TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING

41 SUMMIT STREET • JACKSON, CA 95642
OFFICE (209) 223-0156 • FAX (209) 223-5653

100 YEAR FLOOD STUDY

FOR

JACKSON CREEK BELOW

LAKE AMADOR

APN 012-040-049

AMADOR COUNTY, CA

MARCH 2020

3/24/20

TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING

41 SUMMIT STREET • JACKSON, CA 95642
OFFICE (209) 223-0156 • FAX (209) 223-5653

JOB _Ninnis 100 year flood_
SHEET NO. _1_ OF _____
CALCULATED BY _JBS_ DATE _3/19/20_
CHECKED BY _____ DATE _____
SCALE _____

I. REQUIRED:

- Calculate 100 year flood event through Ninnis property below Lake Amador (APN 012-040-049)

- Compute 100 year flood level through this property

- Recommend elevations for proposed RV Park

II. ASSUMPTIONS:

- Use 100 year flood estimates from December 2009 flood study by Toma & Associates (copy attached). The 2009 study is considered part of this study. From this study, $Q_{100} = 12,900 \, cfs$.

- As reference point, Bissel & Karns did 1989 flood study for BV Bridge, and used $Q_{100} = 10,000 \, cfs$, with a range of 10,000 cfs to 12,000 cfs. We feel the more conservative 12,900 cfs is more appropriate here.

- Apply this flow to current topography through property.

- Topo done w/ some water flowing, so some bottom flow area not included - which is conservative

III. CALCULATIONS:

$Q_{100} = 12,900 \, cfs$ (see original study attached)

$$Q = AV = A \times 1.49 \times R^{2/3} \times S^{1/2} / n \qquad S \approx .0033$$

$$n \approx .035$$

$$12,900 = \frac{A \times 1.49 \times R^{2/3} \times .0033^{1/2}}{.035}$$

$$5,274 = AR^{2/3} \quad \text{(solve by trial & error)}$$

TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING
41 SUMMIT STREET • JACKSON, CA 95642
OFFICE (209) 223-0156 • FAX (209) 223-5653

JOB _____Ninnis_____
SHEET NO. ___2___ OF ___5___
CALCULATED BY ___JBS___ DATE ___3/19/20___
CHECKED BY _____ DATE _____
SCALE _____

$5,274 = AR^{2/3}$

ck section A-A (try just bank full first)

elev ≈ 280'

$AR^{2/3} \Rightarrow \begin{cases} A = 1350 \\ R = 10.3 \end{cases} AR^{2/3} = 6,440 \checkmark$ (100 year below bank full)

Try 278'

$\begin{cases} A = 1030 \\ R = \dfrac{1030}{127} = 8.1 \end{cases} AR^{2/3} = 4,186$ (too low, say 100 yr = 279')

@ A-A

now ck section B-B:

based on 100 yr @ A-A = 279', try B-B = 282.1

→ At this level, (even down to 278'), high
water will spill to south over bank

@ D-D, try hgl = 286'

$A = 1060 ft^2$

$R = \dfrac{A}{P} = \dfrac{1060}{420} = 2.52$

$AR^{2/3} = 1971$ (too low)
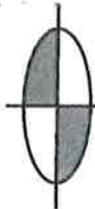
TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING

41 SUMMIT STREET • JACKSON, CA 95642
OFFICE (209) 223-0156 • FAX (209) 223-5653

JOB: Ninnis
SHEET NO. 3 OF 5
CALCULATED BY: JBS   DATE:
CHECKED BY: DATE:
SCALE:

@ D-D,
try hgl = 287'

$$A = 1060 + 400$$
$$= 1460 \, ft^2$$

$$R = \frac{A}{P} = \frac{1460}{450} = 3.2$$

$$AR^{2/3} = 3212 \ (still \ too \ low)$$

try hgl = 288'

$$A = 1460 + 430 \, SF$$
$$= 1890 \, SF$$

$$R = \frac{A}{P} = \frac{1890}{490} = 3.9$$

$$AR^{2/3} = 4704$$

call 100yr = 288.5' @ sec DD

→ Difficult nailing down 100 yr level @ b-b & cc, because some where between D-D & C-C, 100yr goes over south bank, then returns to channel between B-B & A-A

| Sta	Approx 100 year HGL
D-D	288.5
C-C	285.2
B-B	282.1
A-A	279.0
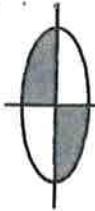
TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING

41 SUMMIT STREET • JACKSON, CA 95642
OFFICE (209) 223-0156 • FAX (209) 223-5653

JOB _Nimui's_
SHEET NO. _4_ OF _5_
CALCULATED BY _JBS_ DATE _3/19/20_
CHECKED BY _____ DATE _____
SCALE _____

IV CONCLUSIONS AND RECOMMENDATIONS:

- 100 year flow @ proposed RV park $\pm 12,900$ cfs.

- 100 year elev. @ upper end of park $\pm 285'$ and $\pm 279'$ @ lower end.

- Make upper (northern) end of park pad no lower than 291', and lower end no lower than 285'

- It appears upper end of property (on west side of creek) could flood and be seasonally inundated. This should not affect RV PK if elevations noted are used.

- Should improve west bank of creek near Goose Hill Ranch Rd to keep creek flows out of area north of RV park.

- Should have Geotech address subsurface drainage in RV park area
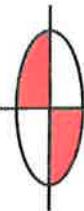
TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING

41 SUMMIT STREET • JACKSON, CA 95642
OFFICE (209) 223-0156 • FAX (209) 223-5653

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

100 YEAR FLOOD STUDY

FOR

JACKSON CREEK BELOW

LAKE AMADOR

AMADOR COUNTY, CA

DECEMBER 2009
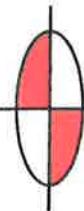
TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING

41 SUMMIT STREET • JACKSON, CA 95642
OFFICE (209) 223-0156 • FAX (209) 223-5653

JOB _Jackson CK – 100 yr flood_
SHEET NO. _1_ OF _15_
CALCULATED BY _JBS_ DATE _12/4/9_
CHECKED BY _____ DATE _____
SCALE _____

I. REQUIRED:

- Compute Q_{100} for Jacksn Ck near Lake Amador

II. ASSUMPTIONS:

- Use methodology contained in USGS Bulletin 173 – Guidelines for Determining Flood Frequency

- Lake Amador full & spilling, 100 year flood then arrives

- Use Manning eqn to determine flow depths through proposed RV park.

III CALCULATIONS:

From page 4 above reference:

$$Q_u = Q_g \times (A_u / A_g)^b$$

$Q_u =$ ungaged 100yr Q
$Q_g =$ gaged "
$A_u =$ Area ungaged
$A_g =$ " gaged
$b = .77$ for 100yr

$$A_u = 56.3 \, mi^2 \quad (\text{Jackson Ck near Lake Amador})$$
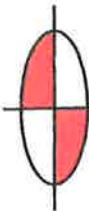
TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING

41 SUMMIT STREET • JACKSON, CA 95642
OFFICE (209) 223-0156 • FAX (209) 223-5653

JOB _Jackson CK 100 yr flood_

SHEET NO. __3__ OF __15__

CALCULATED BY __JBS__ DATE __12/4/9__

CHECKED BY _____ DATE _____

SCALE _____

From Jesus Maria CK (near Moke Hill):

$$Q_{100} = 10,700 \text{ cfs} , \quad A_g = 34.6 \text{ mi}^2$$

$$Q_u = 10,700 \text{ cfs} \times \left(\frac{56.3}{34.6}\right)^{.77}$$

$$Q_u = \underline{15,600 \text{ cfs}}$$

Average of 3 gaging stations = $\underline{12,900 \text{ cfs}}$

CK w/ Dry CK study by Ensign & Buckley for a Ranch project:

$$\text{Area} = 84 \text{ mi}^2$$

$$Q_{100} \text{ (calculated)} = \underline{18,000 \text{ cfs}}$$

$$Q_u = 18,000 \times \left(\frac{56.3}{84}\right)^{.77}$$

$$Q_{100} = \underline{13,200 \text{ cfs}}$$

TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING

41 SUMMIT STREET • JACKSON, CA 95642

OFFICE (209) 223-0156 • FAX (209) 223-5653

JOB Jackson Ck - 100 yr flood

SHEET NO. 4 OF 15

CALCULATED BY JBS DATE 12/4/9

CHECKED BY _____ DATE _____

SCALE _____

→ Data from 3 gaging stations chosen, and compared w/ Q_{100} calculated for Dry Ck @ Q Ranch, all agree well.

Use Q_{100} @ Lake Amador = 12,900 cfs

Now ck existing Jackson Ck X-sections through site:

Sec A-A

TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING
41 SUMMIT STREET • JACKSON, CA 95642
OFFICE (209) 223-0156 • FAX (209) 223-5653

JOB _Jackson Ck - 100 yr flood_
SHEET NO. ___5___ OF ___15___
CALCULATED BY ___JBS___ DATE _12/4/9_
CHECKED BY _____ DATE _____
SCALE _____

Use Manning formula to determine flow depth,
(by trial & error):

$$Q = AV = \frac{A \times 1.49 \times R^{2/3} \times S^{1/2}}{n}$$

$Q = 12,900 \, cfs$
$S = .0058$
$n = .035$

$$12,900 = \frac{A \times 1.49 \times R^{2/3} \times .0058^{1/2}}{.035}$$

$$12,900 = 3.24 \times AR^{2/3}$$
$$AR^{2/3} = 3981$$ $R = \frac{A}{P}$

<u>SEC A-A</u> (solve by trial & error):

d	$A(sf)$	$P(ft)$	R	$R^{2/3}$	$AR^{2/3}$	
10'	875	197	4.44	2.72	2,376	
12.5'	1475	270	5.46	3.12	4,602	✓ high, actual slightly lower

ck v

$$V = \frac{Q}{A} = \frac{12,900 \, cfs}{1,475 \, sf} = 8.7 \, fps \quad ✓ \text{ high, but reasonable (probably} \approx 12')$$

<u>SEC B-B</u>:

| d	A	P	R	$R^{2/3}$	$AR^{2/3}$	
12.5'	1475	190'	7.76	3.95	5822	say ≈ 11'
10'	1025	180	5.69	3.21	3288	
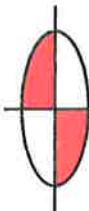
TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING

41 SUMMIT STREET • JACKSON, CA 95642
OFFICE (209) 223-0156 • FAX (209) 223-5653.

JOB _Jackson CK - 100 yr Flood_
SHEET NO. __6__ OF __15__
CALCULATED BY __JBS__ DATE __12/4/9__
CHECKED BY _____ DATE _____
SCALE _____

sec CC (most upstream section)

d	A	P	R	$R^{2/3}$	$AR^{2/3}$
10'	900 SF	160'	5.63	3.18	2863
12.5'	1325	175'	7.57	3.89	5035 (high, actual $d \approx 11.5'$)

