



CITY OF  
Albuquerque

July 28, 1997

Martin J. Chávez, Mayor

Leonard Espinosa  
P.O. Box 7790  
Albuquerque, NM 87194

**RE: SUNRISE ESTATES UNIT 1, (M10-D5A) COMPLAINTS.**

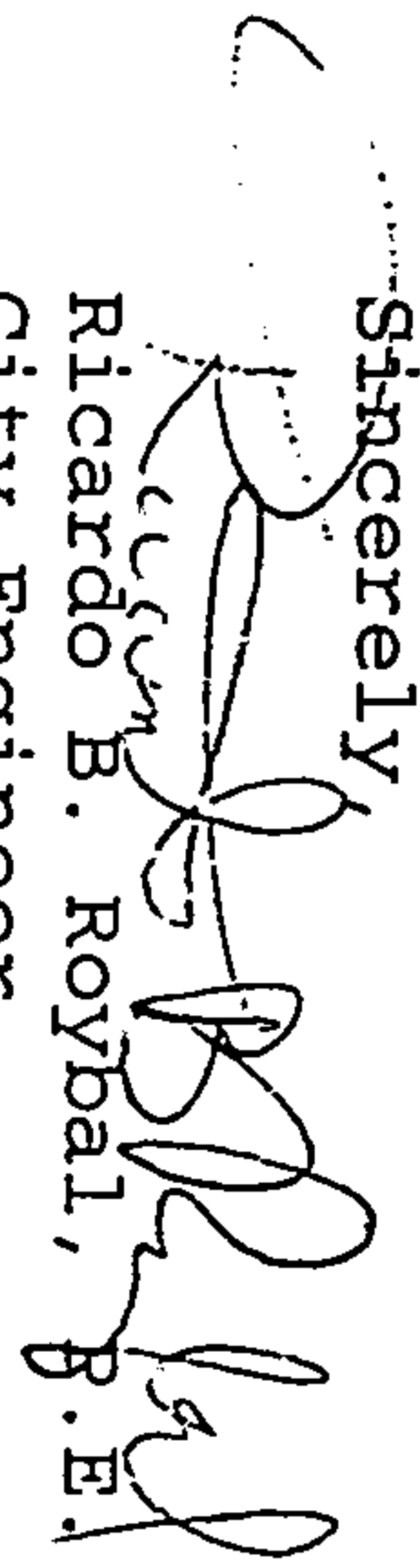
Dear Mr. Espinosa:

Per our meeting on July 28, 1997, I am forwarding you copies of the complaints we have received regarding Sunrise Estates, Unit 1. We have received ten (10) complaints.

I hope this information is beneficial to Presley Homes and that the drainage/erosion problems will be corrected.

If I can be of further assistance, please feel free to contact me at 924-3979.

Sincerely,



Ricardo B. Roybal, P.E.  
City Engineer

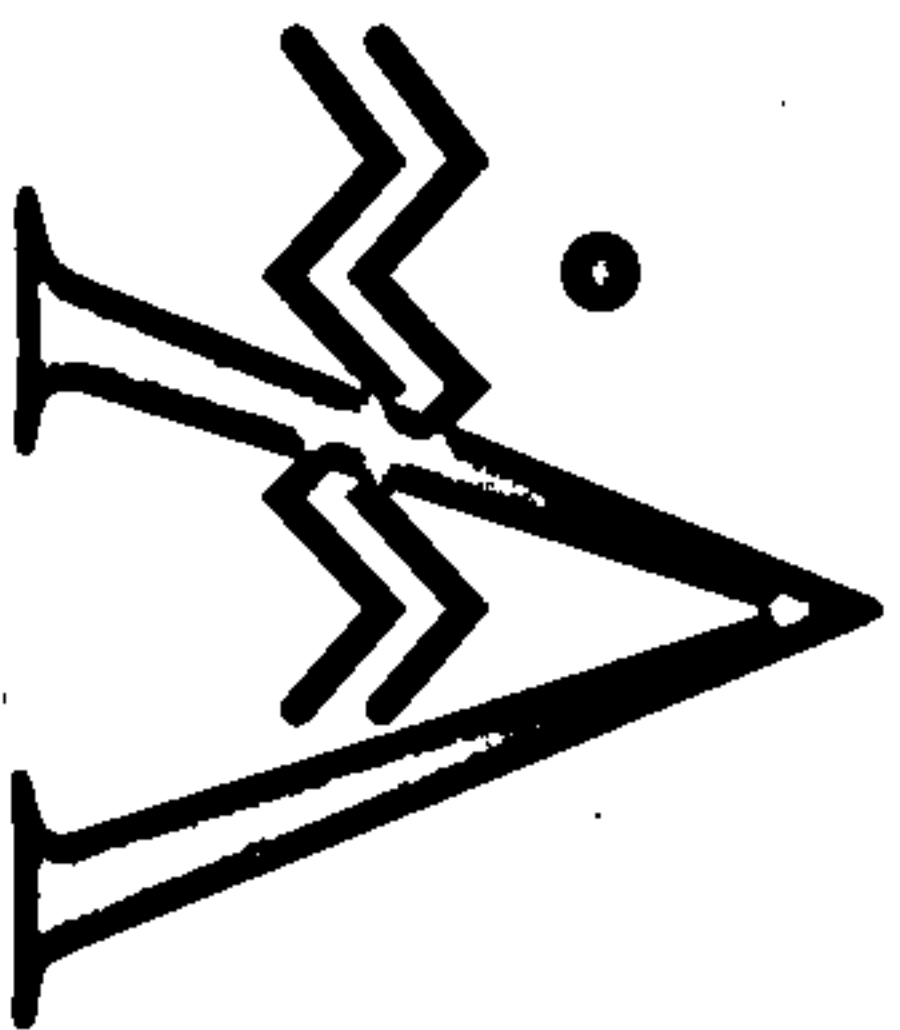
c: 

RBR/lam

Good for You, Albuquerque!

P.O. Box 1293, Albuquerque, New Mexico 87103





CITY OF  
Albuquerque

Public Works Department  
October 30, 1996

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

R. Louis Costley III  
1201 Diamond Place SW  
Albuquerque, NM 87121-8331

RE: **SUNRISE ESTATES UNIT 1 (M10-D5A).**

Dear Mr. Costly:

I am in receipt of your letter dated October 25, 1996. I have include the (9) separate complaints from Sunrise Estates Unit I residents in the drainage file.

The approved and certified plan for this subdivision indicates no cross-lot drainage. I have enclosed a copy of the approved plan, designed and certified by Isaacson & Arfman Consulting Engineers. As can be seen by the flow directional arrows (see legend on plan sheets) each lot was designed to discharge directly to the City street and not from lot to lot.

From the numerous pictures you showed me, it is evident that cross lot drainage and severe erosion is occurring in many yards. It is my suggestion that this matter be taken up with the Builder/Developer. Per the approved and certified plan, cross lot drainage is absolutely not allowed.

I am forwarding a copy of this letter to Presely Homes, Isaacson & Arfman, and to all the residents of Sunrise Estates, Unit I who have filed a complaint.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill  
Engineering Assoc./Hyd.

Was this  
letter actually  
sent?  
JAC  
7/18/98

Good for You, Albuquerque!



- Identify onsite Floodplain boundary
- Status of Blanket Easement
- Floodplain in Sapphire St.

Offsite = 447 yds Sapphire

" " = 60 yds 82nd

- Greater detail of outfall needed @ DRC
- Unse Impr. (S.D.) right of Unit 2.

