



County of Bernalillo

State of New Mexico

ONE CIVIC PLAZA, N.W.
ALBUQUERQUE, NEW MEXICO 87102
ADMINISTRATION (505) 768-4000
COMMISSION (505) 768-4217
FAX (505) 768-4329

February 3, 1994

BOARD OF COUNTY COMMISSIONERS

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JACQUELYN SCHAEFER, VICE CHAIR
DISTRICT 5
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RAY GALLAGHER, SHERIFF
H. R. FINE, TREASURER

John M. MacKenzie, P.E.
Mark Goodwin & Associates, P.A.
P.O. Box 90606
Albuquerque, NM 87199

RE: DRAINAGE PLAN FOR LOT 11109, SANDIA HEIGHTS SOUTH (D23/D39)
ENGINEER'S STAMP DATED JANUARY 24, 1994.

Dear Mr. MacKenzie:

Based on the information provided on the referenced submittal received January 26, 1994, the plan is acceptable for Building Permit release.

Please be advised that prior to the County Building Department performing final inspection of the structure, an Engineer's Certification must be submitted and approved by this office.

This approval includes AMAFCA and County Public Works Department. If you should have any questions, please do not hesitate to call me at 768-2650.

Cordially,

A handwritten signature in black ink, appearing to read "Gilbert Aldaz".

Gilbert Aldaz, P.E. & P.S.
City/County Floodplain Administrator

c: Clifford E. Anderson, AMAFCA
Bob Foglesong, County Public Works Dept.
Tom Burlison, County Building Dept.
Andrew Garcia, City Hydrology
File

wp+8282

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Lot 11109 Sandia Heights South ZONE ATLAS/DRNG, FILE #: D-23/239
DRB #: _____ EPC #: _____ WORK ORDER #: _____
LEGAL DESCRIPTION: Lot 11109 Sandia Heights South
CITY ADDRESS: 1109 Morning Glory NE

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: John M. MacKenzie, PE
ADDRESS: P.O. Box 90606 PHONE: 828-2200
OWNER: Desert Classic Homes CONTACT: Ted Zmroczek
ADDRESS: 4101 Morris NE PHONE: 294-1525
ARCHITECT: N/A CONTACT: _____
ADDRESS: _____ PHONE: _____
SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich
ADDRESS: P.O. Box 30701 PHONE: 884-1990
CONTRACTOR: N/A CONTACT: _____
ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
☒ DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION
____ OTHER

PRE-DESIGN MEETING:

____ YES
☒ NO
____ COPY PROVIDED

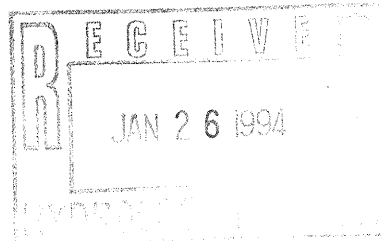
CHECK TYPE OF APPROVAL SOUGHT:

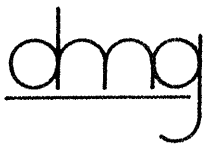
____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ S. DEV. PLAN FOR SUB'D APPROVAL
____ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
☒ BUILDING PERMIT APPROVAL
____ CERTIFICATION OF OCCUPANCY APPROVAL
____ GRADING PERMIT APPROVAL
____ PAVING PERMIT APPROVAL
____ S.A.D. DRAINAGE REPORT
____ DRAINAGE REQUIREMENTS
____ OTHER _____ (Specify)