Note: All 3 sections show 100 year flood flow is contained within banks of Jackson CK through this property.
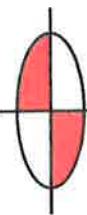
SEC B-B
n = .035

Approx Q100 depth

$S = \dfrac{5'}{860'} = 0.0058$

SEC A-A

Approx Q100 depth
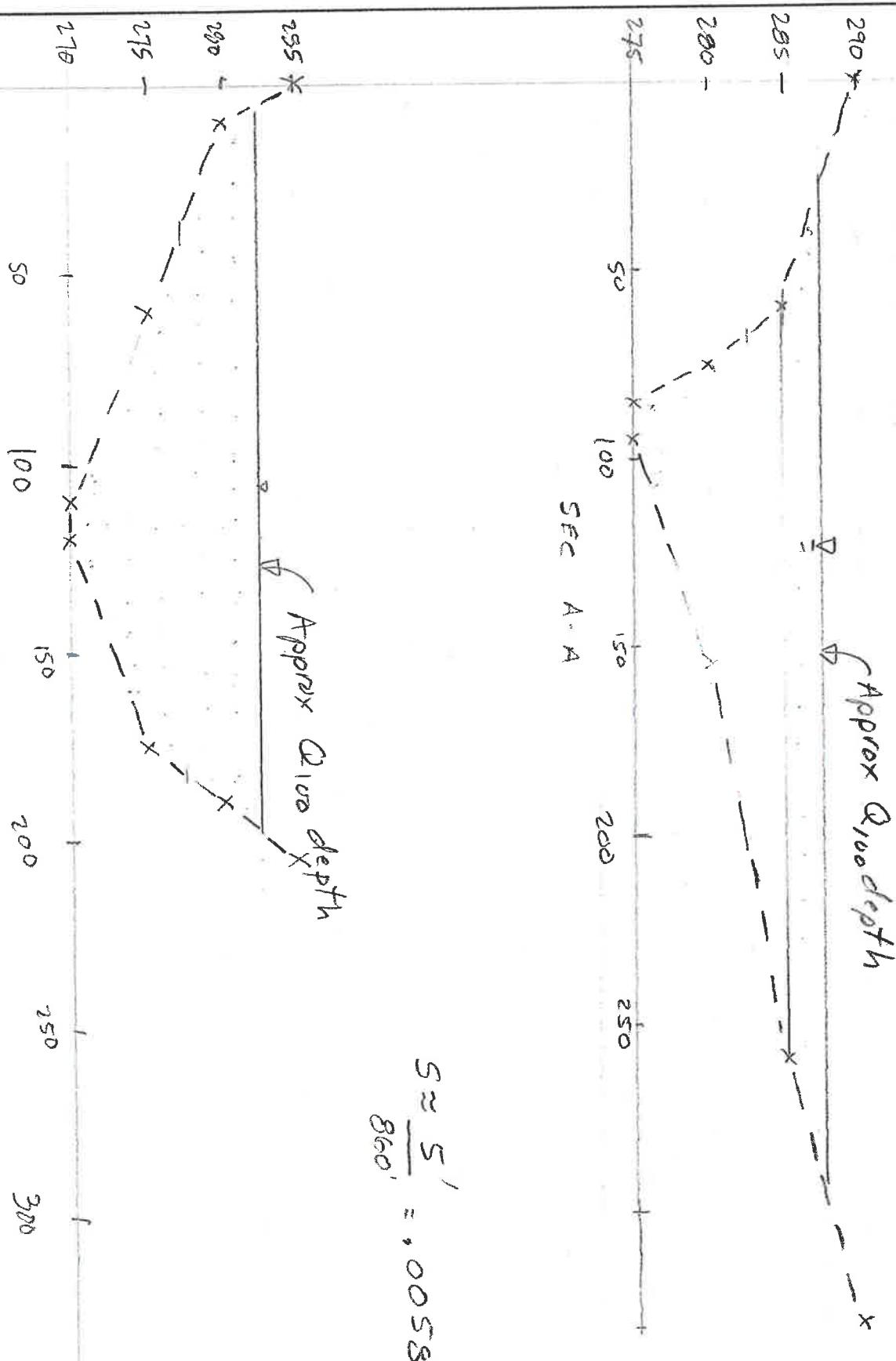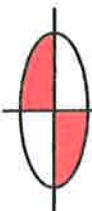
TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING

41 SUMMIT STREET • JACKSON, CA 95642
OFFICE (209) 223-0156 • FAX (209) 223-5653

JOB _Jackson CK - 100 yr flood_
SHEET NO. _8_ OF _15_
CALCULATED BY _JBS_ DATE _12/4/9_
CHECKED BY _____ DATE _____
SCALE _____

SEC GC

Approx. 100 year flood elev.
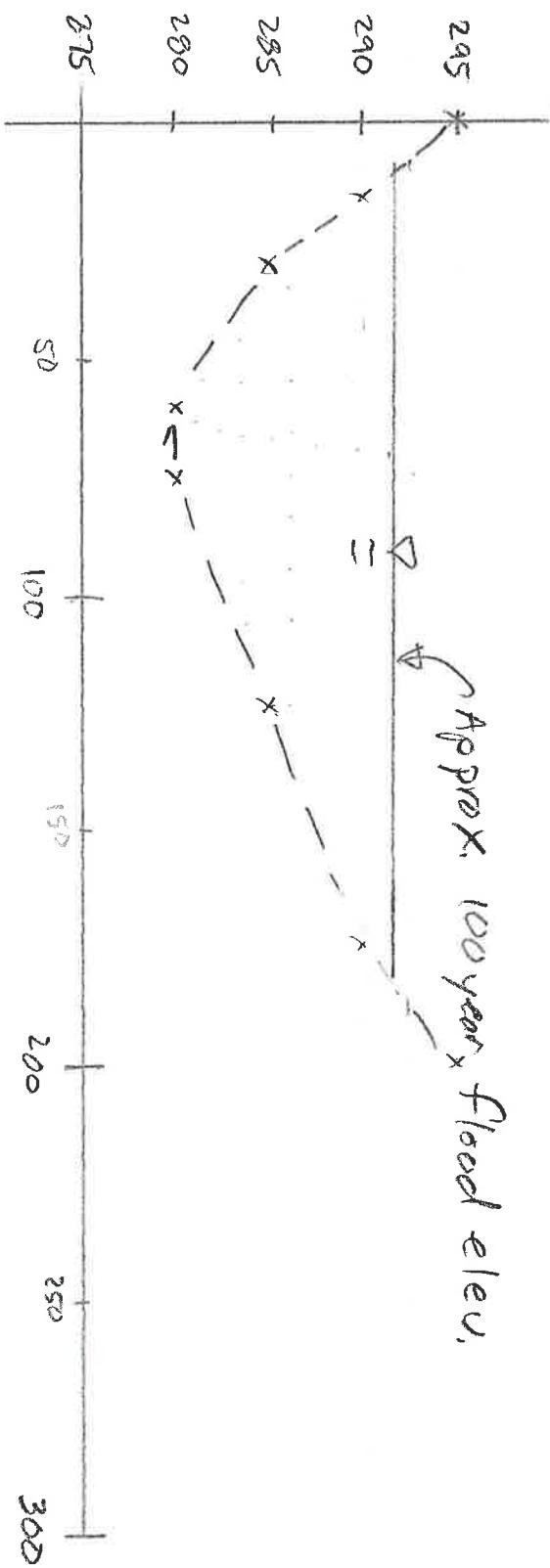
Slope from ℄ to AA =

$$\frac{5'}{1300'} = .00385$$
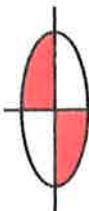
TOMA & ASSOCIATES, INC.

ENGINEERING - SURVEYING - PLANNING

41 SUMMIT STREET • JACKSON, CA 95642

OFFICE (209) 223-0156 • FAX (209) 223-5653

IV SUMMARY & CONCLUSIONS:

- Jackson CK Q_{100} below Lake Amador is approximately 12,900 cfs based on methodology and data contained USGS Bulletin 77-21. This number agrees well with 100 year flows calculated on Dry CK through the Q Ranch north of Ione.

- The above flow was routed in Jackson CK through the Ninnis property, which has tentatively proposed to be developed as an RV park. Flow depths were calculated using Manning formula and aerial topography through Ninnis property.

- In all 3 locations, the 100 year flood stage was well within the existing banks of Jackson CK.

- Due to irregularities of stream banks on this property - there may be locations where flood flows leave main channel, however, this will not be the norm and could easily be corrected w/ minor remedial bank restoration work.

- It does not appear that 100 year flood flow will have any affect on proposed development of this property.

297.5

292.0

282.0

302.0

299.5

283.5

299.6 x

301.0

286.5

292.5

277.5

282.5

280.5

299

292.5

JACKSON

289.0

296.0

297.4 x

A

296.0

296.0

28 A

275.5

286.5

282.5

295.5

279.5

282.5

276

285.2

297.5

275

B

281.5

274.0

295.5

275.5

304.0

277.5

278.5

275

29.0

270.0

294

283.5

275

B

282.5

299.5

283.5

286

274.0

281.5

281.5

1" = 200'

