truncated at 10164.3.
     1.393      4.86   1673.06   1672.94   1672.92   1674.98      1.92      4.71       .30   1669.30
    1420.0        .0    1420.0        .0        .0     127.7        .0      20.6       7.6   1671.20
       .15       .03     11.12       .00      .065      .045      .000      .000   1668.20   9989.69
   .018642      275.      293.      285.         2         8         0       .00     30.61  10020.30
```

THIS RUN EXECUTED 21OCT96 15:07:15

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

Wash 10,100-Yr Floodplai

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.551	.00	.00	.00	1594.10	1890.00	1599.02	1599.02	1600.11	80.73	8.85	255.18	210.35
	.551	.00	.00	.00	1594.10	1890.00	1599.12	1599.10	1600.56	97.89	9.62	196.45	191.02
*	.567	82.30	.00	.00	1595.50	1890.00	1599.92	1598.53	1600.53	27.75	6.28	301.16	358.79
*	.567	82.30	.00	.00	1595.50	1890.00	1600.47	1598.53	1600.95	18.32	5.52	342.20	441.56
*	.642	400.00	.00	.00	1600.70	1890.00	1604.11	1604.11	1605.58	98.95	9.73	194.24	190.00
*	.642	400.00	.00	.00	1600.70	1890.00	1604.10	1604.10	1605.58	99.08	9.73	194.16	189.87
*	.734	486.51	.00	.00	1607.90	1890.00	1611.26	1611.26	1612.73	98.64	9.72	194.53	190.30
*	.734	486.51	.00	.00	1607.90	1890.00	1611.26	1611.26	1612.73	98.51	9.71	194.62	190.42
*	.829	499.88	.00	.00	1618.40	1890.00	1622.06	1622.06	1623.47	104.94	9.52	198.63	184.50
*	.829	499.88	.00	.00	1618.40	1890.00	1622.06	1622.06	1623.47	104.91	9.51	198.64	184.53
*	.838	46.26	.00	.00	1622.80	1890.00	1625.74	1625.74	1626.75	103.30	8.05	235.10	185.96
*	.838	46.26	.00	.00	1622.80	1890.00	1625.73	1625.73	1626.75	106.27	8.12	232.74	183.34
*	.851	71.26	.00	.00	1624.60	1890.00	1627.14	1627.14	1628.13	96.00	8.01	244.97	192.90
*	.851	71.26	.00	.00	1624.60	1890.00	1627.09	1627.09	1628.15	104.88	8.24	229.35	184.55
*	.895	232.15	.00	.00	1629.40	1430.00	1631.51	1631.51	1632.33	113.76	7.28	196.54	134.07
*	.895	232.15	.00	.00	1629.40	1430.00	1631.51	1631.51	1632.33	113.83	7.28	196.40	134.03
*	.949	284.12	.00	.00	1633.60	1430.00	1636.39	1636.39	1637.22	100.03	8.03	240.10	142.98
*	.949	284.12	.00	.00	1633.60	1430.00	1636.70	1636.70	1637.88	101.10	8.72	163.95	142.22
	1.002	278.57	.00	.00	1636.90	1430.00	1639.13	1639.06	1639.88	92.83	7.18	226.54	148.42
	1.002	278.57	.00	.00	1636.90	1430.00	1639.47	1639.13	1640.14	63.77	6.56	217.96	179.08
*	1.074	382.98	.00	.00	1640.50	1430.00	1644.50	1644.50	1645.54	58.79	8.50	228.88	186.50
*	1.074	382.98	.00	.00	1640.50	1430.00	1644.24	1644.24	1645.78	98.09	9.97	143.44	144.39

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	1.096	113.64	.00	.00	1641.20	1430.00	1645.46	1645.46	1647.22	100.11	10.65	134.46	142.92
*	1.096	113.64	.00	.00	1641.20	1430.00	1645.47	1645.47	1647.22	99.58	10.63	134.54	143.30
*	1.108	66.20	.00	.00	1642.60	1430.00	1647.37	1644.53	1647.42	1.00	1.87	882.08	1431.72
*	1.108	66.20	.00	.00	1642.60	1430.00	1647.35	1644.51	1647.42	1.52	2.30	658.67	1160.41

*	1.117	46.62	.00	.00	1643.10	1430.00	1646.97	1646.04	1647.61	76.05	6.51	245.83	163.98
*	1.117	46.62	.00	.00	1643.10	1430.00	1646.91	1646.05	1647.64	87.05	6.88	207.77	153.26
*	1.175	303.54	.00	.00	1650.40	1430.00	1653.65	1653.65	1654.36	158.50	7.34	243.34	113.59
*	1.175	303.54	.00	.00	1650.40	1430.00	1653.70	1653.70	1654.94	231.99	8.91	160.42	93.89
	1.247	381.10	.00	.00	1656.60	1430.00	1659.71	1659.35	1660.07	154.25	5.78	310.06	115.14
	1.247	381.10	.00	.00	1656.60	1430.00	1660.76	1660.39	1661.49	133.25	7.33	225.82	123.88
*	1.305	304.75	.00	.00	1661.60	1420.00	1665.50	1665.50	1666.40	167.64	8.17	217.65	109.67
*	1.305	304.75	.00	.00	1661.60	1420.00	1665.57	1665.57	1666.95	215.80	9.41	150.89	96.66
	1.337	172.96	.00	.00	1664.10	1420.00	1668.31	1667.70	1668.74	112.58	6.18	280.51	133.83
	1.337	172.96	.00	.00	1664.10	1420.00	1669.05	1668.56	1669.97	141.47	8.16	195.13	119.39
*	1.393	293.34	.00	.00	1668.20	1420.00	1672.92	1672.92	1673.83	107.54	8.59	232.53	136.93
	1.393	293.34	.00	.00	1668.20	1420.00	1673.06	1672.94	1674.98	186.42	11.12	127.71	104.00

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Wash 10,100-Yr Floodplai

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	.551	1890.00	1599.02	.00	.00	.04	109.25	.00
	.551	1890.00	1599.12	.10	.00	.10	69.01	.00
*	.567	1890.00	1599.92	.00	.90	.00	73.10	82.30
*	.567	1890.00	1600.47	.56	1.35	.56	73.11	82.30
*	.642	1890.00	1604.11	.00	4.19	.00	67.05	400.00
*	.642	1890.00	1604.10	.00	3.63	.00	67.04	400.00
*	.734	1890.00	1611.26	.00	7.16	.00	67.73	486.51
*	.734	1890.00	1611.26	.00	7.16	.00	67.74	486.51