DATE SUBMITTED: 1/26/94

BY: _____

John M. MacKenzie, PE



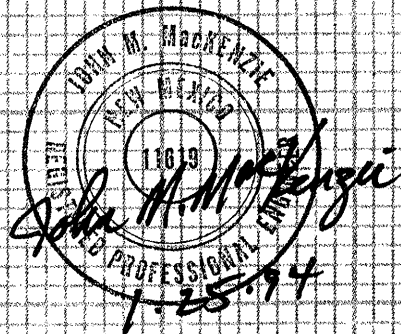


D. MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS & SURVEYORS

PROJECT _____
SUBJECT _____
BY _____ DATE _____
CHECKED _____ DATE _____
SHEET _____ OF _____

LOT 11109 SANDIA HEIGHTS

DESIGN CALCULATIONS



January 1994

X X XXXXXXX XXXX X
X X X X X X
X X X X X X
XXXXXX XXXX X
X X X X X
X X X X X
X X XXXXXXX XXXX
X X XXXXXXX XXXX

END OF BANNER

1/21/94 8: 1: 8

PAGE 1

THIS RUN EXECUTED 1/21/94 8: 1: 8

HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01.02
MODIFICATION -

T2 FOREWATER FLOW ANALYSIS FOR LOT 11109 - SANDIA HEIGHTS - JAN. 94

J1	ICHECK	ING	NINV	IDIR	SIRT	METRIC	HVINS	Q	WSEL	FO
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NC	.035	.0435	.0435	.1	.3	10	10	0	0	0
X1	1	17	198	266	13	10	83	82.1	85	47
GR	88	0	85	24	84	29	85.4	198	80	201
GR	83	70	84	97	85	161	81	225	80	235
GR	84	204	83	209	82	216				
GR	78.75	243	87.4	266						
X1	2	19	202	265	8	10	10	0	0	0
GR	88	0	86	12	85	21	84	26	83	31
GR	82	49	81	54	82	57	83	86	84	126
GR	84.9	202	84	205	83	209	82	213	81	223
GR	80	235	79	242	78.1	246	87	265		
X1	3	18	203	271	18	15	14	0	0	0
GR	87.5	0	86	11	83	26	84	33	82	53
GR	82	53	80.7	56	82	63	83	96	84	173
GR	84.3	203	82	208	81	216	80	230	79	238
GR	78	243	77.4	245	86.6	271				
X1	4	18	200	266	20	18	18	0	0	0
GR	87	0	81	39	81.6	44	81.5	98	81	61
GR	79	65	81	67	82	85	83	138	83.5	200
GR	80.6	208	80	217	79	227	78	233	77	237
GR	76.3	240	77	242.5	86	266				

GR	36	0	86	19	62	30	81	39	79.3	47
GR	30.5	52	80.4	56	79.5	59	80	60	81	77
GR	82	115	82.7	195	81	199.5	80	205	79	215
GR	78	222	75	234	83	256	85.3	262		
X1	6	20	194	259	22	17	15	0	0	0
GR	85	0	84	9	83	20	82	31	80	47
GR	79.3	54	79.5	57	79.2	59	80	71	81	94
GR	81.9	194	81	196	79	206	78	215	76	224
GR	75	227	74.7	230	75	234	80	249	84.3	259
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X1	7	19	190	267	19	7	8	0	0	0
GR	83	0	81	22	80	43	79	63	78.8	67
GR	79	70	80	94	81	160	81.3	150	80	185
GR	78	205	77	213	76	220	75	224	76	234
GR	79	243	80	245	81	249	82	267		
X1	8	15	177	235	14	0	2	0	0	0
GR	81	0	80	15	79.3	40	79.3	55	79	60
GR	78.4	66	79	74	80	87	80.6	125	80	177
GR	79	181	78	201	77.1	211	78	220	80	235
X1	8	15	177	251	0	0	0	0	0	0
GR	80	0	79	28	78.7	47	78.9	70	78.4	77
GR	79	87	80	110	80.3	127	80	162	79	177
GR	78	205	77.7	210	78	215	79	230	80	251

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SECNO	DEPTH	QWSEL	CRWS	WSELK	EG	HV	HL	GLSS	BANK ELEV
TIME	QLOB	QCH	QROB	ALDE	ACH	AROB	VOL	TWA	LEFT/RIGHT
SLOPE	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
	XLOB	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1
0

CCRHV= .100 CCHV= .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3245 DIVIDED FLOW
3720 CRITICAL DEPTH ASSUMED
1.00 6.37 85.12 35.12 .00 86.06 94 .00 .00 85.40
2997. 1253. 1744. 0. 185. 207. 0. 0. 0. 87.40
.00 6.76 8.42 .00 .035 .043 .000 .000 78.75 23.02
.012040 0. 0. 0. 0. 0. 0. 0. 209.18 259.94

*SECNO 2.000
3250 DIVIDED FLOW

2301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE; KRATIO = 1.44

30

	2.00	5.99	84.61	.00	85.50	1.70	.19	.08	84.30
2997.	1066.	1931.	0.	123.	170.	0.	0.	0.	87.00
.00	8.70	11.33	.00	.035	.043	.000	.000	78.10	25.54
024925	13.	10.	10.	6	8	0	.00	163.32	258.72
0	*SECNO 3.000								

2263 DIVIDED FLOW

3.00	4.28	83.68	54.34	.00	85.54	1.85	.24	.02	84.30
2997.	723.	2274.	0.	97.	192.	0.	0.	0.	86.60
.00	7.41	11.83	.00	.035	.043	.000	.000	77.40	22.58
.025480	9.	10.	10.	11	8	0	.00	179.19	262.74

1100

	SECNO	DEPTH	CWSEL	CRIMS	MSELK	ES	HV	HL	GLOSS	BANK ELEV
O		QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME		VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
							IDONT	CORAB	TORNWD	ENDST