11/15
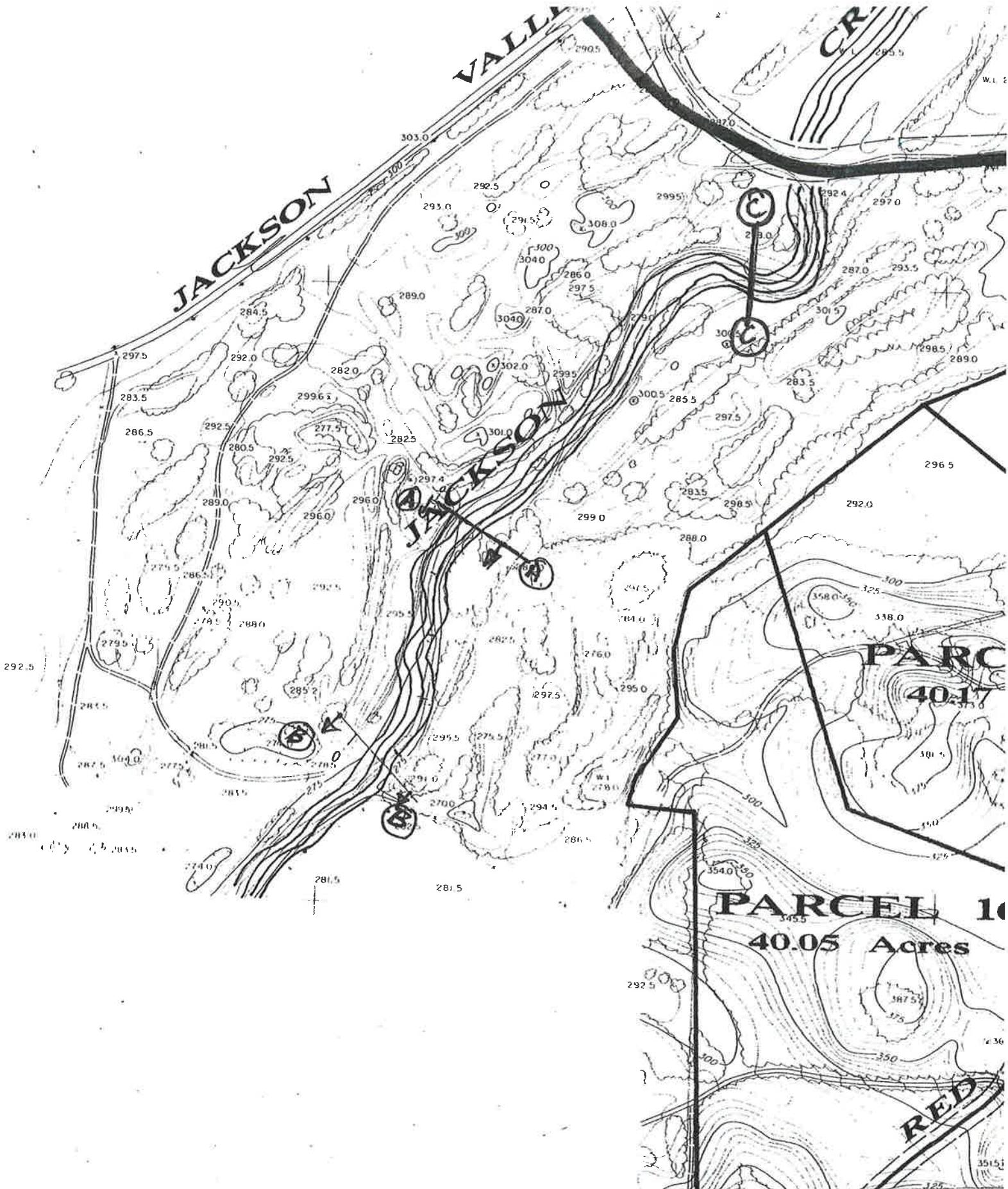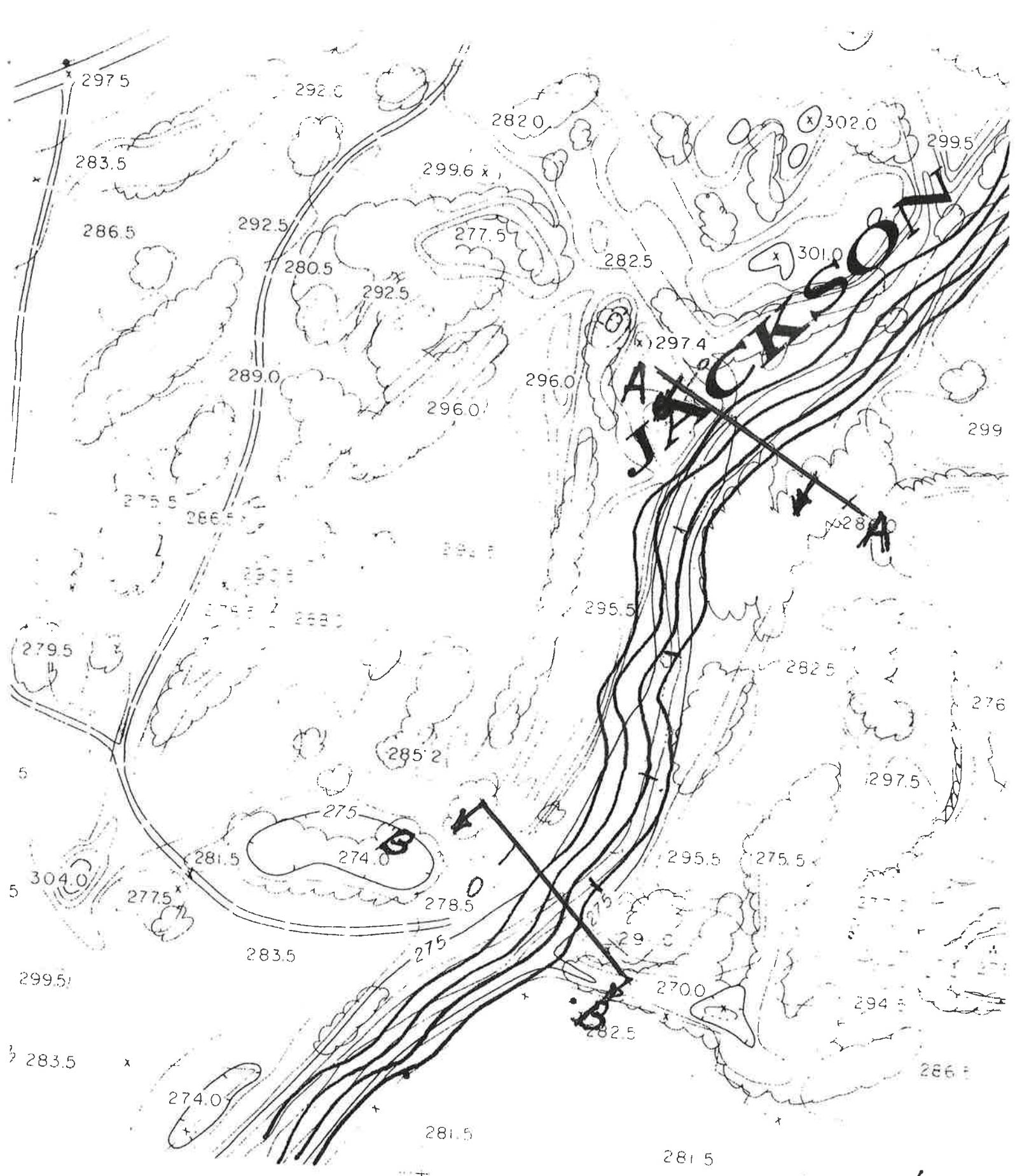
ENSIGN & BUCKLEY

CONSULTING ENGINEERS

January 31, 1991

Mr. Dave Arnaiz
H. D. Arnaiz Corporation
3158 Auto Center Circle, Suite E
Stockton, California 95212

Subject: Dry Creek Floodplain - Property Near Ione

Dear Dave:

Enclosed is the original of the one inch equals 200 feet scale topographic mapping for the property with the estimated 100-year floodplain limits shown. Also enclosed are the originals of the cross section plots received from Toma-Anderson.

The 100-year discharge used for the floodplain definition was determined based on a statistical analyses of stream gage records for the Sutter Creek gage located near Sutter Creek. The analysis consisted of:

- Gage discharge data was obtained using the U. S. Geological Survey WATSTORE (National Water Data Storage and Retrieval System) computer data bank.

- Peak 100-year discharges at the Sutter Creek gage site were determined using the Log-Pearson Type III projection in accordance with *Bulletin 173 - Guideline for Determining Flood Flow Frequency* by the Interagency Advisory Committee on Water Data as adopted by the U. S. Water Resources Council.

- The Dry Creek flows were determined by correlation with the estimated peak flows for the gage site in accordance with the regression analysis parameters as defined by the U. S. Geological Survey publication *Magnitude and Frequency of Flood in California*. The watershed parameters included area, elevation, slope, and average annual precipitation.

The above hydrologic methodology has been used for studies reviewed and accepted by both the Federal Emergency Management Agency and Caltrans.

13/15

The resulting 100-year return period peak discharge in Dry Creek at Highway 104 for the 84 square mile watershed was determined to be 18,000 cubic feet per second.

The hydraulic analyses performed to determine water surface elevations and floodplain limits was conducted using the Corps of Engineers computer program HEC-2, *Water Surface Profiles*. Cross sections of the waterway through the project area were developed from the one inch equals 100 feet scale topographic mapping of the study area by Cartwright Aerial Surveys from a photo dated August 30, 1990. For areas located downstream, upstream, and to the east of the study area maps, cross sections were field surveyed by Toma-Anderson during the periods December 27, 1990 through January 3, 1991 and the week of January 21, 1991. Channel and overbank roughness values were determined based on a field site reconnaissance and standard reference values. The roughness value varied between 0.04 and 0.07 with most of the Dry Creek channel judged to be 0.04.

The Highway 104 bridge was modeled using as-built drawings obtained from Caltrans for the existing structure. The Southern Pacific Railroad bridge was modeled based on the field surveyed section data and field inspection.

To minimize the potential error that could result from inexact estimation of the downstream starting water surface elevation, the HEC-2 model was started 100 feet downstream of the Southern Pacific Railroad tracks which are approximately 4,500 feet downstream of Highway 104. The starting water surface downstream of the railroad was based on an approximate estimated normal depth.

As a result of preliminary analyses and a review of the available topographic mapping it was noted that flow could enter the study area at an upstream property boundary through a secondary channel as a result of backwater from Dry Creek. A multiple computer run split flow analyses was performed to define the division of flow and it was determined that approximately 1,700 cfs could enter the property through the secondary channel. In addition, it was determined by split flow analyses at low points in the left bank of Dry Creek within the property that an additional transfer of approximately 300 cfs from Dry Creek to the secondary channel would occur. The final water surface elevations in Dry Creek and the secondary channel were determined using the adjusted flows determined by the split flow analyses.

14/15

The computed water surface elevations are summarized in the following table.

DRY CREEK
100-YEAR WATER SURFACE ELEVATION

DRY CREEK		SECONDARY CHANNEL	
Station	Water Surface Elevation	Station	Water Surface Elevation
55+17 (1	245.9	--	--
56+20	250.3	--	--
77+50	251.3	--	--
88+50	252.9	--	--
99+10	258.4	--	--
99+64 (2	258.7	--	--
100+00 (3	260.0	--	--
101+00	261.9	--	--
104+50	262.5	--	--
107+50	262.6	--	--
112+00	262.8	--	--
116+00	262.7	--	--
121+00	264.1	--	--
125+00	265.2	--	--
130+00	268.2	--	--
132+00	269.1	--	--
135+50	269.3	135+50	269.3
138+00	269.9	139+50	270.8
143+00	271.3	145+00	270.8
148+00	273.9	150+00	270.8
154+00	274.6	154+50	271.5
158+50	273.1	158+50	272.2
160+00	275.0	165+50	278.3
163+00	278.7	165+75	280.1
167+60	280.9	168+85	280.2
172+50	282.6	172+75	282.3
177+50	282.9	177+50	282.9

1) Upstream Face Southern Pacific Railroad
2) Downstream Face State Highway 104
3) Upstream Face State Highway 104 Bridge

Please call if you have any questions.

Sincerely,

Rick Bettis

RICK BETTIS

RB:dw
Enclosures
c: Jack Buckley

VICINITY SKETCH
SCALE: 1" = 3000'

LAKE AMADOR ROAD

J.V.I.D. 130/O.R./254 13-M-62

OWNER'S STATEMENT
THE UNDERSIGNED BEING THE OWNER(S) OF THE PROPERTY DELINEATED HEREON DO HEREBY CONSENT TO THE PREPARATION AND RECORDATION OF THIS MAP.