# PIPE CULVERT ANALYSIS COMPUTATION OF CULVERT PERFORMANCE CURVE

March 16, 1990  
VISTA NUEVA SUBDIVISION  
UNSER/KIMELA INTERSECTION

## PROGRAM INPUT DATA: DESCRIPTION

VALUE

```

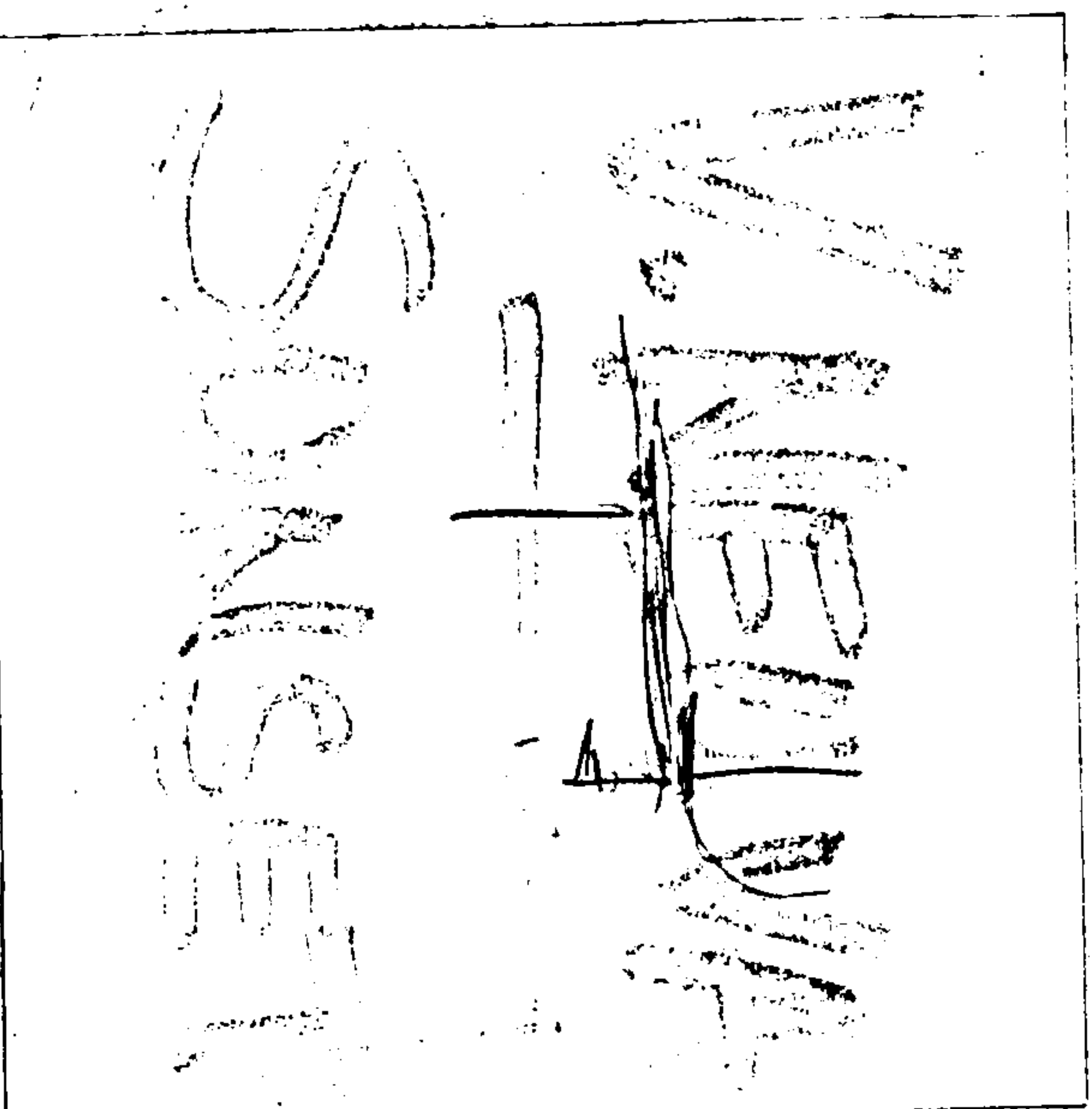
Culvert Diameter (feet)..... 4.50
FHWA Chart Number (1,2 or 3)..... 1
Scale Number on Chart (Type of Culvert Entrance)..... 1
Manning's Roughness Coefficient (n-value)..... 0.0130
Entrance Loss Coefficient of Culvert Opening..... 0.50
Culvert Length (feet)..... 110.0
Culvert Slope (feet per foot)..... 0.0050
    
```

## PROGRAM RESULTS:

| Flow Rate (cfs) | Tailwater Depth (ft) | Headwater Inlet Control Depth (ft) | Normal Depth (ft) | Critical Depth (ft) | Depth at Outlet (ft) | Outlet Velocity (fps) |
|-----------------|----------------------|------------------------------------|-------------------|---------------------|----------------------|-----------------------|
| 168.0           | 1.00                 | 7.46                               | 6.99              | 4.50                | 3.78                 | 4.50                  |
|                 |                      |                                    |                   |                     |                      | 10.56                 |

=====

PIPE CULVERT ANALYSIS COMPUTER PROGRAM Version 1.7 Copyright (c) 1986  
Dedmon & Associates, Inc., 7015 W. Tidwell, #107, Houston, TX 77052  
(713) 895-0322. All Rights Reserved.



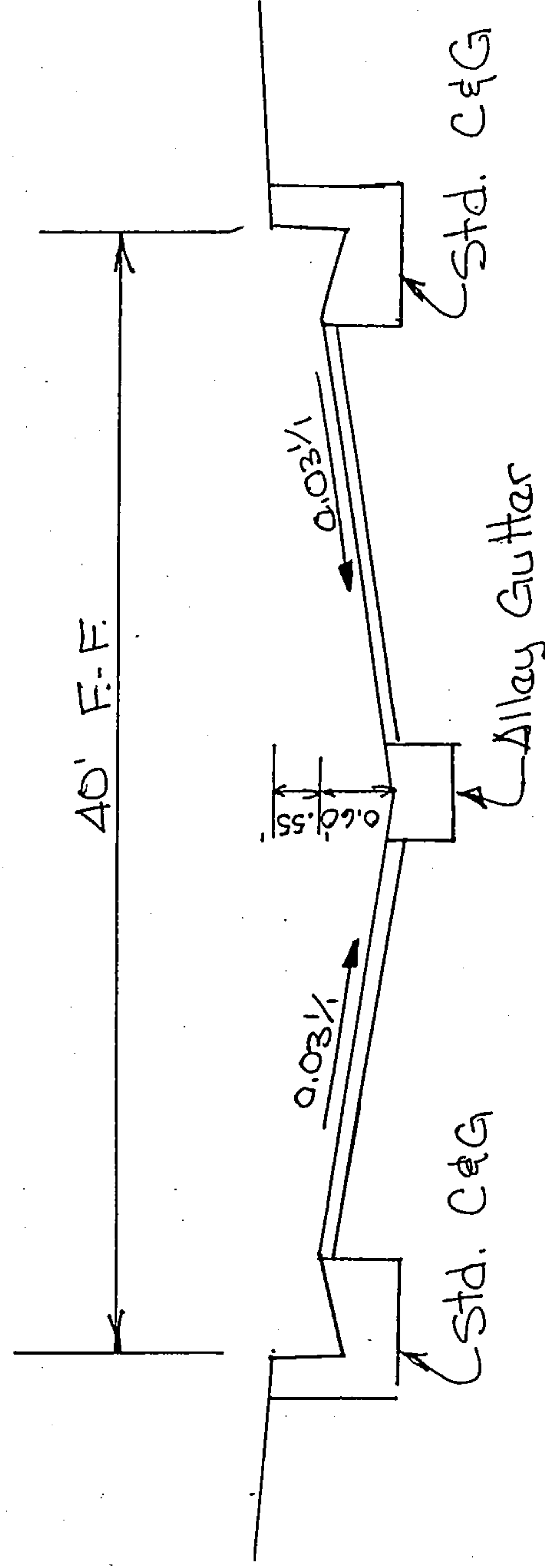
| # CALC | NODE 1  | NODE 2  | ELEV     | D1     | D2     | Q       | A      | V1     | V2     | K        | LENGTH  | DELTA | HV       | n        |
|--------|---------|---------|----------|--------|--------|---------|--------|--------|--------|----------|---------|-------|----------|----------|
| 1.000  | 78.000  | 78.000  | 5022.000 | 60.000 | 0.000  | 230.000 | 19.635 | 11.714 | 0.000  | 0.000    | 0.000   | 0.000 | 2.131    | 0.000    |
| 2.000  | 78.000  | 182.000 | 5022.500 | 60.000 | 0.000  | 230.000 | 19.635 | 0.000  | 0.000  | 2604.422 | 104.000 | 0.000 | 2.131    | 0.013    |
| 3.000  | 182.000 | 190.000 | 5022.550 | 60.000 | 60.000 | 230.000 | 19.635 | 6.723  | 11.714 | 0.000    | 8.000   | 0.000 | 0.702    | 0.013    |
| 4.000  | 190.000 | 200.000 | 5022.600 | 60.000 | 60.000 | 132.000 | 0.000  | 6.723  | 6.723  | 0.100    | 10.000  | 0.000 | 0.702    | 0.013    |
| CODE   | NODE    | FS      | FRIC L   | MANH L | BEND L | EXP L   | JUNC L | ANG L  | CNT L  | INLT L   | TRANS L | TOT L | HGL      | EGL      |
| 0.000  | 78.000  | 0.000   | 0.000    | 0.000  | 0.000  | 0.000   | 0.000  | 0.000  | 0.000  | 0.000    | 0.000   | 0.000 | 5028.000 | 5030.131 |
| 1.000  | 182.000 | 0.008   | 0.811    | 0.000  | 0.000  | 0.000   | 0.000  | 0.000  | 0.000  | 0.000    | 0.000   | 0.811 | 5028.811 | 5030.942 |
| 5.000  | 190.000 | 0.003   | 0.041    | 0.000  | 0.000  | 0.000   | 0.334  | 0.000  | 0.000  | 0.000    | 0.000   | 0.375 | 5030.615 | 5031.317 |
| 9.000  | 200.000 | 0.003   | 0.026    | 0.000  | 0.000  | 0.000   | 0.000  | 0.000  | 0.000  | 0.000    | 0.000   | 0.026 | 5030.641 | 5031.343 |