*SECNO 4.000

3265 DIVIDED FLOW

2701 HV CHANGED MORE THAN HVINS

[illegible]

000 5 12 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042

2025 DIVIDED FLOW

5.00	6.73	81.73	82.64	.00	84.34	2.61	.64	.02	82.70
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2000

[illegible]

1.000	2997.00	83.12	.00	.00	.00	209.18	.00
2.000	2997.00	84.09	.00	-1.03	.00	162.32	10.00
3.000	2997.00	83.68	.00	-1.41	.00	179.19	10.00
4.000	2997.00	82.58	.00	-1.10	.00	141.67	16.00
5.000	2997.00	81.73	.00	-.85	.00	127.42	18.00
6.000	2997.00	81.04	.00	-.69	.00	115.79	17.00
7.000	2997.00	80.63	.00	-.41	.00	160.57	15.00
8.000	2997.00	80.78	.00	-.16	.00	231.69	8.00
9.000	2997.00	80.35	.00	-.43	.00	231.00	5.00
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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO= 1.000 PROFILE= 1 CRITICAL DEPTH ASSUMED

WARNING SECNO= 2.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE



D. MARK GOODWIN & ASSOC.
CONSULTING ENGINEERS

p13

JOB Lot 11109 Sanidia Heights
SUBJECT Drainage
JOB NO. _____ SHEET _____ OF _____
BY Jmm DATE 1/25/94
CHECKED _____ DATE _____

The embankment along the south side of the south branch of the South Domingo Baca Arroyo consists of large boulders averaging 2 feet in diameter. The estimated allowable shear forces of these are:

$$\tau = a (\gamma_s - \gamma) D_{50} = 0.04 (155 - 62.4) (2)$$

$$\tau = 7.41 \text{ psf}$$

$$\tau' = \tau \left(1 - \frac{\sin^2 \phi}{\sin^2 \theta} \right)^{0.5}$$

11.3° = ϕ = existing channel slope
30° = θ = estimated angle of repose

$$\tau' = 7.41 \left(1 - \frac{(0.196)^2}{(1.5)^2} \right)^{0.5}$$

$$\tau' = 6.82 \text{ psf}$$

Allowable shear on boulders

$$\tau'_0 = \frac{\gamma v^2}{\left[32.6 \log \frac{12.2 d}{D_{50}} \right]^2} = \frac{62.4 (8.67)^2}{\left[32.6 \log \frac{12.2 (2)}{2.0} \right]^2}$$

$$\tau = 1.55 \text{ psf}$$

Actual shear on boulders

P15

AHYMO PROGRAM (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992
 RUN DATE (MON/DAY/YR) = 11/29/1993
 START TIME (HR:MIN:SEC) = 16:07:25 USER NO. = Z_GOODWN.S92
 INPUT FILE = LOT11109.DAT

START TIME=0.0
 ***** HYDROGRAPH FOR LOT 11109 SANDIA HEIGHTS - ON SITE UNDEVELOPED RUNOFF
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=2.27 IN RAIN SIX=2.86 IN
 RAIN DAY=3.50 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 H

R.

DT = .033330 HOURS			END TIME = 5.999400 HOURS			
.0000	.0042	.0085	.0128	.0173	.0219	.0265
.0313	.0362	.0412	.0463	.0515	.0569	.0624
.0681	.0739	.0799	.0861	.0925	.0991	.1059
.1130	.1203	.1279	.1358	.1440	.1527	.1617
.1711	.1811	.1916	.1979	.2046	.2118	.2272
.2616	.3146	.3907	.4947	.6312	.8054	1.0222
1.2869	1.5326	1.6351	1.7218	1.7988	1.8689	1.9334
1.9933	2.0493	2.1018	2.1511	2.1977	2.2417	2.2834
2.3228	2.3603	2.3958	2.4295	2.4615	2.4698	2.4776
2.4851	2.4923	2.4992	2.5059	2.5123	2.5186	2.5246
2.5305	2.5362	2.5418	2.5472	2.5525	2.5576	2.5627
2.5676	2.5725	2.5772	2.5819	2.5864	2.5909	2.5953
2.5996	2.6039	2.6081	2.6122	2.6162	2.6202	2.6241
2.6280	2.6318	2.6356	2.6393	2.6429	2.6466	2.6501
2.6537	2.6571	2.6606	2.6640	2.6673	2.6707	2.6739
2.6772	2.6804	2.6836	2.6867	2.6899	2.6929	2.6960
2.6990	2.7020	2.7050	2.7079	2.7108	2.7137	2.7166
2.7194	2.7222	2.7250	2.7278	2.7305	2.7332	2.7359
2.7386	2.7413	2.7439	2.7465	2.7491	2.7517	2.7543
2.7568	2.7593	2.7618	2.7643	2.7668	2.7692	2.7717
2.7741	2.7765	2.7789	2.7812	2.7836	2.7859	2.7883
2.7906	2.7929	2.7951	2.7974	2.7997	2.8019	2.8041
2.8064	2.8086	2.8107	2.8129	2.8151	2.8172	2.8194
2.8215	2.8236	2.8257	2.8278	2.8299	2.8320	2.8341
2.8361	2.8382	2.8402	2.8422	2.8442	2.8462	2.8482
2.8502	2.8522	2.8541	2.8561	2.8580	2.8600	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.00127 SQ MI
 PER A=100.0 PER B=0.0 PER C=0.0 PER D=0.0
 TP=0.1333 HR MASS RAINFALL=-1