TNH/GLENMOOR II, a Calif. limited partnership
By: GLENMOOR SALES AGENCY, INC., general partner
By: Robert H. Rueder, Vice President
By: TNH COMPANY, general partner
By: Wayne Havens, general partner

SURVEYOR'S STATEMENT
THIS MAP CORRECTLY REPRESENTS A SURVEY MADE BY ME, OR UNDER MY DIRECTION IN CONFORMANCE WITH THE REQUIREMENTS OF THE LAND SURVEYORS' ACT AT THE REQUEST OF: TNH / GLENMOOR II

CIRO L. TOMA L.S. 3570
MY LICENSE EXPIRES 6/30/96
6/30/96

COUNTY SURVEYOR'S STATEMENT
THIS MAP HAS BEEN EXAMINED IN ACCORDANCE WITH SECTION 8766 OF THE LAND SURVEYORS' ACT THIS 15 DAY OF MAY, 1995.

C. LEE DeLANGE L.S. 4066
AMADOR COUNTY SURVEYOR
MY LICENSE EXPIRES 6/30/96

LICENSED LAND SURVEYOR C. LEE DE LANGE STATE OF CALIFORNIA No. 4066

TNH / GLENMOOR II 1993004690 & 89
PARCEL 2
161.00 Acres

100' ACCESS AND P.U.E.

R = 500'
D = 31° 20' 54"
L = 273.57'

60' ACCESS AND P.U.E.

TNH / GLENMOOR II 1993004694 & 93
1993004696, 1993004698
1993004699, 1993004702
1993004704, 1993004706

R = 1136'
D = 65° 34' 16"
L = 1300.07'

TNH / GLENMOOR II 1993004688
PARCEL 3
8.36 Acres

PARCEL 1
105.21 Acres

REMAINDER

NOTES and LEGEND
- ● DENOTES 3/4" REBAR W/PLASTIC CAP STAMPED L.S. 3750 AND SET.
- ○ DENOTES 3/4" REBAR, NO TAG MARKING 100' UNDISTURBED AREA.
- □ DENOTES A FOUND MONUMENT AS NOTED.
- DENOTES A MATHEMATICAL POINT ONLY, NOTHING FOUND OR SET.
- DENOTES BOUNDARY OF 100' UNDISTURBED AREA OVER JACKSON CREEK THRU PARCEL 1
- ( ) DENOTES RECORD DATA PER 13-M-62.
- (( )) DENOTES RECORD DATA PER 21-M-69.
- ((( ))) DENOTES RECORD DATA PER 2-S-39.

THE MERIDIAN OF THIS SURVEY IS BASED UPON THE LINE BETWEEN THE SECTION CORNER MARKING SECTIONS 7, 8, 18 & 17 T.5N., R.10E., M.D.M. AND THE NORTH 1/4 SECTION CORNER OF SECTION 17, AS SHOWN ON 'RECORD of SURVEY for: Jacob Strohm – RECORDED IN BOOK 21 OF MAPS AND PLATS AT PAGE 69, THE BEARING WHICH IS N. 89° 10' 11" E.

RECORDER'S STATEMENT
FILED THIS 31st DAY OF MAY, 1995 AT 10:16 AM IN BOOK 49 OF MAPS AND PLATS AT PAGE 11 AT THE REQUEST OF THE AMADOR COUNTY SURVEYOR. FEE: $7.50 SERIAL #1995-003788

SHELDON D. JOHNSON BY: M. Arrese, Deputy
AMADOR COUNTY RECORDER

✳NOTE:
FINAL APPROVAL OF THIS MAP SUBJECT TO BOARD RESOLUTION NO. 95-195 RECORDED AS SERIAL NO. 1995-003787 THIS 31st DAY OF MAY, 1995.

CURVE DATA TABLE

	R	D	L
C1	R = 400'	D = 29° 56' 20"	L = 209.01'
C2	R = 250'	D = 22° 13' 30"	L = 96.98'
C3	R = 250'	D = 30° 47' 30"	L = 134.35'
C4	R = 250'	D = 43° 20' 30"	L = 189.11'
C5	R = 250'	D = 39° 25' 00"	L = 171.99'
C6	R = 250'	D = 31° 11' 00"	L = 136.06'
C7	R = 500'	D = 18° 05' 46"	L = 157.92'
C8	R = 1000'	D = 04° 52' 34"	L = 85.10'
C9	R = 400'	D = 43° 32' 34"	L = 303.99'
C10	R = 350'	D = 33° 02' 00"	L = 201.79'
C11	R = 250'	D = 25° 15' 30"	L = 110.21'
C12	R = 30'	D = 86° 25' 32"	L = 45.25'
C13	R = 30'	D = 85° 13' 28"	L = 44.62'
C14	R = 200'	D = 25° 15' 30"	L = 88.17'
C15	R = 450'	D = 24° 05' 37"	L = 189.23'
C16	R = 450'	D = 10° 22' 45"	L = 81.52'
C17	R = 450'	D = 09° 04' 12"	L = 71.24'

SETBACK LINE DATA TABLE

	Bearing	Distance
S1	S. 02° 51' 00" E.	326.53'
S2	S. 02° 51' 00" E.	281.10'
S3	S. 51° 01' 38" W.	79.10'
S4	N. 89° 42' 59" W.	82.57'
S5	N. 87° 43' 38" W.	105.34'
S6	N. 65° 44' 07" W.	185.86'
S7	N. 63° 46' 41" W.	172.24'
S8	N. 70° 42' 02" W.	24.08'
S9	N. 65° 24' 18" W.	159.28'
S10	S. 21° 47' 53" W.	120.34'
S11	S. 25° 03' 27" W.	197.21'
S12	S. 16° 43' 22" W.	177.31'
S13	S. 17° 47' 44" W.	207.50'
S14	S. 47° 43' 23" W.	208.87'
S15	S. 47° 54' 22" W.	208.24'
S16	S. 26° 22' 33" W.	138.93'
S17	S. 26° 35' 36" W.	142.00'
S18	S. 46° 03' 07" W.	213.54'
S19	S. 48° 14' 23" W.	182.84'
S20	S. 57° 32' 23" W.	169.97'
S21	S. 58° 59' 19" W.	165.51'
S22	S. 38° 53' 06" W.	102.38'
S23	S. 35° 32' 08" W.	156.64'
S24	S. 05° 06' 07" W.	502.63'
S25	S. 05° 18' 39" W.	515.01'
S26	S. 30° 43' 31" W.	189.81'
S27	S. 58° 53' 57" W.	162.80'
S28	S. 53° 59' 34" W.	149.44'
S29	S. 30° 03' 51" W.	39.76'

LINE DATA TABLE

	Bearing	Distance
L1	S. 53° 12' 50" W.	25.00'
L2	S. 53° 12' 50" W.	30.00'
L3	S. 36° 47' 10" W.	115.05'
L4	N. 66° 43' 30" W.	293.03'
L5	N. 88° 57' 00" W.	176.06'
L6	N. 58° 09' 30" W.	161.92'
L7	S. 78° 30' 00" W.	140.56'
L8	S. 39° 05' 00" W.	50.99'
L9	S. 70° 16' 00" W.	270.38'
L10	S. 86° 23' 34" W.	170.22'
L11	N. 03° 36' 26" W.	20.00'
L12	S. 81° 31' 00" W.	168.82'
L13	S. 54° 56' 26" W.	143.90'
L14	N. 21° 54' 26" W.	128.90'
L15	N. 47° 09' 56" W.	49.43'
L16	N. 39° 15' 36" E.	16.06'
L17	S. 47° 09' 56" E.	48.73'
L18	S. 21° 54' 26" E.	38.35'
L19	S. 21° 54' 26" E.	105.70'
L20	N. 47° 09' 56" W.	74.49'
L21	N. 03° 36' 26" W.	20.00'
L22	S. 21° 54' 26" E.	15.14'

NOTE:
THE REMAINDER OF COMPLIANCE CERTIFICATE No. 1993004687 AND COMPLIANCE CERTIFICATE No. 1993004691 ARE MERGED WITH COMPLIANCE CERTIFICATE No. 1993004693 AND THE REMAINDER OF COMPLIANCE CERTIFICATE No. 1993004689 IS MERGED WITH COMPLIANCE CERTIFICATE No. 1993004699.

RECORD of SURVEY
BOUNDARY LINE ADJUSTMENT
for
TNH / GLENMOOR II
BEING A PORTION OF SECTION'S 8, 9, 17 & 16, T.5N., R.10E., M.D.M.
COUNTY OF AMADOR, STATE OF CALIFORNIA

TOMA & ANDERSON
Land Surveyors – Planners
41 Summit Street
Jackson, Ca 95642
(209) 223-0156
FAX (209) 223-5653

SCALE: 1" = 400'   APRIL, 1995

NOTE

ALL PARKING SHALL CONFORM WITH THE 2016 CBC, PART 2, VOLUME 1, CHAPTERS 11B-208 AND 11B-502 AND THE AMADOR COUNTY TITLE 19 ZONING CODE, CHAPTER 19.36.

PARKING SPACES

PARKING SPACE TYPE	# SPACES PROPOSED PER PLAN
STANDARD	153 SPACES (REQ'D PER CH 19.36)
ACCESSIBLE	6 SPACES
VAN ACCESSIBLE	1 SPACE
LOADING	2 SPACES
RV	127 SPACES

RV PARKING SPACES

RV PARKING SPACE DIMENSIONS ARE 75' X 16'.

STRUCTURES

CLUB HOUSE	75' X 200'	15,000 SF
CHECK IN / GUARD SHACK	15' X 25'	375 SF
SHOWER / RESTROOM FACILITY X3	15' X 25'	375 SF
RESTROOM FACILITY X2	15' X 25'	375 SF

AMENITIES

PICNIC / PLAY AREA
PICNIC / PLAY AREA WITH BBQs X2
MINIATURE GOLF COURSE
BATTING CAGE
TENNIS COURT

EEA
ERROL ESBIT
ARCHITECT
A.I.A.

ARCHITECTURE
PLANNING
DESIGN

220 BROADWAY
P.O. BOX 1704
JACKSON, CA.
95642

209. 223. 5181
E-MAIL
EEARCHITECT@SBCGLOBAL.NET

NO. C22002

63± ACRES

40± ACRES

Goose Hill Ranch Road
Jackson Valley Road
Gate
Deer Fence
Water retention pond (No Swimming)
Jackson Creek
Existing storage building to be removed
Existing office to be removed
Building set back lines
Water retention pond (No Swimming)
Park name signs on rock faced walls
Main Entrance
Water Feature
Guard / Check in Building
Flag Pole
Picnic / Play Area
Paved Road
Showers Restrooms
Tennis Court
Batting Cage
Miniature Golf Course
Restrooms
Patio / Event Lawn Area
Club House
Picnic / Play Area
Picnic Area W/ Bar-B-Q's and walking paths
Deer Fence
Maintenance Building
Rubbish Collection Building
Sewer Treatment Plant
Picnic Area W/ Bar-B-Q's and walking paths

SITE PLAN

PARKING AND ACCESSIBLE SPACE DETAIL
NOT TO SCALE

WHEEL STOP, TYP.
ACCESSIBLE PATH OF TRAVEL
ACCESSIBLE AISLE
TYPICAL 9' X 18' PARKING SPACE
VAN ACCESSIBLE
18' MIN. TYPICAL
9' — 9' — 5' MIN. — 9' — 9' — 8' MIN.
INTERNATIONAL SYMBOL OF ACCESSIBILITY STALL EMBLEM, TYP.