CODES

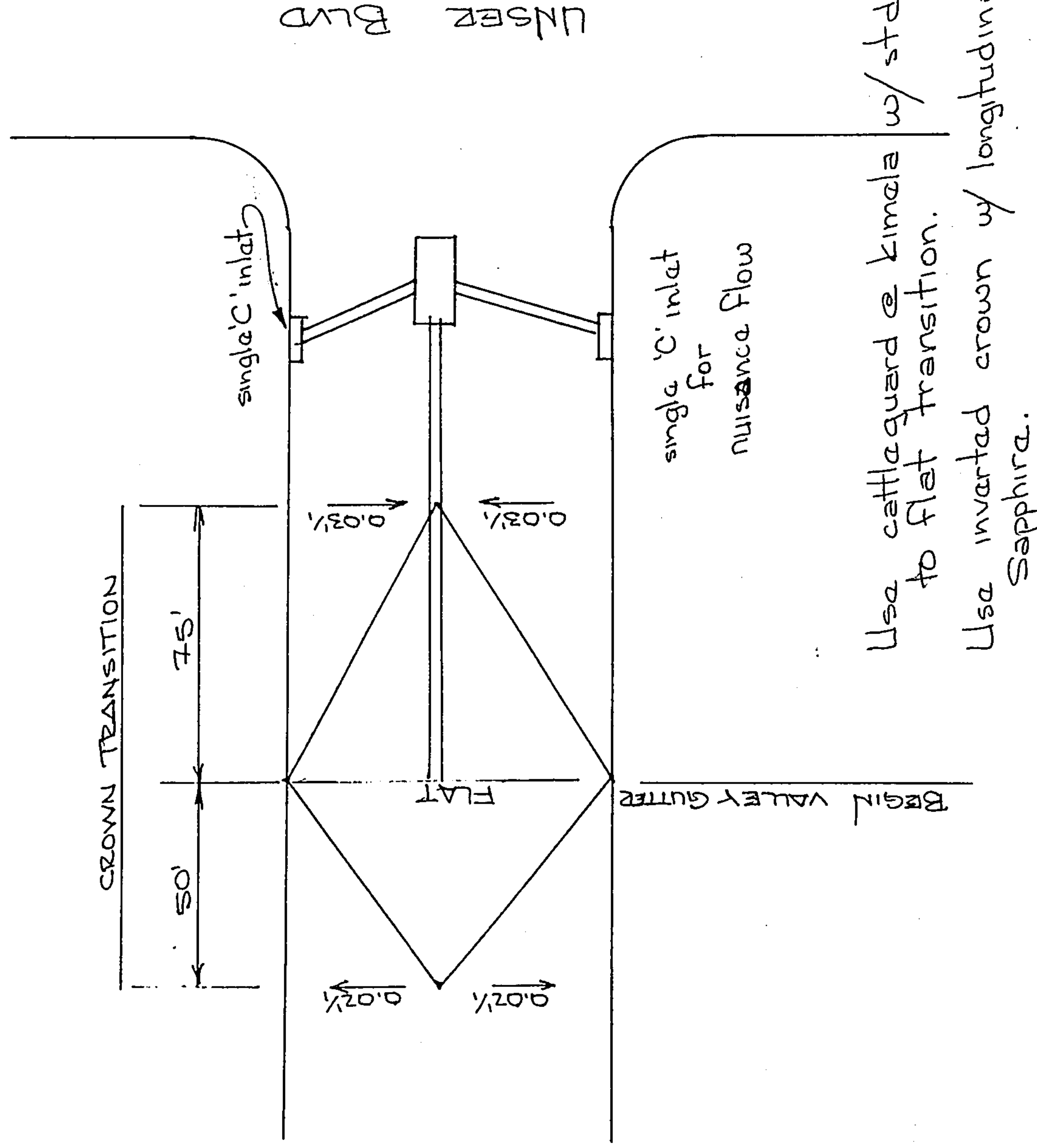
- 1 - PIPE SECTION
- 2 - MANHOLE
- 3 - PIPE-BEND
- 8 - INLETS
- 4 - EXPANSION
- 5 - JUNCTION
- 6 - ANGLE - POINT
- 7 - CONTRACTION
- 9 - TRANSITIONS



STREET SECTION - SAPPHIRE & KIMELA



TYPICAL SECTION



CONDITIONS AND CRITERIA FOR MAP REVISIONS OF  
FLOOD INSURANCE RATE MAPS (FIRMS) AND  
FLOOD BOUNDARY AND FLOODWAY MAPS (FBFWS)

A) REASONS FOR REVISION

FEMA will revise an effective Flood Insurance Study to reflect new information which shows the original FIS to be incorrect and to reflect physical changes which invalidates the original FIS analyses or presentation of data. Updated or corrected topographic mapping, hydrologic data, or hydraulic data constitute new information which may warrant a revision. Flood protection projects and any form of topographic alterations (cut and fill) constitute physical changes which may also warrant a map revision.

B) COMMUNITY MAP REVISION REQUESTS

The map revision process cannot be initiated without the community's endorsement since it is the community that adopts the effective FIS. Therefore, any individuals requesting a change to the FIS, must do so through the community. The community, in turn, may support the request and forward the information to FEMA for evaluation. FEMA will review the request to ascertain that the following conditions are met before evaluating the revision request.

Condition Number 1

The community must endorse the revision request and demonstrate preparedness to accept responsibility for the operation and/or maintenance of any structural measures (e.g. channel improvements or levees) involved. The request submittal should include the following:

1.1 A statement that the community endorses the revision request.

1.2 If the basis for the revision request is a channel modification, the completion of a dam, levee, or any other structural measure. Evidence is required to demonstrate the design is adequate and that maintenance and operation provisions, where applicable, have been made. The submittal must indicate what entity has operation and maintenance responsibility and how they will be accomplished. If maintenance is to be accomplished by an agent other than the community, a legal provision (ordinance) for community monitoring and backup maintenance is required.

Condition Number 2

If the revision request is based on information showing a mathematical or measurement error in the original analysis, the submittal must include the following:

2.1 Documentation that identifies the specific source of the error.

2.2 A written description of the new information and how it differs from the existing FIS information.

- 2.3 Basic data supporting the revision request to enable FEMA to revise the FIS. In most cases, this data must be certified by a registered professional engineer or licensed land surveyor. Updated topographic maps, revised community boundary maps including annexation ordinances, and channel, dam, or bridge structure plans which illustrate the correct dimensions are examples of the basic data required.

Condition Number 3

If the revision request is based on improved application of hydrologic, hydraulic, or other methods, or use of better data in applying such methods, the requester must submit the following:

- 3.1 Documentation that identifies the error in the application or in the inferior data in the original analysis and supports why the application is incorrect or the data is inferior.
- 3.2 Engineering analyses applying the same basic methods utilized by FEMA but with the changes itemized.
- 3.3 Alternative engineering analyses utilizing the methods or assumptions determined to be correct.
- 3.4 Background technical information which supports the requestor's changes as being more correct.
- 3.5 Certification by a registered professional engineer or licensed land surveyor of the correctness of any alternate data utilized or measurements made.
- 3.6 Documentation of all locations where the requested base flood elevations are different from FEMA's.

All engineering analyses performed must substantiate that the revised hydrologic or hydraulic analyses meet FEMA requirements as well as any state or community requirements.