K = .160070HR TP = .133300HR K/TP RATIO = 1.200823 SHAPE CONSTANT, N =
 2.959344 UNIT PEAK = 2.6533 CFS UNIT VOLUME = .9945 B = 278.49 P60 = 2.27

00 AREA = .001270 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = .79303 INCHES = .0537 ACRE-FEET
 PEAK DISCHARGE RATE = 1.78 CFS AT 1.500 HOURS BASIN AREA = .0013 SQ. MI.

***** HYDROGRAPH FOR LOT 11109 SANDIA HEIGHTS - ON SITE DEVELOPED RUNOFF
COMPUTE NM HYD ID=2 HYD NO=101.2 AREA=0.00127 SQ MI
PER A=63.0 PER B=0.0 PER C=20.0 PER D=17.0
TP=0.1333 HR MASS RAINFALL=-1

p16

7.106420 K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
00 UNIT PEAK = .85238 CFS UNIT VOLUME = .9862 B = 526.28 P60 = 2.27
AREA = .000216 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

3.182971 K = .148096HR TP = .133300HR K/TP RATIO = 1.110997 SHAPE CONSTANT, N =
00 UNIT PEAK = 2.3440 CFS UNIT VOLUME = .9942 B = 296.41 P60 = 2.27
AREA = .001054 SQ MI IA = .57771 INCHES INF = 1.46759 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.20527 INCHES = .0816 ACRE-FEET
PEAK DISCHARGE RATE = 2.45 CFS AT 1.500 HOURS BASIN AREA = .0013 SQ. MI.

***** HYDROGRAPH FOR OFF-SITE RUNOFF GENERATED ALONG MORNING GLORY RD. AND
***** EAST OF SITE
COMPUTE NM HYD ID=3 HYD NO=101.3 AREA=0.00108 SQ MI

PER A=40.0 PER B=0.0 PER C=20.0 PER D=40.0
TP=0.1333 HR MASS RAINFALL=-1

7.106420 K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
00 UNIT PEAK = 1.7056 CFS UNIT VOLUME = .9922 B = 526.28 P60 = 2.27
AREA = .000432 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

3.281168 K = .143506HR TP = .133300HR K/TP RATIO = 1.076564 SHAPE CONSTANT, N =
00 UNIT PEAK = 1.4778 CFS UNIT VOLUME = .9906 B = 304.00 P60 = 2.27
AREA = .000648 SQ MI IA = .55000 INCHES INF = 1.39000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