GENERAL ACCESSIBLE PARKING SPACE NOTES

1. EACH PARKING SPACE SHALL BE A MINIMUM OF 18' IN LENGTH.
2. EACH PARKING SPACE SHALL BE A MINIMUM OF 9' IN WIDTH.
3. ACCESS AISLE SHALL BE A MINIMUM OF 18' X 5'.
4. SURFACE OF THE PARKING SPACE(S) AND ACCESS AISLE(S) SHALL NOT EXCEED 2% IN ANY DIRECTION.
5. ACCESSIBLE PARKING SPACE MUST PERMIT USE OF CAR DOOR AT EITHER SIDE.
6. A WHEEL STOP IS REQUIRED WHEN NO CURB OR BARRIER IS PROVIDED WHICH WILL PREVENT ENCROACHMENT OF VEHICLE OVER THE ADJOINING ACCESSIBLE ROUTE.
7. WHEELCHAIR USERS SHALL NOT BE FORCED TO GO BEHIND PARKED CARS OTHER THAN THEIR OWN TO ACCESS AN ADJOINING ACCESSIBLE ROUTE.
8. CURB RAMPS SHALL NOT ENCROACH INTO THE REQUIRED DIMENSIONS OF ACCESSIBLE PARKING SPACES OR ADJACENT ACCESS AISLES.
9. ACCESS AISLE (LOADING/UNLOADING AREA) SHALL CONNECT TO AN ACCESSIBLE PATH OF TRAVEL TO THE FACILITY.
10. GROUND SURFACES ALONG ACCESSIBLE ROUTE SHALL BE STABLE, FIRM AND SLIP RESISTANT.
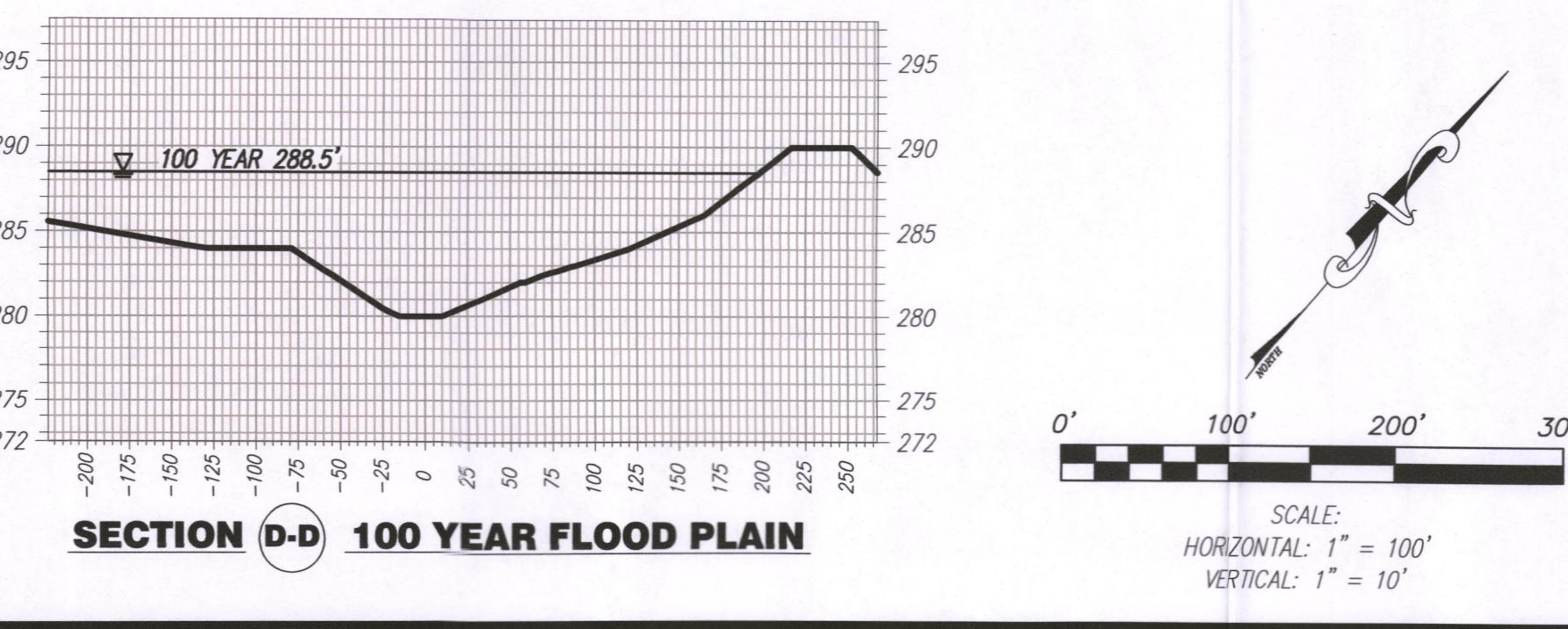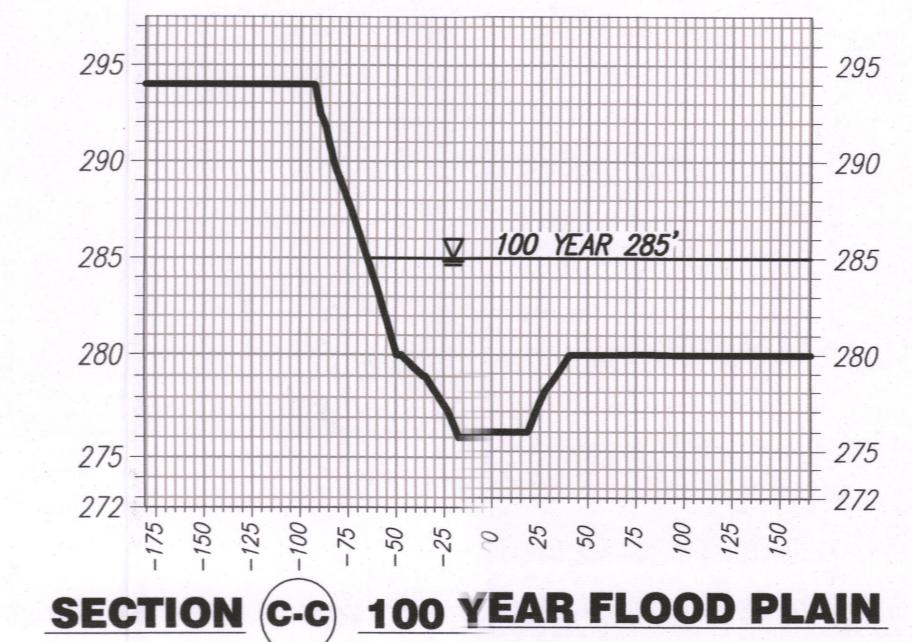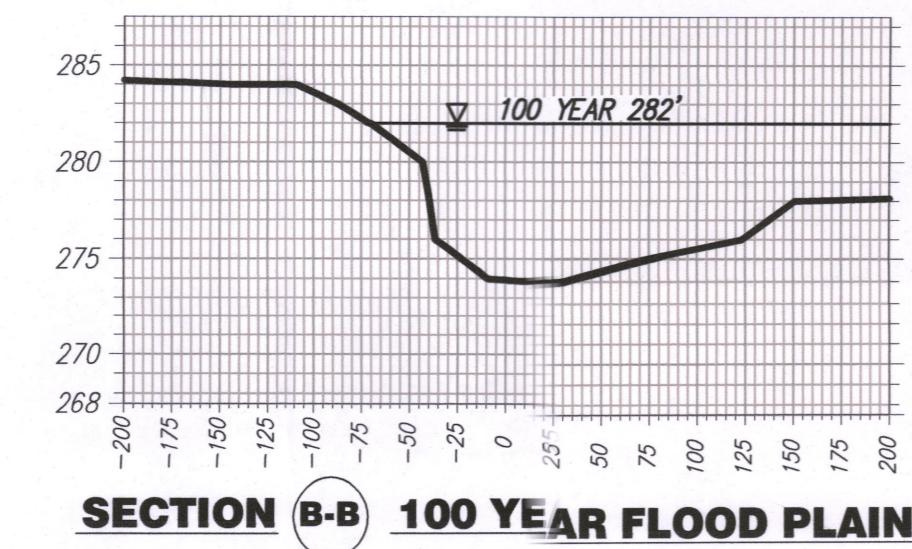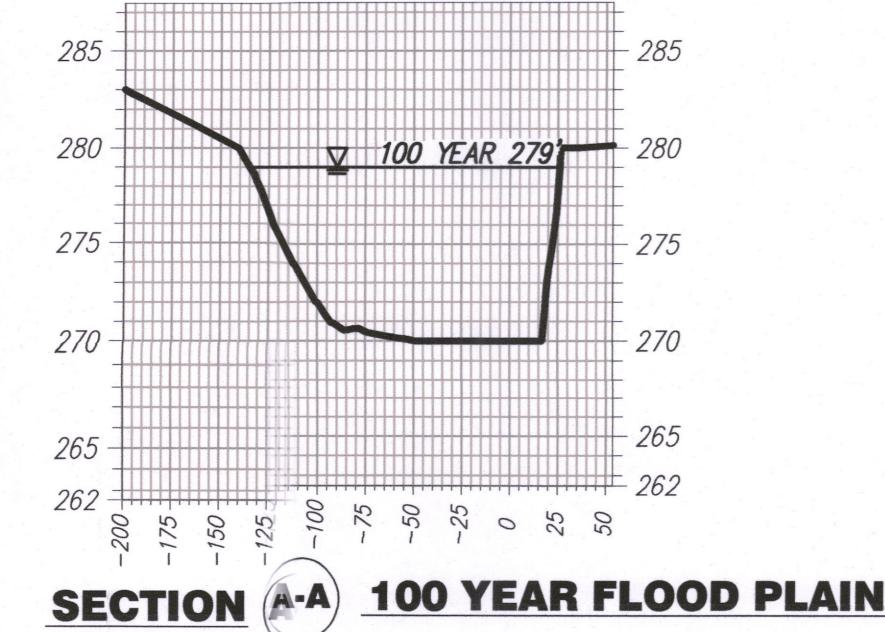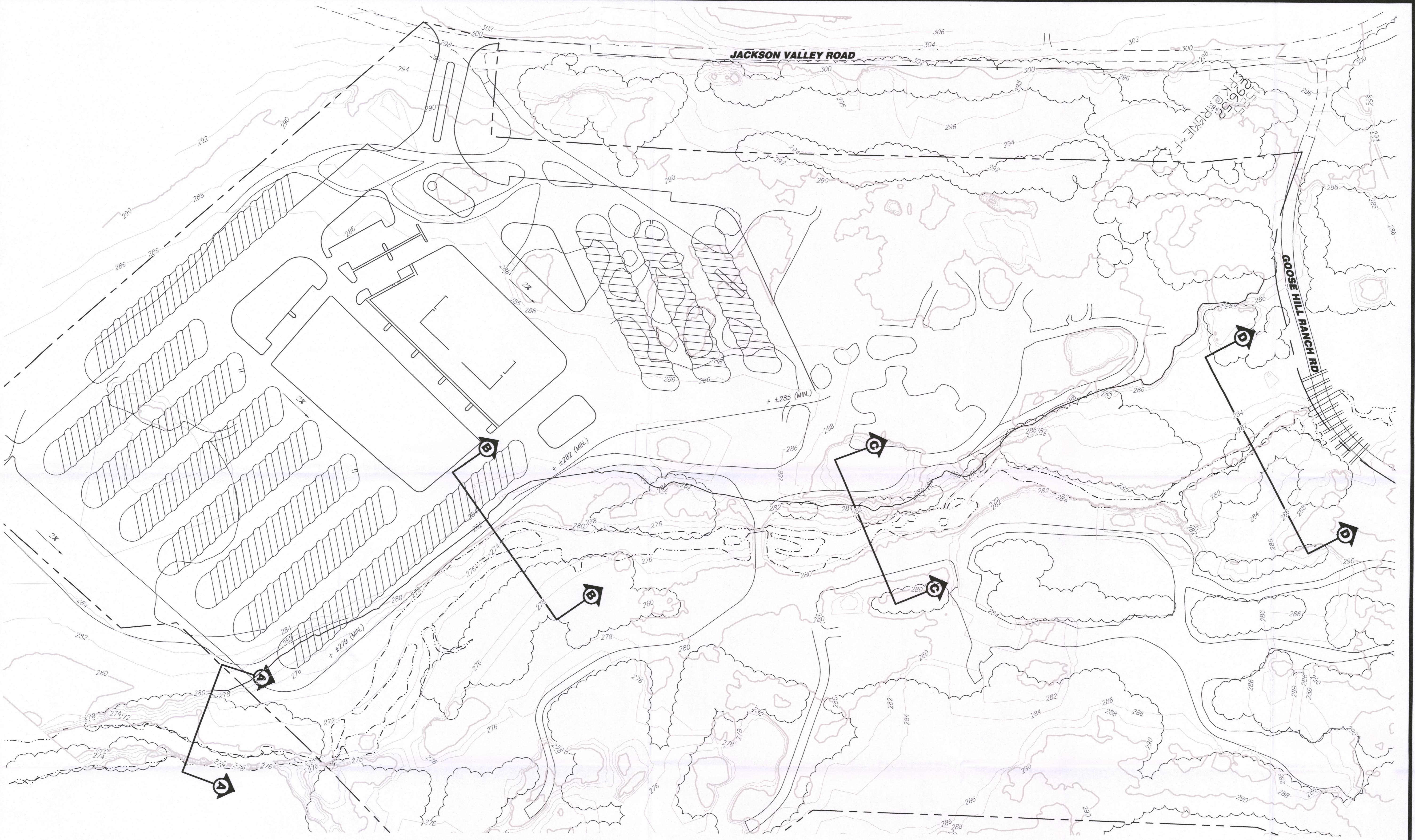
JACKSON VALLEY ROAD