C) TECHNICAL SUBMITTAL REQUIREMENTS

- ° A copy of the printout for the original hydraulic computer model, if available, representing the 100-year flood profile run for conditions existing at the time the currently effective hydraulic analysis was developed. The printout must include full input and output listings.
- ° A copy of the printout from the hydraulic computer model representing the new 100 year profiles. The model should be the same as that used in the preceding item, but modified to include any channel modification, fill or other encroachment that may have occurred in the flood plain since the original flood plain was delineated.

- ° Delineation of the 100 year flood boundaries and the location and alignment of cross sections and flow line used in the hydraulic model. This information should be shown on a map of suitable scale and topographic definition to provide reasonable accuracy.
- ° A copy of the currently effective flood profiles showing the existing and the revised flood elevations.
- ° A copy of the input/output printout of hydrological data for the 100 year storm.
- ° As-builts for the completion of channel modifications, the completion of a dam, levee, or any other structural measures.
- ° Certification from a registered professional engineer that the physical parameters used in the proposed flood boundary delineation represent actual conditions and that the standards contained in these "Conditions and Criteria" are met.



collected on  
Mr. Costley +  
Oct 31 per  
61 pictures  
Nov 61 of mine +  
copies are in  
copy This is  
old card

not get pictures

I am in receipt of your letter dated October 25, 1996. I have included the (9) separate complaints from Sunrise Estates Unit I residents in the drainage file.

of negative

lot drainage is absolutely not allowed.

have filed a complaint.

at 768-3622.

Engineering Assoc./Hyd.

→

October 25, 1996

COA Public Works Department

Hydrology Division

P.O. Box 1293

Albuquerque, NM 87103

Attn.: Ms. Lisa Manwill

Dear Lisa,

Here are the complaint forms that I was actually able to pick up. Of the twenty (20) homes that are in the specific quadrant of the subdivision that I have been in dealing with, only nine (9) turned in a form. I was able to get about twenty (20) more pictures from the neighbors on Diamond Place. It is truly amazing just how many homes are affected by this drainage and erosion. It is very evident that there is quite a bit of cross-lot runoff, and not just across the back property lines. I fear what the future holds in store for this brand new subdivision. It would most certainly be a crime if The Presley Companies was not made to correct this very serious problem.

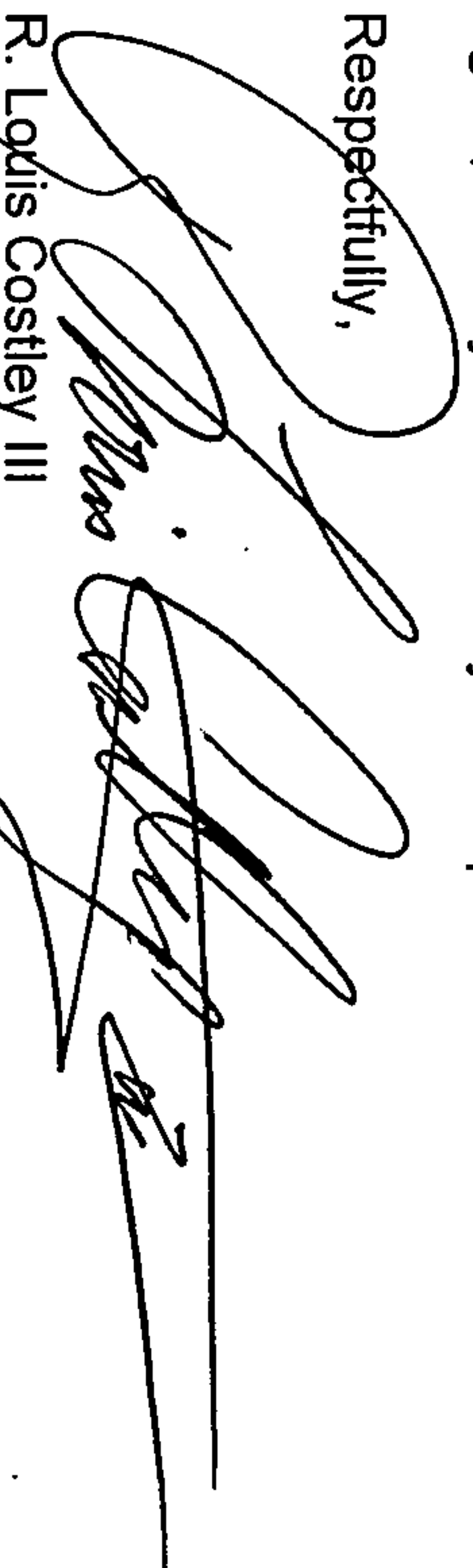
Although many of the residents have voiced much concern about this situation, some of them are afraid to become vocal. They fear that Presley will ignore their own concerns should it become known that they have filed this complaint. That is part of the reason that I seemed to have difficulty garnering the actual complaints. Presley has been notified by many of my neighbors about this situation, and has proceeded to pretty much ignore us. In one case, they failed to show up for a scheduled appointment. In another case, the resident works for a subcontractor of Presley (specifically on this subdivision); He has been told point blank by his employer not to get involved in any activity that could cause conflict for Presley.

I have included a copy of our subdivision covenants, as per your request. I have highlighted each reference to landscaping (Pages 6, 7, & 9), and there is absolutely no mention of a responsibility on the part of the homeowner to have the back yards landscaped within any kind of time frame. I guess this would mean that Presley's claims that our landscaping would have avoided this problem, thus releasing them of any responsibility, is irrelevant.

I would like to express my sincere gratitude for any help that you offer this new community as we attempt to deal with this issue. Without the involvement of the COA, I feel that we would be in danger of losing our investments, as our property values plummet with the degradation of the land. I look forward to hearing from you soon, and will do everything in my power to help facilitate a timely resolution to this matter. If you still intend to send an inspector out to the properties, please let me know so that I can personally inform my neighbors (if that would be appropriate).

Again, thank you for all of your help.