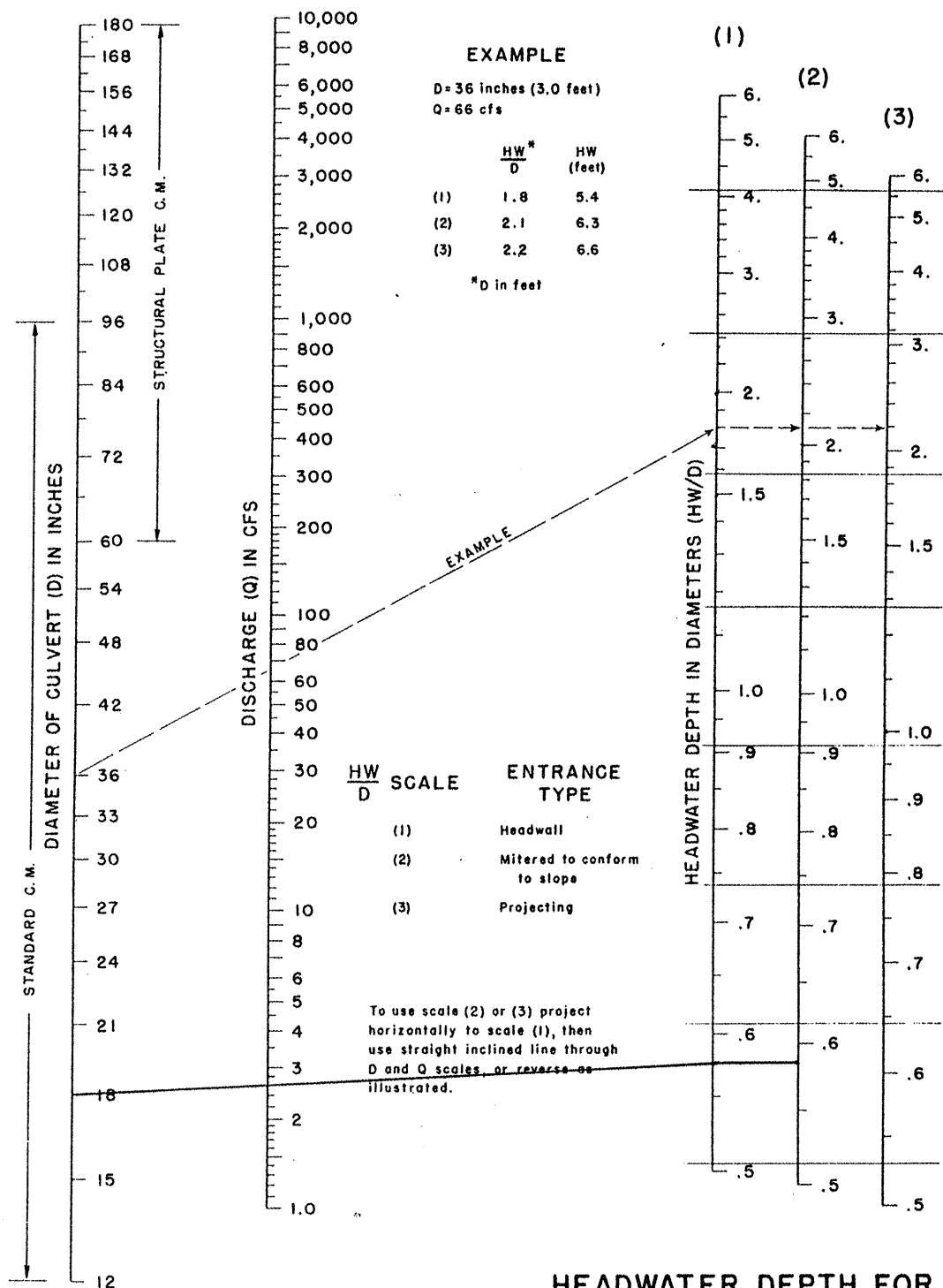
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 101.30

RUNOFF VOLUME = 1.62540 INCHES = .0936 ACRE-FEET
PEAK DISCHARGE RATE = 2.60 CFS AT 1.500 HOURS BASIN AREA = .0011 SQ. MI.