GOOSE HILL RANCH RD

TOMA & ASSOCIATES INC.

ENGINEERING - SURVEYING - PLANNING

41 Summit Street, Jackson, CA   95642

(209) 223-0156

NINNIS RV PARK

100 YEAR FLOOD STUDY

AMADOR COUNTY, CALIFORNIA

SECTION A-A 100 YEAR FLOOD PLAIN

100 YEAR 279'

SECTION B-B 100 YEAR FLOOD PLAIN

100 YEAR 282'

SECTION C-C 100 YEAR FLOOD PLAIN

100 YEAR 285'

SECTION D-D 100 YEAR FLOOD PLAIN

100 YEAR 288.5'

SCALE:
HORIZONTAL: 1" = 100'
VERTICAL: 1" = 10'

0'   100'   200'   300'

+ ±285 (MIN.)

+ ±282 (MIN.)

+ ±279 (MIN.)

Scale: 1"=200'
2' Contour Interval

0'   200'   400'   600'

7	8
18	17

SURVEY DATUM:

HORIZONTAL — NAD 83, CALIFORNIA ZONE 2, U.S. SURVEY FEET
   M 1 USGS RESET (EPOCH 1991.35)
VERTICAL — NGVD 29, U.S. SURVEY FEET

AERIAL TOPOGRAPHIC SURVEY
GERRY NINNIS
6080 JACKSON VALLEY ROAD
AMADOR COUNTY, CALIFORNIA

REVISIONS | BY

OWNER:
GERRY NINNIS
P.O. BOX 960
PINE GROVE, CA 95665
(209) 988-4379

(2010)
Before New More

DATE: 12/18/2009
SCALE: 1"= 200'
DRAWN BY: M. TOMA
JOB NO.: 09-10-03MT
SHEET

1
OF 1 SHEETS
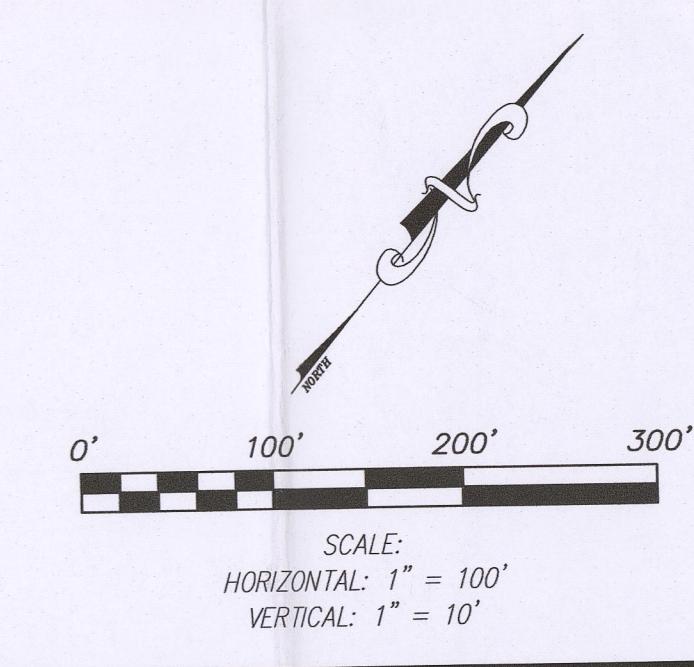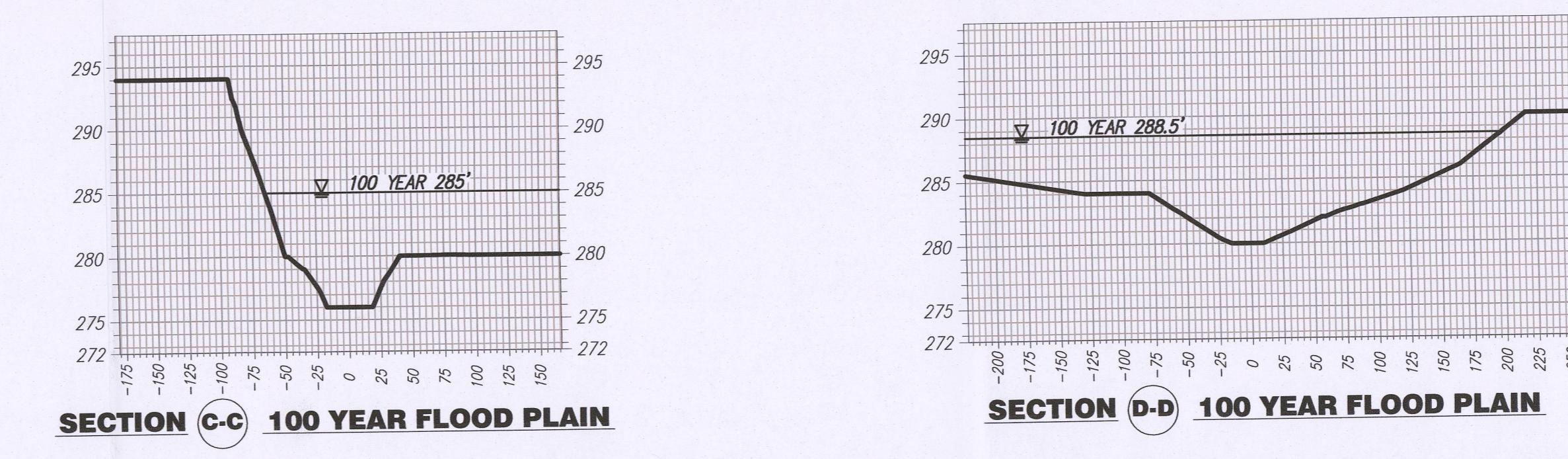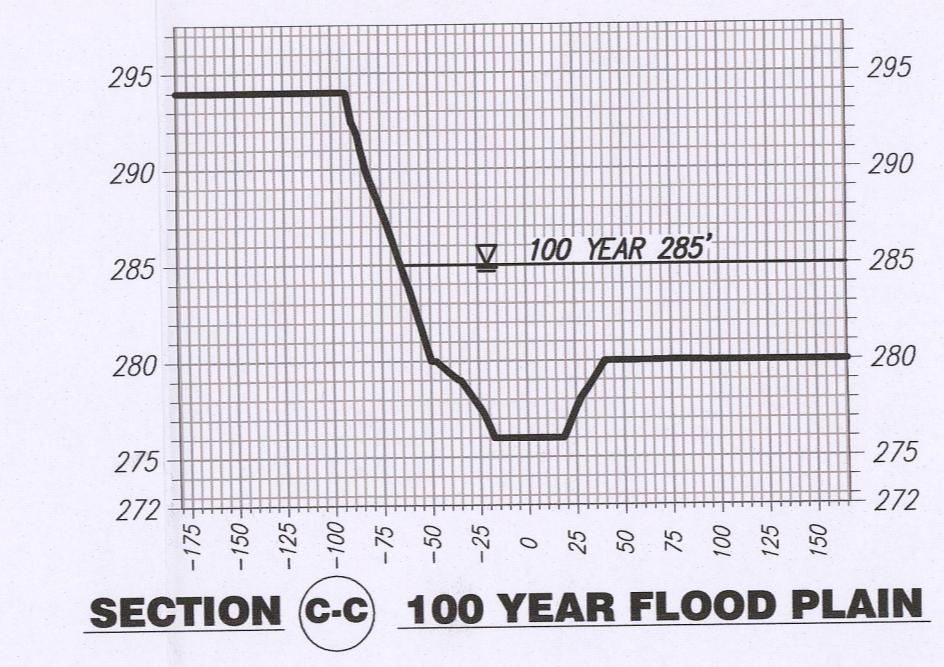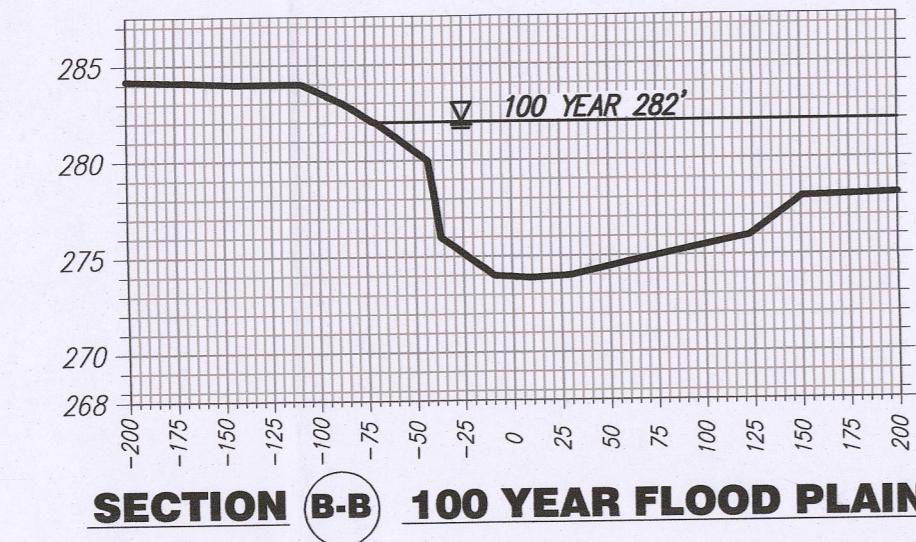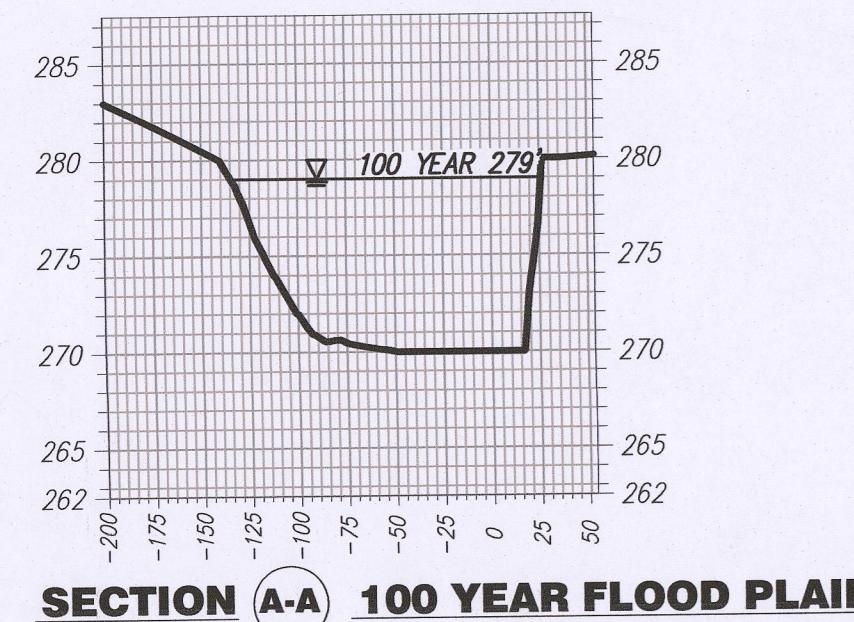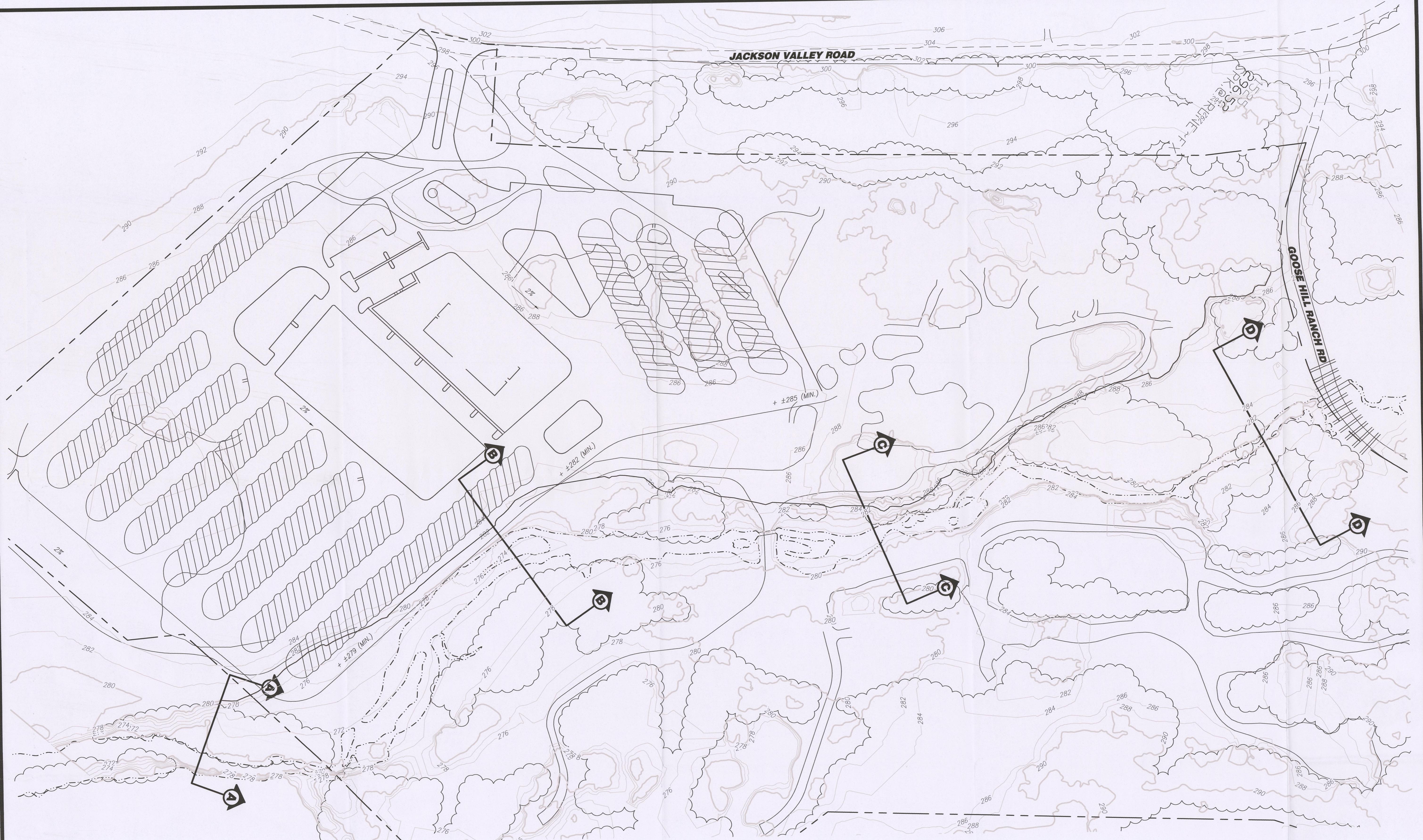
JACKSON VALLEY ROAD

GOOSE HILL RANCH RD.

+ ±285 (MIN.)

+ ±282 (MIN.)

+ ±279 (MIN.)

TOMA & ASSOCIATES INC.

ENGINEERING - SURVEYING - PLANNING

41 Summit Street, Jackson, CA 95642

(209) 223-0156

NINNIS RV PARK

100 YEAR FLOOD STUDY

AMADOR COUNTY, CALIFORNIA

SECTION A-A 100 YEAR FLOOD PLAIN

100 YEAR 279'

SECTION B-B 100 YEAR FLOOD PLAIN

100 YEAR 282'

SECTION C-C 100 YEAR FLOOD PLAIN

100 YEAR 285'

SECTION D-D 100 YEAR FLOOD PLAIN

100 YEAR 288.5'

SCALE:
HORIZONTAL: 1" = 100'
VERTICAL: 1" = 10'

0'   100'   200'   300'

March 22, 2023

Re: Traffic Impact Study for the Goose Hill RV Park Project – Scope Assumptions

SCOPE OF WORK

Wood Rodgers, Inc. (Wood Rodgers) is proposing the following Scope of Work for preparation of a Transportation Impact Study (TIS) for the proposed Goose Hill RV Park Project (Project) located at the current Goose Hill Quarry in Amador County (County). The Project site is located on a 105.21-acre parcel (APN 012-040-049) on the southwest quadrant of the Jackson Valley Road and Goose Hill Ranch Road intersection.