Respectfully,

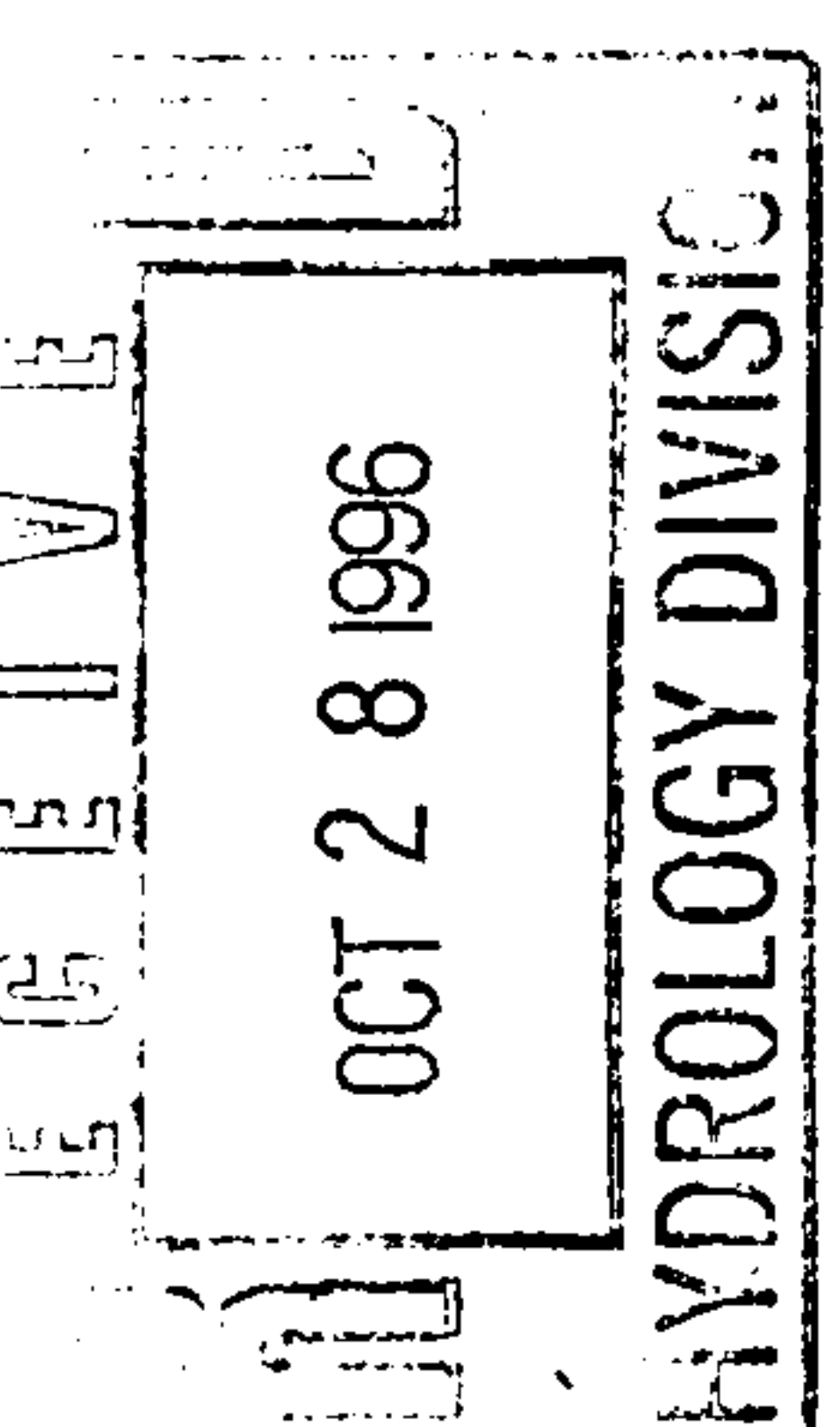


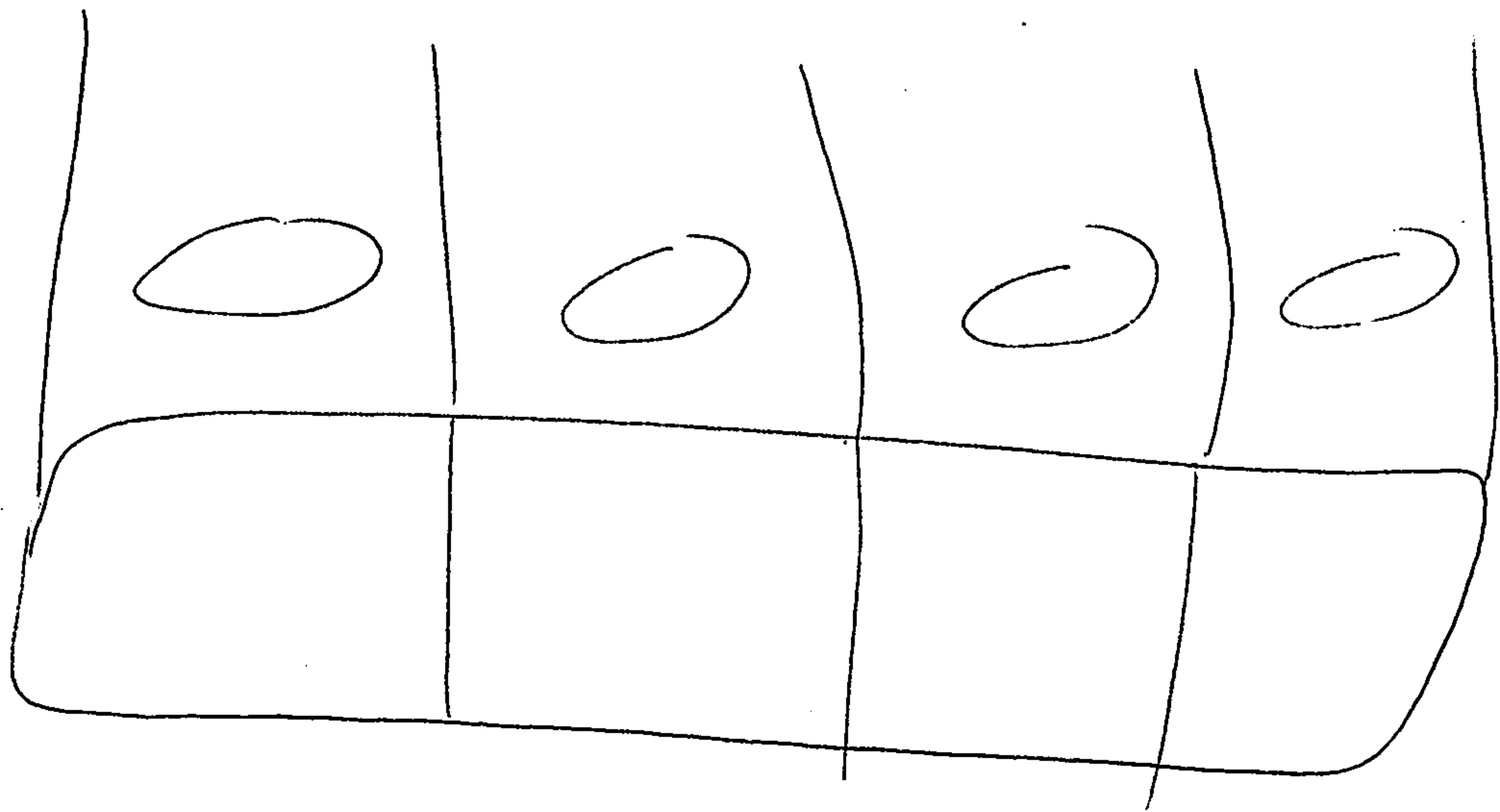
R. Louis Costley III

Interim President, Summerfield Neighborhood Association

RLC3/jmc

Enclosures





COMPLAINT FORM

PUBLIC WORKS DEPARTMENT  
HYDROLOGY DIVISION  
DEVELOPMENT SECTION  
768-2650

Date Complaint Received: 7-28-97

Zone Atlas/Drainage File No.: M10/054 Complaint File No.: \_\_\_\_\_

Complainant: SARA ~~Hotchkiss~~ <sup>SP?</sup> Hotchkiss Phone #: 352-2814

Address/Location: 1239 Diamond St 87121

Complaint: Runoff did not comply w/ the approved  
drainage plan. Runoff from neighboring  
property to the north enters the subject  
property & causes erosion problems

DIAMOND  
→ Scaphere

Referred to: \_\_\_\_\_  
1239 Diamond.

Investigation-Comments: \_\_\_\_\_

Follow-up: \_\_\_\_\_

Resolved by: \_\_\_\_\_ Date: \_\_\_\_\_

COMPLAINT FORM

PUBLIC WORKS DEPARTMENT  
HYDROLOGY DIVISION  
DEVELOPMENT SECTION  
768-2650

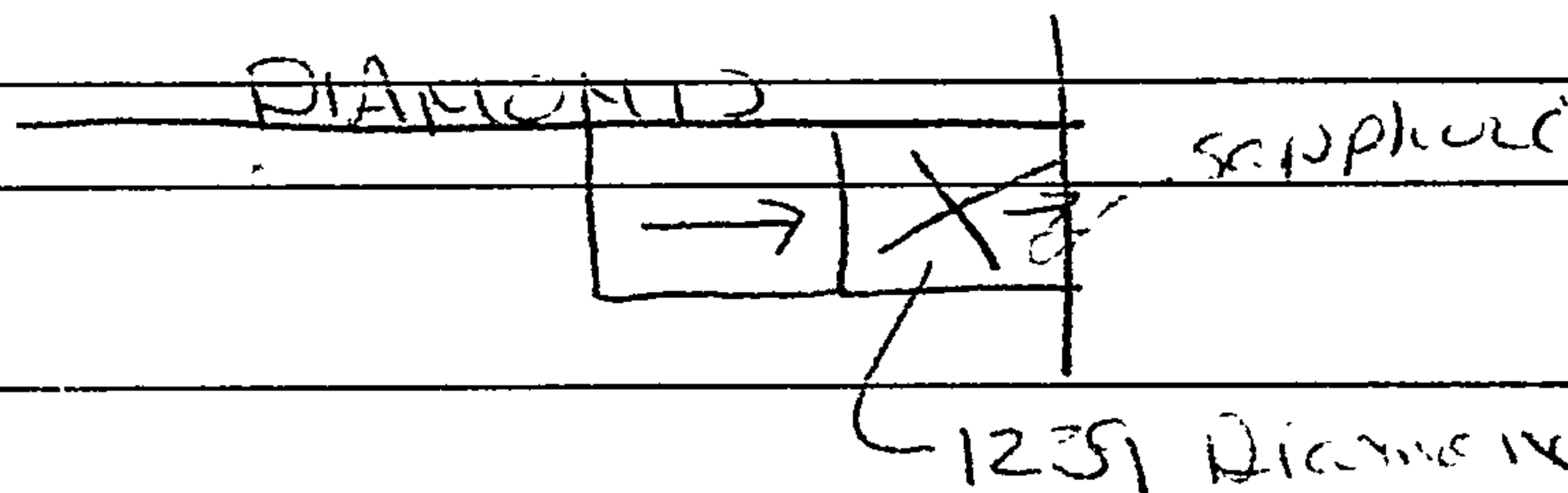
Date Complaint Received: 7-28-97

Zone Atlas/Drainage File No.: 110/054 Complaint File No.: \_\_\_\_\_

Complainant: SARA ~~Hotchkiss~~ <sup>SP?</sup> HOTCHKISS Phone #: 352-2819

Address/Location: 1239 Diamond St 87121

Complaint: Builder did not comply w/ the approved  
drainage plan Run off from neighboring  
property to the north enters the subject  
property & cause erosion problems