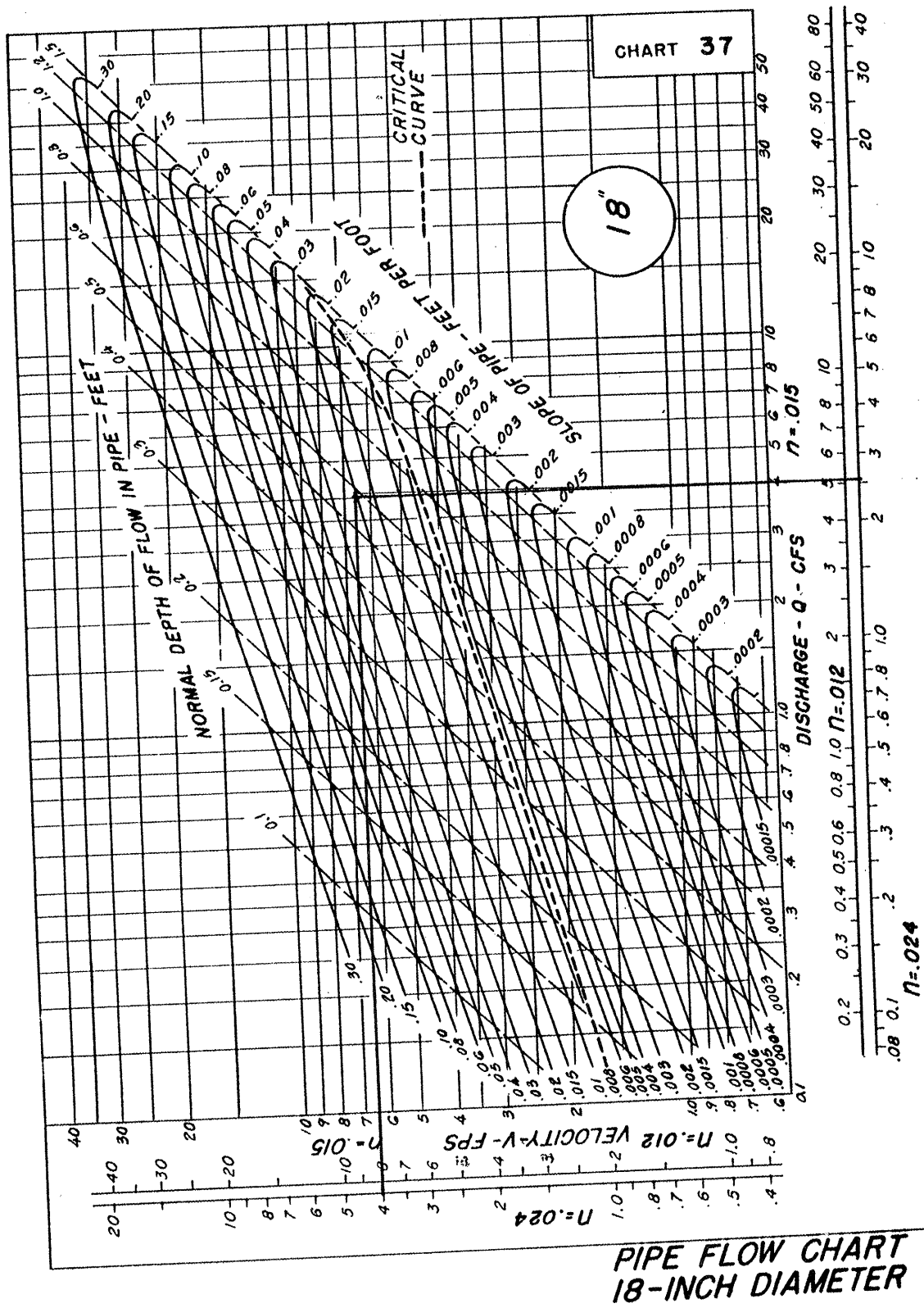
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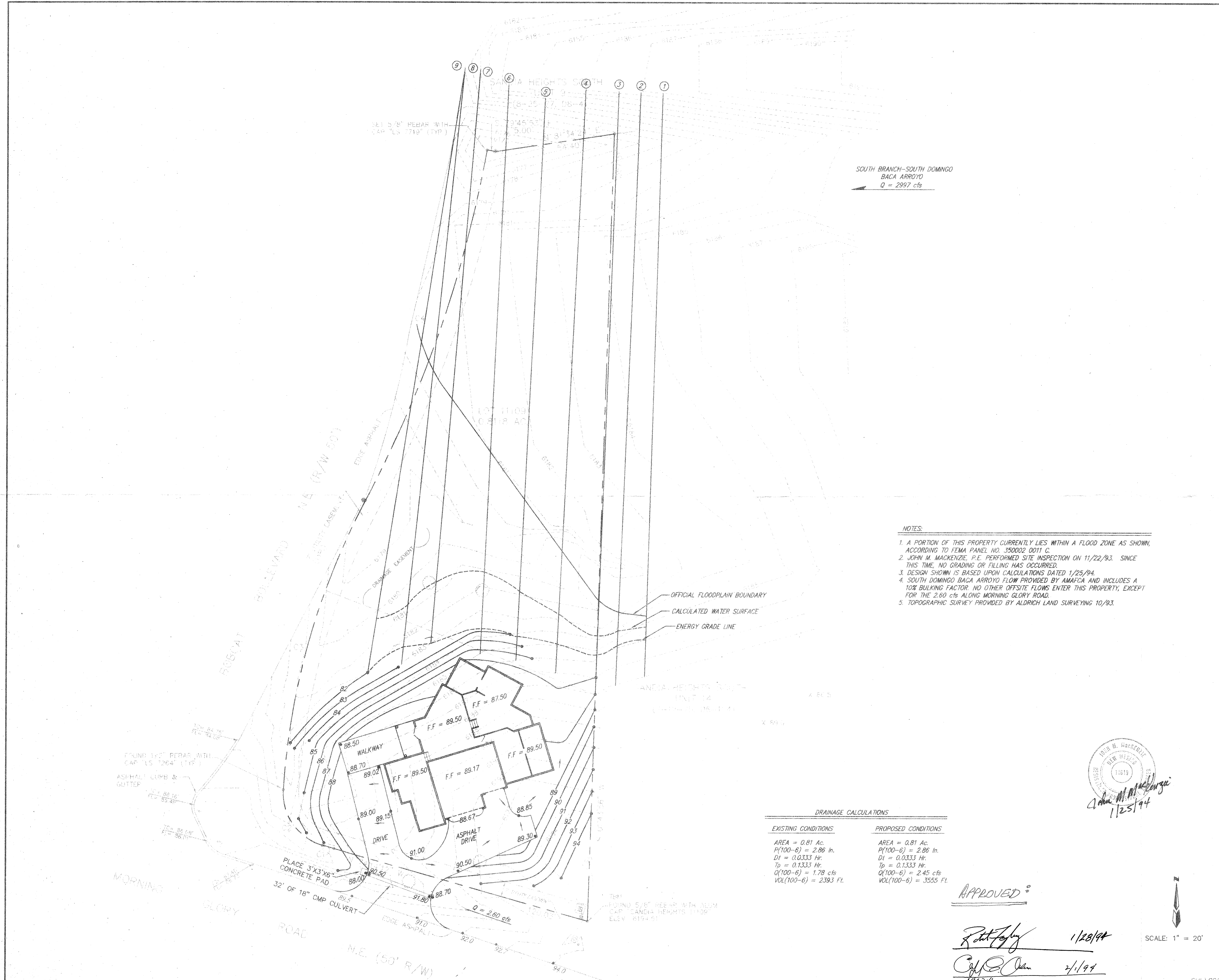
CHART 5