*	.829	1890.00	1622.06	.00	10.80	.00	71.67	499.88
*	.829	1890.00	1622.06	.00	10.80	.00	71.67	499.88
*	.838	1890.00	1625.74	.00	3.68	.00	120.97	46.26
*	.838	1890.00	1625.73	-.02	3.66	-.02	115.66	46.26
*	.851	1890.00	1627.14	.00	1.40	.00	150.54	71.26
*	.851	1890.00	1627.09	-.05	1.37	-.05	110.63	71.26
*	.895	1430.00	1631.51	.00	4.37	.00	122.31	232.15
*	.895	1430.00	1631.51	.00	4.41	.00	121.21	232.15
*	.949	1430.00	1636.39	.00	4.88	.00	163.28	284.12
*	.949	1430.00	1636.70	.31	5.19	.31	70.52	284.12
	1.002	1430.00	1639.13	.00	2.74	.00	136.59	278.57
	1.002	1430.00	1639.47	.33	2.77	.33	101.81	278.57
*	1.074	1430.00	1644.50	.00	5.37	.00	153.54	382.98
*	1.074	1430.00	1644.24	-.27	4.77	-.27	46.41	382.98
*	1.096	1430.00	1645.46	.00	.96	.00	39.74	113.64
*	1.096	1430.00	1645.47	.01	1.23	.01	38.67	113.64
*	1.108	1430.00	1647.37	.00	1.91	.00	280.91	66.20
*	1.108	1430.00	1647.35	-.03	1.88	-.03	155.26	66.20
*	1.117	1430.00	1646.97	.00	-.40	.00	122.51	46.62
*	1.117	1430.00	1646.91	-.06	-.44	-.06	60.43	46.62

*	1.175	1430.00	1653.65	.00	6.68	.00	165.73	303.54
*	1.175	1430.00	1653.70	.05	6.80	.05	66.41	303.54
	1.247	1430.00	1659.71	.00	6.06	.00	207.25	381.10
	1.247	1430.00	1660.76	1.05	7.05	1.05	95.10	381.10

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1.305	1420.00	1665.50	.00	5.79	.00	132.60	304.75
*	1.305	1420.00	1665.57	.08	4.82	.08	54.75	304.75
	1.337	1420.00	1668.31	.00	2.81	.00	119.40	172.96
	1.337	1420.00	1669.05	.74	3.48	.74	63.01	172.96
*	1.393	1420.00	1672.92	.00	4.61	.00	153.44	293.34
	1.393	1420.00	1673.06	.14	4.01	.14	30.61	293.34

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SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      .551  PROFILE=  1  CRITICAL DEPTH ASSUMED

WARNING SECNO=      .567  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .567  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .642  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .642  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .642  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .642  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .734  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .734  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .734  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .734  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .829  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .829  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .829  PROFILE=  2  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      .838  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      .838  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=      .949  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .949  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .949  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .949  PROFILE=  2  MINIMUM SPECIFIC ENERGY
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CAUTION SECNO=      1.096  PROFILE=  2  CRITICAL DEPTH ASSUMED
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WARNING SECNO=      1.108  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      1.117  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      1.117  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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CAUTION SECNO=      1.175  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      1.175  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.175  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      1.305  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      1.393  PROFILE=  1  CRITICAL DEPTH ASSUMED
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FLOODWAY DATA,   Wash 10,100-Yr Floodplai
PROFILE NO.  2
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STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
.551	69.	196.	9.6	1599.1	1599.0	.1
.567	73.	342.	5.5	1600.5	1599.9	.6
.642	67.	194.	9.7	1604.1	1604.1	.0
.734	68.	195.	9.7	1611.3	1611.3	.0
.829	72.	199.	9.5	1622.1	1622.1	.0
.838	116.	233.	8.1	1625.7	1625.7	.0
.851	111.	229.	8.2	1627.1	1627.1	.0
.895	121.	196.	7.3	1631.5	1631.5	.0
.949	71.	164.	8.7	1636.7	1636.4	.3
1.002	102.	218.	6.6	1639.4	1639.1	.3
1.074	46.	143.	10.0	1644.2	1644.5	-.3
1.096	39.	135.	10.6	1645.5	1645.5	.0
1.108	155.	659.	2.2	1647.4	1647.4	.0
1.117	60.	208.	6.9	1646.9	1647.0	-.1
1.175	66.	160.	8.9	1653.8	1653.7	.1
1.247	95.	226.	6.3	1660.7	1659.7	1.0
1.305	55.	151.	9.4	1665.6	1665.5	.1
1.337	63.	195.	7.3	1669.0	1668.3	.7
1.393	31.	128.	11.1	1673.0	1672.9	.1