Referred to: \_\_\_\_\_

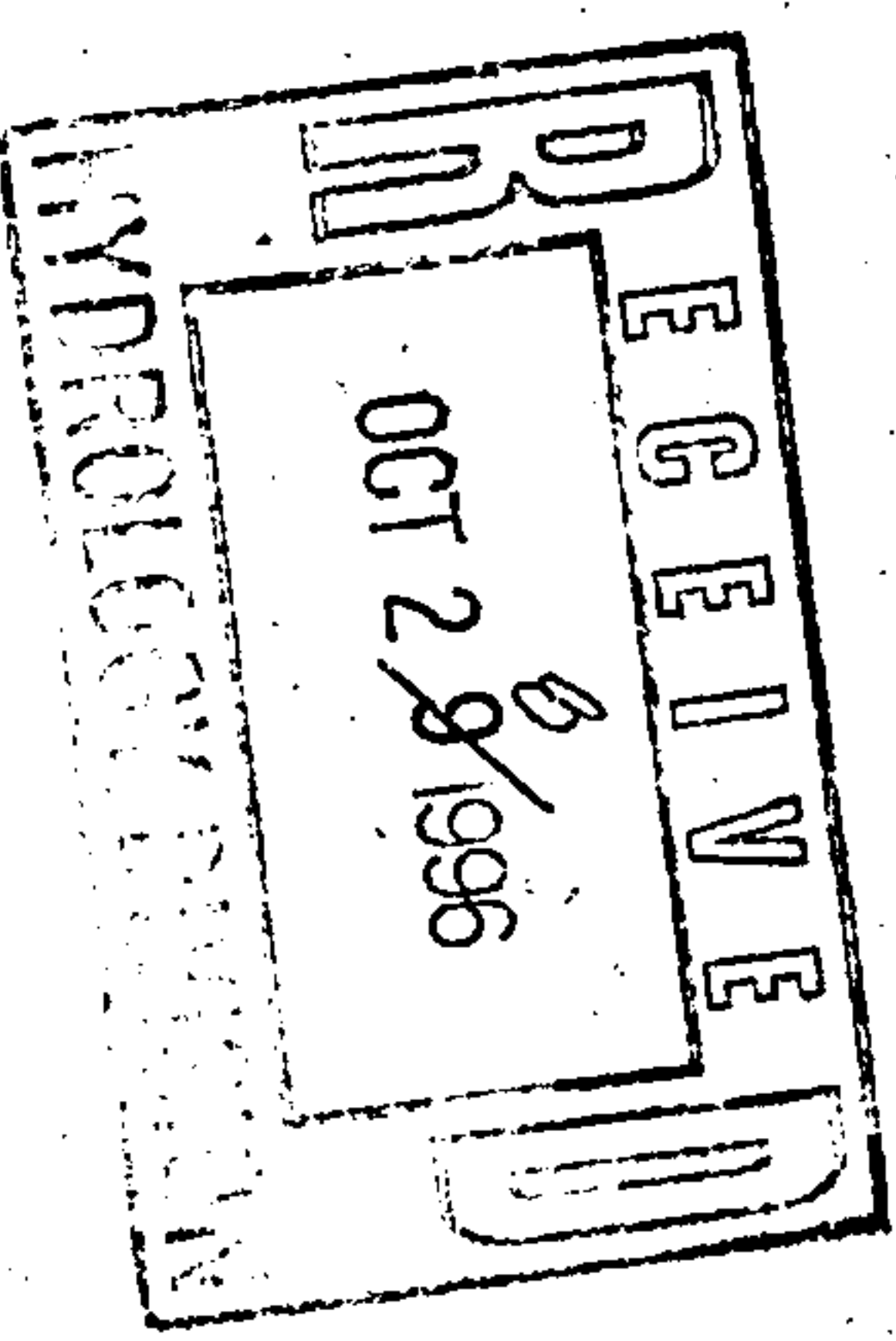
Investigation-Comments: \_\_\_\_\_

Follow-up: \_\_\_\_\_

Resolved by: \_\_\_\_\_ Date: \_\_\_\_\_

COMPLAINT FORM

PUBLIC WORKS DEPARTMENT  
HYDROLOGY DIVISION  
DEVELOPMENT SECTION  
768-2650



Date Complaint Received: OCT 28, 1996

Zone Atlas/Drainage File No.: MWD-DSFA Complaint File No.: \_\_\_\_\_

Complainant: R. Louis Costley III Phone #: H- 833-1945  
W- 821-4145

Address/Location: 1201 DIAMOND PLACE SW ALBUQUERQUE NM, 87121-8331

Complaint: SEVERE DRAINAGE/EROSION PROBLEMS ALONG BACK PROPERTY LINE. FOUNDATION FOR FENCE VASTLY AWAY, CAUSING FENCE TO TILT. NUMEROUS HOLES (ONE APPROX 10 FT X 3 FT X 4 FT DEEP). MY NEIGHBOR TO THE EAST (1205 DIAMOND) ALSO HAS HOLES OF EQUAL SIZE ADJACENT TO MY PROPERTY. ALSO, HUNDREDS (WON HEAVY RAINS, APPROX 7 FT DEEPER X 6" DEEP, IN BACK. MY THREE CHILDREN WOULD EASILY FIT INTO TWO HOLES. VERY UNSAFE AND CAN NOT ALLOW THEM TO PLAY IN UNATTENDED. CAUSE HOLES IMMEDIATELY BEHIND PLAY HOUSE. DRAINAGE ON BACK.

Referred to: \_\_\_\_\_

Investigation-Comments: LOT #10

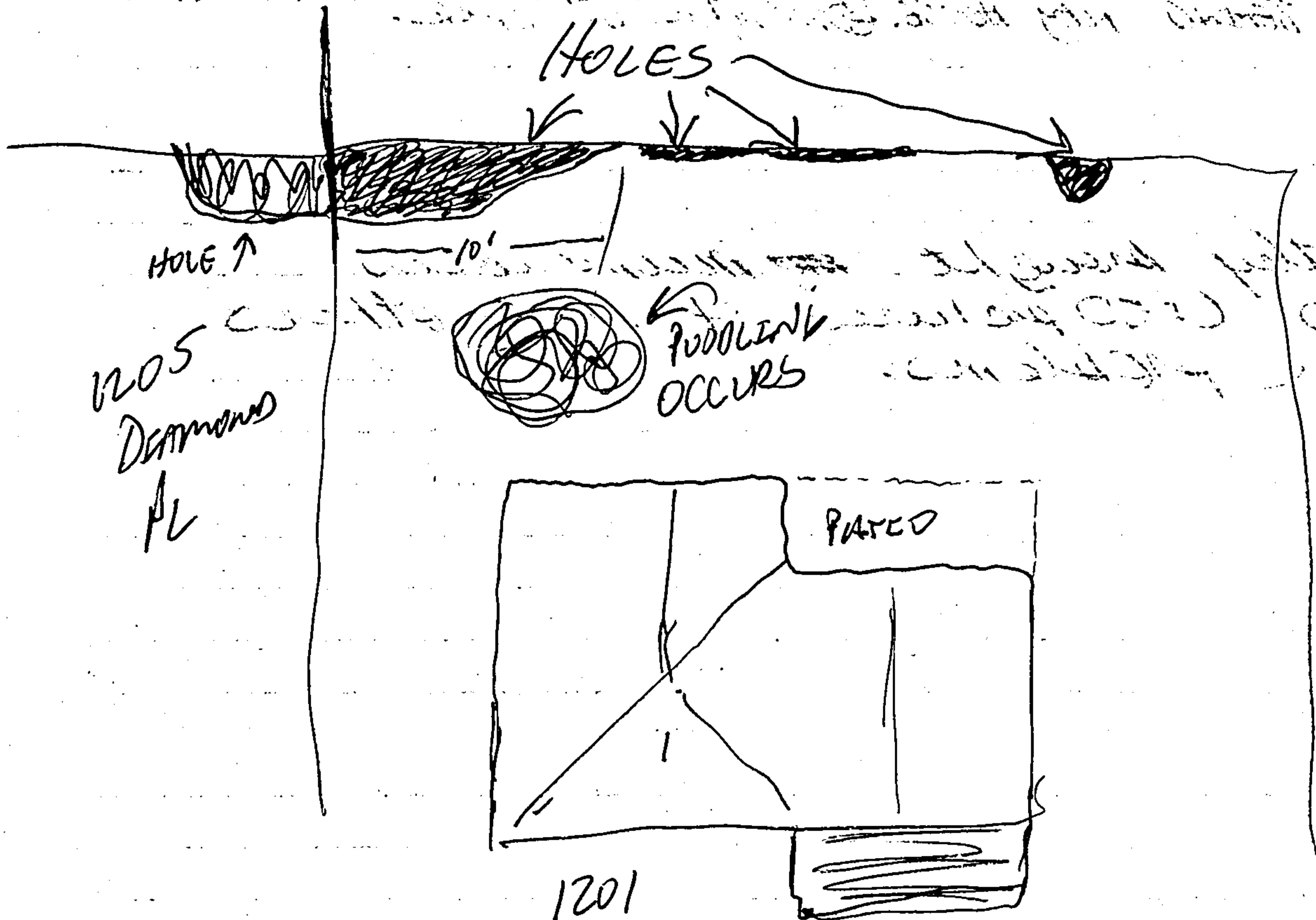
Mr. Costley brought numerous pictures (+50 pictures) of his & others erosion problems.