HEADWATER DEPTH FOR
C. M. PIPE CULVERTS
WITH INLET CONTROL

p 18





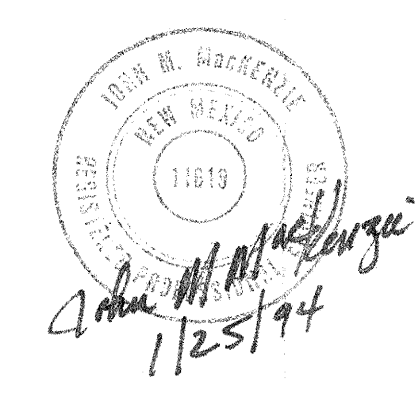
SOUTH BRANCH-SOUTH DOMINGO
BACA ARROYO
Q = 2997 cfs

- NOTES:
1. A PORTION OF THIS PROPERTY CURRENTLY LIES WITHIN A FLOOD ZONE AS SHOWN, ACCORDING TO FEMA PANEL NO. 350002 0011 C.
 2. JOHN M. MACKENZIE, P.E. PERFORMED SITE INSPECTION ON 11/22/93. SINCE THIS TIME, NO GRADING OR FILLING HAS OCCURRED.
 3. DESIGN SHOWN IS BASED UPON CALCULATIONS DATED 1/25/94.
 4. SOUTH DOMINGO BACA ARROYO FLOW PROVIDED BY AMAFCA AND INCLUDES A 10% BULKING FACTOR. NO OTHER OFFSITE FLOWS ENTER THIS PROPERTY, EXCEPT FOR THE 2.60 cfs ALONG MORNING GLORY ROAD.
 5. TOPOGRAPHIC SURVEY PROVIDED BY ALDRICH LAND SURVEYING 10/93.