All Project understanding is based on information contained in the Project's County Application Packet, provided by BaseCamp Environmental (Client) on 1/26/2023. 40 acres of the Project site would be occupied by the proposed recreational facility and the remaining 65 acres would be agricultural open space and wildlife habitat. The recreational facility would consist of a 7,000 square foot clubhouse and office space, several 305 square foot toilet/shower outbuildings, living quarters for staff (limited to one unit), and 100 transitory recreational vehicle sites for rotating occupancy. It is assumed the Project would gain access to the surrounding roadway network via the existing driveway on Jackson Valley Road located approximately 1,880 feet west of Goose Hill Ranch Road.

The Project site is currently zoned "X" Special Use District and has a General Plan designation of "A" Agricultural. The Project proposes to rezone the site as "PD" Planned Development District and change the General Plan designation to "SPA" Special Planning Area. The Project would also need a Use Permit for a Recreational Vehicle Park.

The purpose of this TIS is to estimate Project travel characteristics and evaluate potential traffic deficiencies and impacts of the Project on surrounding roadway facilities. Traffic analysis in the TIS will be prepared consistent with Amador County Traffic Impact Study Guidelines (County TIS Guidelines) and CEQA Guidelines. The following tasks will be performed as part of the TIS:

TASK 1 | PREPARATION OF TRAFFIC IMPACT STUDY

TASK 1.1 | PROJECT MANAGEMENT

- Communicate with the Client as necessary to discuss and resolve key issues. Attend a Project kickoff phone conference with Client and/or City if necessary to establish final Project description and scope of the TIS.

- Daily project management and quality control/quality assurance.

- Review Project documents (Project description, site plans, driveway access, emergency access, etc.).

- Review agency planning documents including, but not limited to the County General Plan Mobility Element, County Traffic Impact Study Guidelines, etc.