Follow-up: \_\_\_\_\_

Resolved by: \_\_\_\_\_ Date: \_\_\_\_\_

1205 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310 1311 1312 1313 1314 1315 1316 1317 1318 1319 1320 1321 1322 1323 1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1370 1371 1372 1373 1374 1375 1376 1377 1378 1379 1380 1381 1382 1383 1384 1385 1386 1387 1388 1389 1390 1391 1392 1393 1394 1395 1396 1397 1398 1399 1400 1401 1402 1403 1404 1405 1406 1407 1408 1409 1410 1411 1412 1413 1414 1415 1416 1417 1418 1419 1420 1421 1422 1423 1424 1425 1426 1427 1428 1429 1430 1431 1432 1433 1434 1435 1436 1437 1438 1439 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481 1482 1483 1484 1485 1486 1487 1488 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1499 1500

1205 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310 1311 1312 1313 1314 1315 1316 1317 1318 1319 1320 1321 1322 1323 1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1370 1371 1372 1373 1374 1375 1376 1377 1378 1379 1380 1381 1382 1383 1384 1385 1386 1387 1388 1389 1390 1391 1392 1393 1394 1395 1396 1397 1398 1399 1400 1401 1402 1403 1404 1405 1406 1407 1408 1409 1410 1411 1412 1413 1414 1415 1416 1417 1418 1419 1420 1421 1422 1423 1424 1425 1426 1427 1428 1429 1430 1431 1432 1433 1434 1435 1436 1437 1438 1439 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481 1482 1483 1484 1485 1486 1487 1488 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1499 1500



1205  
Diamonds  
PL

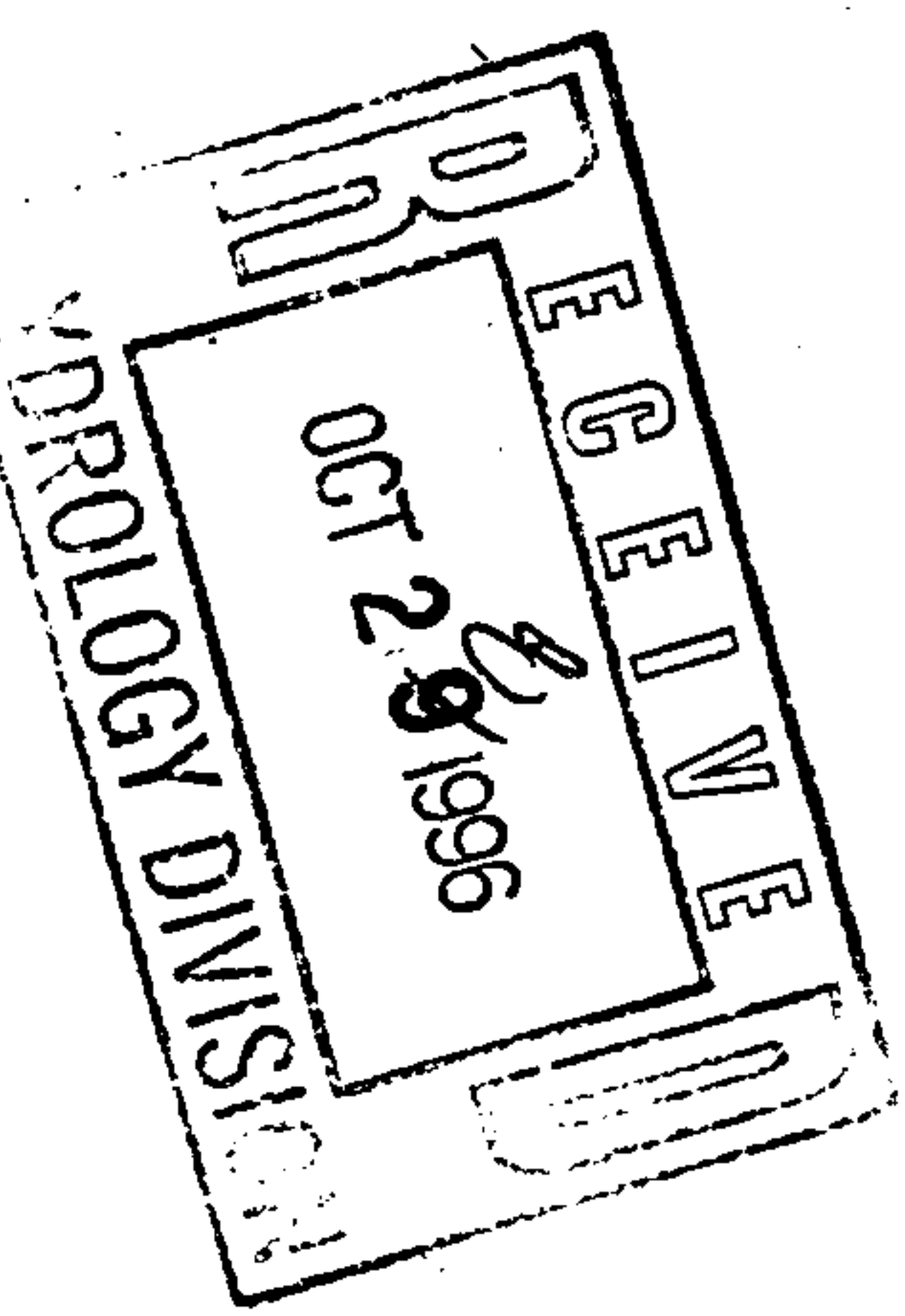
1201  
Diamonds  
Placement

PLACED

PODOLIN  
OCCURS

COMPLAINT FORM

PUBLIC WORKS DEPARTMENT  
HYDROLOGY DIVISION  
DEVELOPMENT SECTION  
768-2650



Date Complaint Received: \_\_\_\_\_

Zone Atlas/Drainage File No.: \_\_\_\_\_ Complaint File No.: \_\_\_\_\_

Complainant: Alan Carter Phone #: 836-4944

Address/Location: 1223 82nd St. S.W.

Complaint: Soil erosion in back yard every  
time it rains, there is a big muddy  
run.