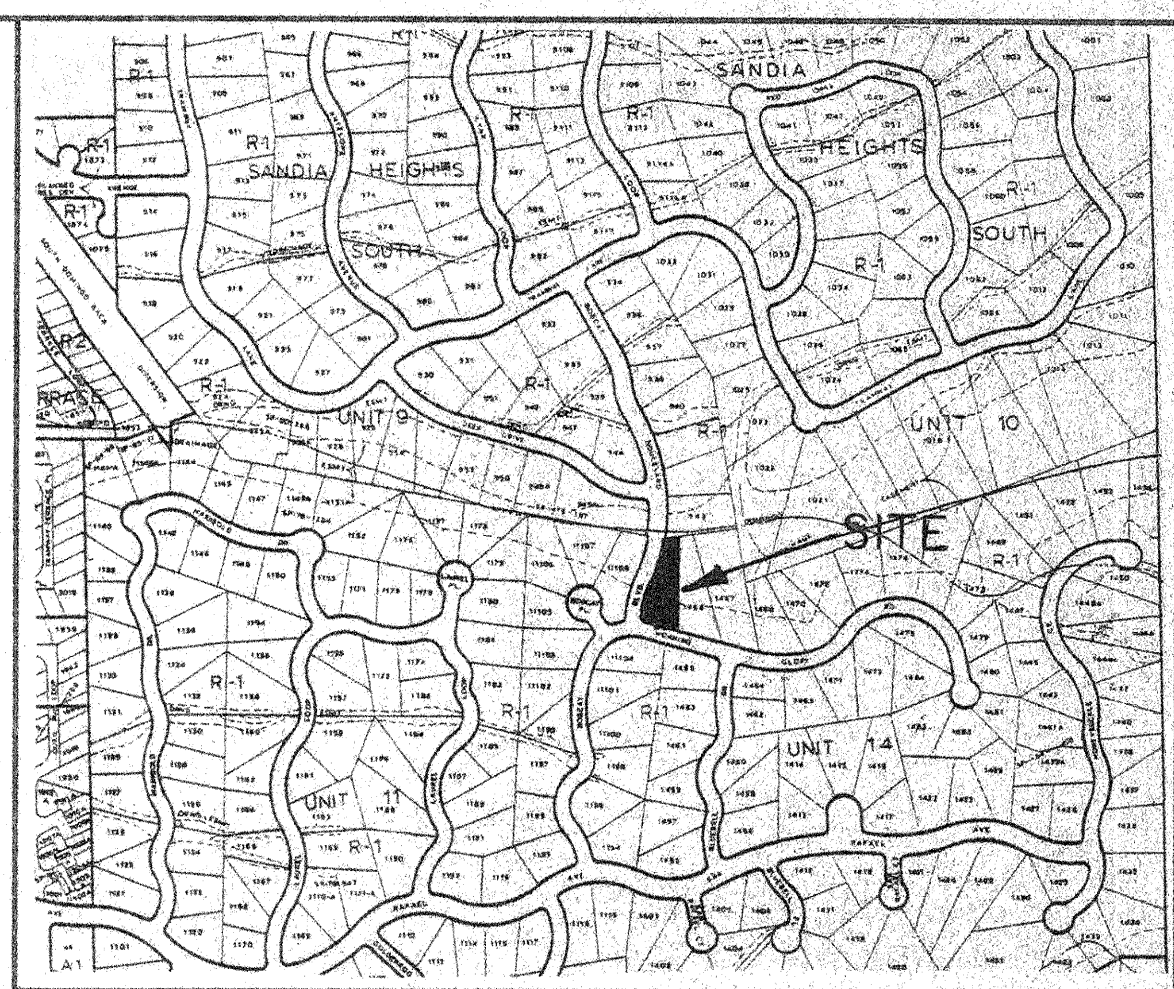
EXISTING CONDITIONS	PROPOSED CONDITIONS
AREA = 0.81 Ac.	AREA = 0.81 Ac.
P(100-6) = 2.86 in.	P(100-6) = 2.86 in.
Dt = 0.0333 Hr.	Dt = 0.0333 Hr.
Tp = 0.1333 Hr.	Tp = 0.1333 Hr.
Q(100-6) = 1.78 cfs	Q(100-6) = 2.45 cfs
VOL(100-6) = 2393 FL.	VOL(100-6) = 3555 FL.

APPROVED:

John M. Mackenzie 1/23/94
John M. Mackenzie 2/1/94
AMAFCA



SCALE: 1" = 20'



VICINITY MAP ZONE MAP: D-23-Z

TBM (TEMPORARY BENCHMARK)

5/8" REBAR WITH ALUM. CAP "SANDIA HEIGHTS 11109." LOCATED AT THE SOUTHEAST PROP. CORNER. ELEV. = 6194.51.

ACS BENCHMARK

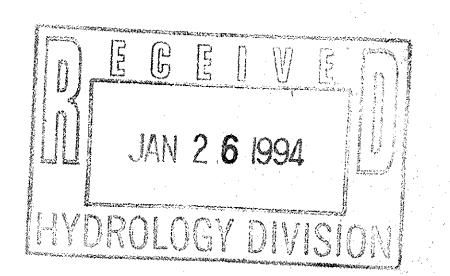
ELEVATIONS BASED ON THE ALBUQUERQUE CONTROL SURVEY MONUMENT "1-C23", MSLD 1929.

LEGAL DESCRIPTION

LOT 11109 SANDIA HEIGHTS SOUTH, UNIT 11. WITHIN IN THE ELENA GALLEGOS GRANT. PROJECTED SECTION 23 TOWNSHIP 11 NORTH, RANGE 4 EAST, NMPM BERNALILLO COUNTY, NEW MEXICO.

LEGEND

- 72.00 PROPOSED GRADE
- FLOW ARROW
- EXISTING CONTOUR
- EXISTING CURB & GUTTER
- EXISTING SPOT ELEVATION
- EXISTING TREE
- EXISTING ELECTRIC TRANSFORMER
- ① HEC 2 CROSS - SECTION
- WATER SURFACE



LOT 11109 SANDIA HEIGHTS SOUTH
GRADING & DRAINAGE PLAN

dmg D. MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS & SURVEYORS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505) 828-2200

Designed: JMM	Drawn: STAFF	Checked: DMG	Sheet 1 of 1
Scale: 1"=20'	Date: 1/94	Job: 93107	