Corporate Office: 3301 C Street, Bldg. 100-B • Sacramento, CA 95816 • Tel: 916.341.7760 • Fax: 916.341.7767
Offices located in California and Nevada
www.woodrodgers.com

- Review relevant, recently completed traffic studies and planning/engineering reports (as available).

TASK 1.2 | LOCAL TRAFFIC OPERATIONS ANALYSIS

- Wood Rodgers has prepared a preliminary Project Trip Generation (see Exhibit D) and preliminary Project Trip Distribution (See Exhibit E).

- Based on a preliminary Project trip generation/distribution, Wood Rodgers is proposing to analyze up to five (5) intersections and one (1) roadway segment.

  - Study Intersections:
    1. SR 88 & Jackson Valley Road (West)
    2. SR 88 & Buena Vista Road
    3. SR 88 & Jackson Valley Road (East)
    4. Jackson Valley Road & Buena Vista Road
    5. Project Driveway & Jackson Valley Road

  - Study Roadway Segments:
    1. Jackson Valley Road between Buena Vista Road and Goose Hill Ranch Road

  - **Note:** Initial study facilities were selected based on where the Project would add at least 10 peak hour trips consistent with County TIS Guidelines.

- New weekday peak hour traffic counts will be obtained for the four existing study intersections. New weekday daily traffic counts will be obtained for the one study roadway segment.

- Proposed study facilities are also shown in Exhibit E.

Task 1.2.1 | Estimate Project Trip Characteristics

- Prepare final Project trip generation for weekday daily, AM peak hour, and PM peak hour conditions using trip generation rates specified in Institute of Transportation Engineers (ITE) publication *Trip Generation, 11th Edition* (2021).

- Prepare final Project trip distribution and assignment based on review of existing traffic flow and travel patterns within the vicinity of the Project and knowledge of the area.

Task 1.2.2 | Operations Analysis

- Operations analysis for study intersections and roadways will be performed under the following time periods and scenarios:

  - Time Periods:
    - Weekday AM & PM Peak Hour

  - Scenarios:
    - "Existing" Conditions
    - "Existing Plus Project" Conditions
    - "Cumulative" Conditions
    - "Cumulative Plus Project" Conditions

- **Assumption:** Cumulative Conditions will be estimated as existing volumes plus volumes from pending and approved projects in the area. The County will provide a list of pending and approved projects.

- The following analysis will be performed for the above scenarios:

    - Complete HCM 6th Edition capacity analysis using Synchro software for all study intersections under weekday AM and PM peak hour conditions.

    - Complete roadway capacity analysis at all study roadway segments.

    - Complete peak hour signal warrant analysis for unsignalized study intersections.

    - Develop future volume forecasts for "Cumulative Conditions" based on a list of pending and approved projects.

    - 95th percentile queues will be analyzed for critical movements.

Task 1.2.3 | Identification of Level-of-Service Deficiencies and Recommended Improvements

- The study will follow County Level of Service (LOS) standards outlined in the County TIS Guidelines.

- Identify LOS deficiencies caused by the Project, if any.

- Recommend off-site intersection/roadway improvements, as needed, related to the proposed Project.

- Estimate Project fair share costs towards identified improvements.

Task 1.2.4 | Site Access and Internal Circulation Evaluation

- Evaluate Project site internal circulation, driveway locations, and emergency access.

- Evaluate truck turns for a design vehicle at the Project driveway.

- Provide recommendations for potential improvements to internal circulation.

- Provide a discussion of Project RV routing and potential effects on local roadways.

TASK 1.3 | TRAFFIC IMPACT ANALYSIS

Task 1.3.1 | Safety Analysis

- Vehicular collision data will be obtained from the Statewide Integrated Traffic Records System (SWITRS) or Caltrans Traffic Accident Surveillance and Analysis System (TASAS). Collision data for study area facilities will be analyzed. Project effects will be qualitatively evaluated.

- Potential improvements will be identified, if necessary.

Task 1.3.2 | Pedestrian, Bicycle, and Transit Facilities

- Identify Project impacts on existing and proposed pedestrian, bicycle, and transit facilities in the study area.

Task 1.3.3 | Vehicle Miles Traveled Analysis

- Project vehicle miles traveled (VMT) will be evaluated consistent with the current Amador County policies and guidelines, the OPR Technical Advisory, and CEQA Guidelines.

- Project VMT will be estimated using trip lengths obtained from big data or regional travel demand model sources.

- Project VMT may be compared against existing average VMT for similar land uses to determine impacts.

- Mitigation measures will be identified, if necessary, to reduce project VMT.

TASK 1.4 | PREPARE TRAFFIC IMPACT STUDY REPORT

- Prepare a detailed TIS Report summarizing data/results/findings from Tasks 1.1 through 1.3 using appropriate text, tables, and graphics.

- Prepare and deliver one (1) electronic PDF copy of the Draft TIS Report to the Client.

- Respond to one (1) round of Client and City comments on the Draft TIS Report.

- Prepare and deliver one (1) electronic PDF copy Final TIS Report.

Deliverables:

- ✓ Draft TIS Report

- ✓ Response to comments on the Draft TIS Report

- ✓ Final TIS Report

EXHIBIT "D" PRELIMINARY PROJECT TRIP GENERATION

Table 1 - ITE Trip Generation Rates
Goose Hill RV Park

Land Use Category	Source	ITE Code	Rate Unit	Weekday Daily Trip Rate/Unit[2]	Weekday AM Peak Hour Rate/Unit[1]			Weekday PM Peak Hour Rate/Unit[1]		
					Total	In%	Out%	Total	In%	Out%
Campground/Recreational Vehicle Park	ITE	416	Occupied Sites	2.70	0.21	36%	64%	0.27	65%	35%

Notes:

[1] *AM and PM Peak Hour trip rates based on average rates contained in the ITE Trip Generation Manual, 11th Edition.*

[2] *Since the ITE Trip Generation Manual, 11th Edition does not have Daily trip generation rates for the Campground/Recreational Vehicle Park land use, the Daily trip generation rate was assumed to be: (PM Peak Hour Average Rate) * (10). This is consistent with typical observed traffic patterns of peak hour traffic equaling 10% of daily traffic, and is consistent with custom trip generation data collected for other similar recreational sites, such as in the Yosemite Under Canvas DEIR (ESA, June 2020) which indicated a daily trip rate of 2.60 trips per occupied campsite/RV unit.*

Table 2 - Trip Generation Volumes
Goose Hill RV Park

Land Use Category	Units	Quantity	Daily Trips	Weekday AM Peak Hour Trips[1]			Weekday PM Peak Hour Trips[1]		
				Total	In	Out	Total	In	Out
Campground/Recreational Vehicle Park	Occupied Sites	100	270	21	8	13	27	18	9
Total			270	21	8	13	27	18	9

Notes:

[1] *Trip rates based on the ITE Trip Generation Manual, 11th Edition.*

EXHIBIT "E" PROJECT LOCATION, DISTRIBUTION, AND STUDY FACILITIES
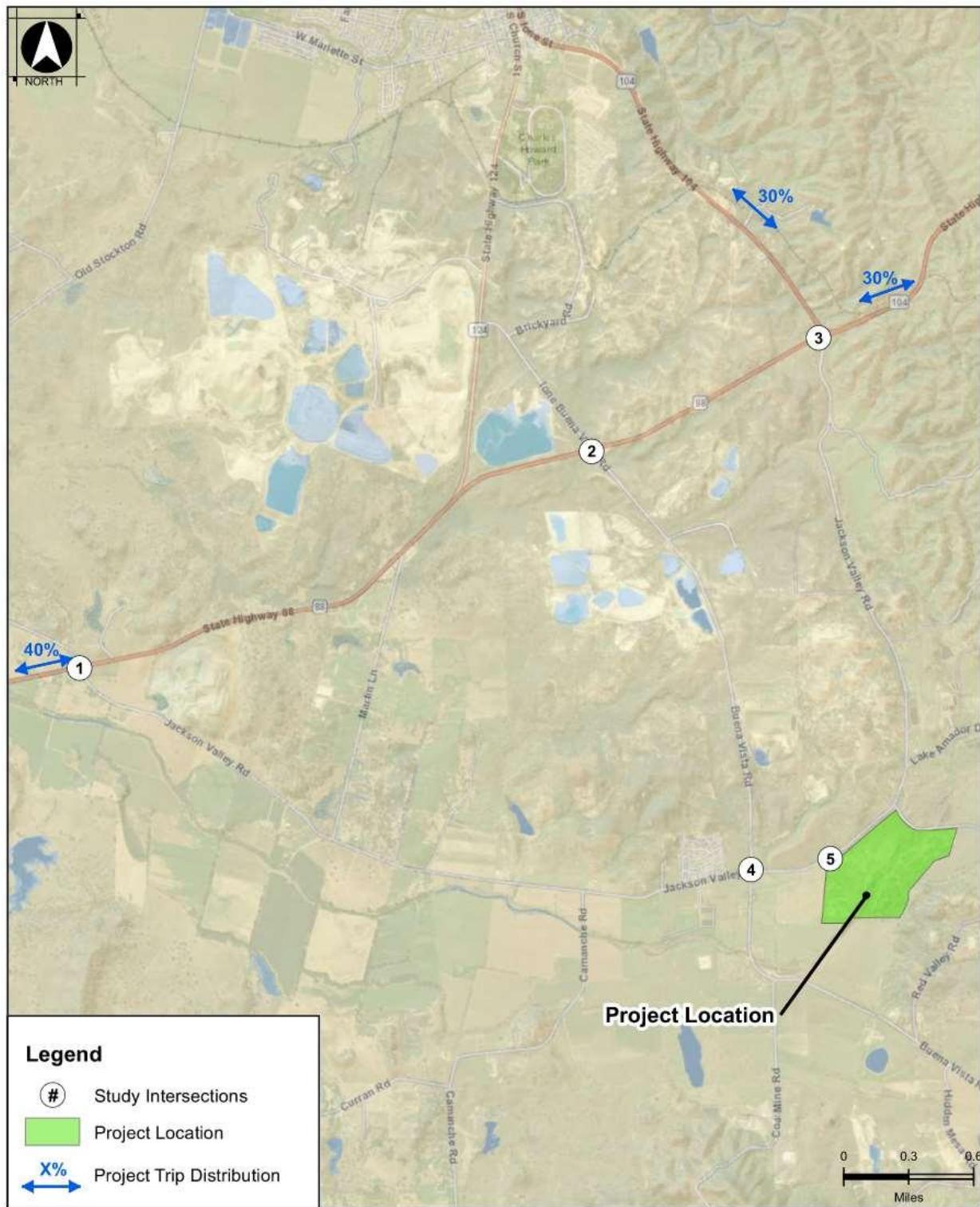
Project Location, Distribution, and Study Facilities
Goose Hill RV Park TIS
Amador County, CA
March 2023

Exhibit "E"

WOOD RODGERS

Legend
Study Intersections
Project Location
X% Project Trip Distribution