*WJL*

Referred to: \_\_\_\_\_

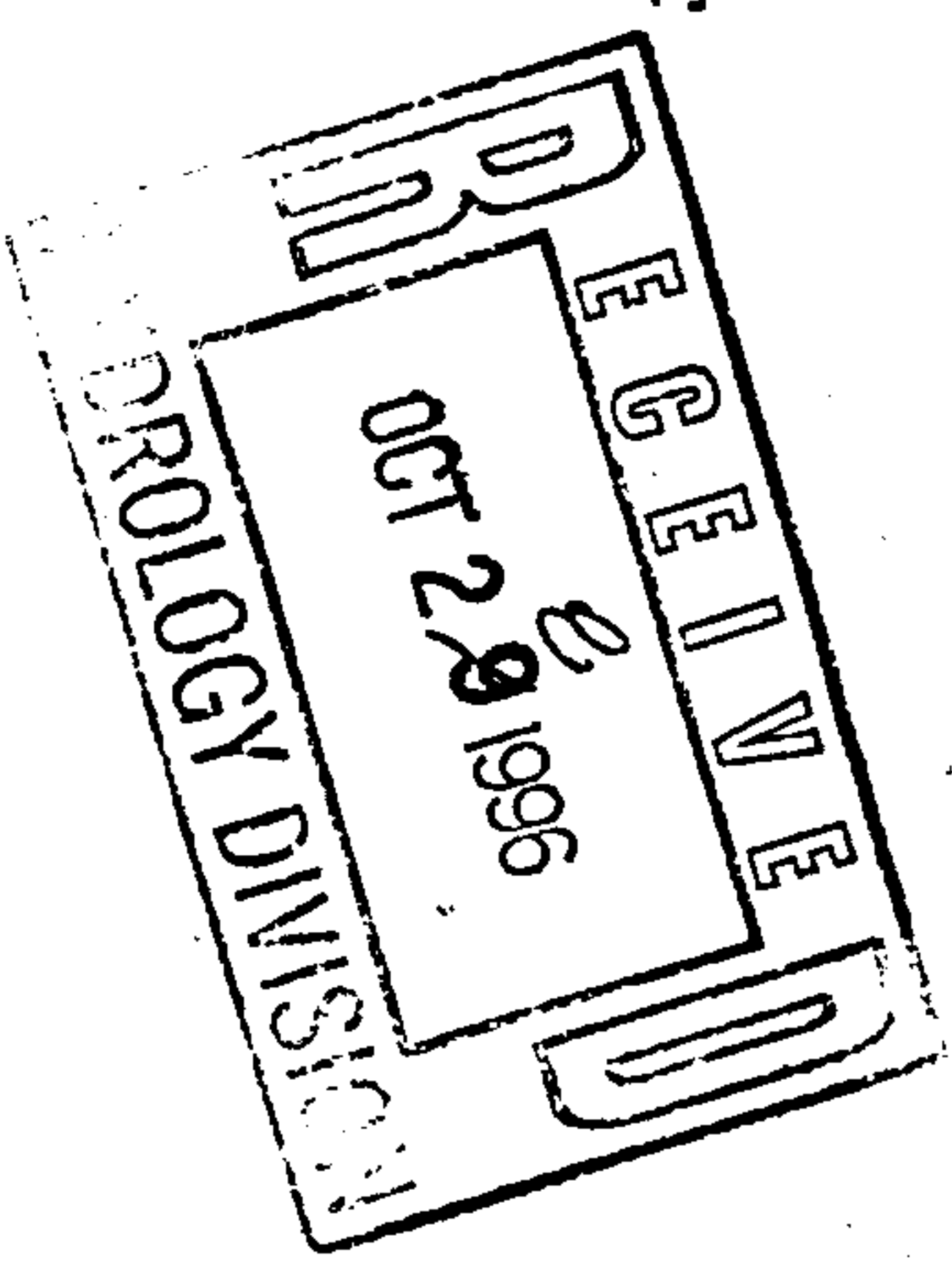
Investigation-Comments: lot of

Follow-up: \_\_\_\_\_

Resolved by: \_\_\_\_\_ Date: \_\_\_\_\_

COMPLAINT FORM

PUBLIC WORKS DEPARTMENT  
HYDROLOGY DIVISION  
DEVELOPMENT SECTION  
768-2650



*Received  
12/1/96*

Date Complaint Received: \_\_\_\_\_

Zone Atlas/Drainage File No.: M10/D51 Complaint File No.: \_\_\_\_\_

Complainant: JAMES J. JENNIFER CARLTON Phone #: 839-4344

Address/Location: 1219 82ND ST. SW, FLOEDING

Complaint: Due to severe flooding from the last month's  
rain storm my landscaping in front yard between  
the rail road & boundaries w/1215, & my side  
were flushed out (dirt) on to my property. Also my  
backyard has become a sand box, especially at bottom  
of the blocked sand hill & also holes/cracks between  
my property & both my neighbors' underneath both fence lines,  
Referred to: \_\_\_\_\_

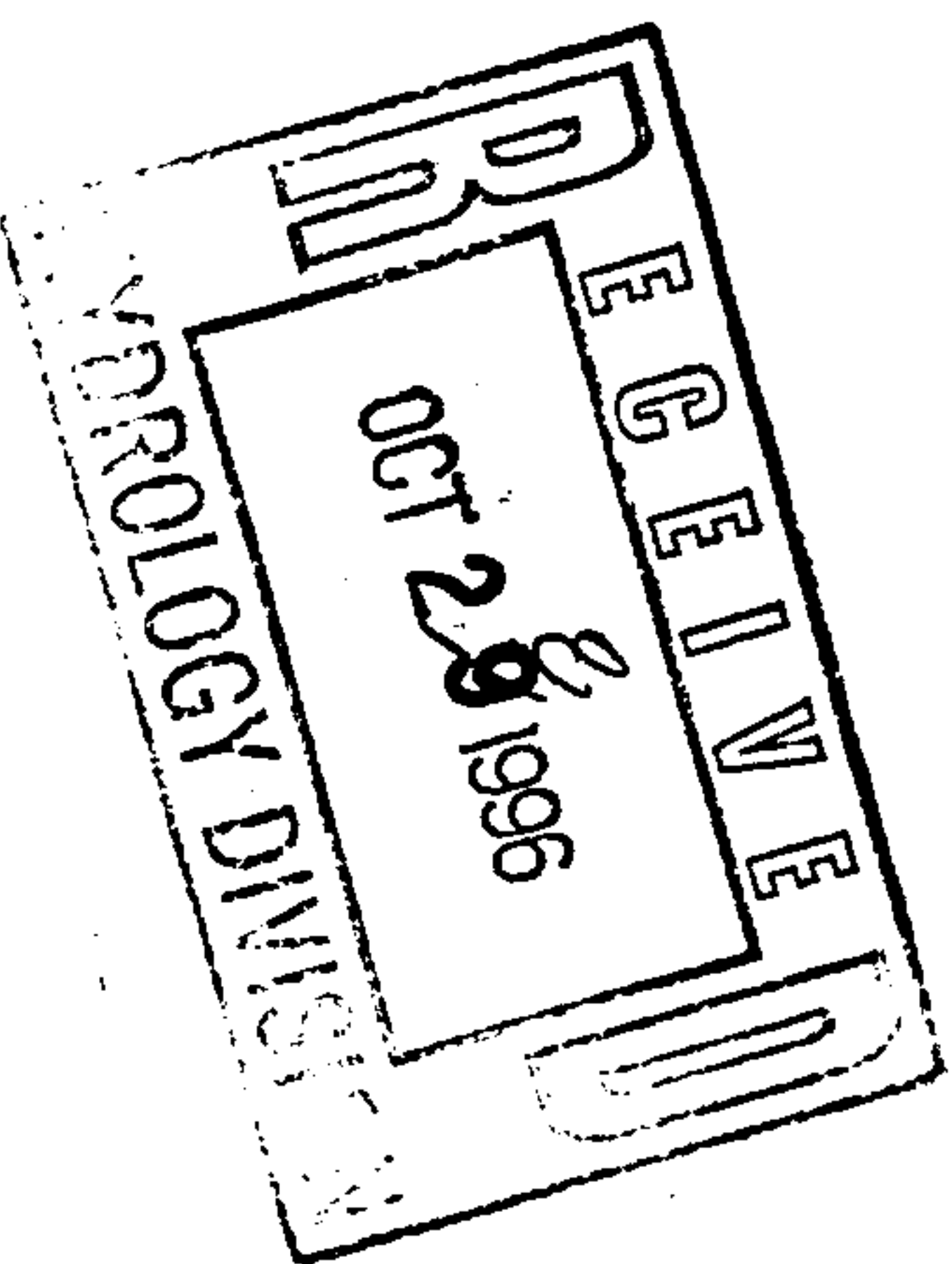
Investigation-Comments: Lot 24

Follow-up: \_\_\_\_\_

Resolved by: \_\_\_\_\_ Date: \_\_\_\_\_

COMPLAINT FORM

PUBLIC WORKS DEPARTMENT  
HYDROLOGY DIVISION  
DEVELOPMENT SECTION  
768-2650



Date Complaint Received: \_\_\_\_\_

Zone Atlas/Drainage File No.: MD105X Complaint File No.: \_\_\_\_\_

Complainant: Elias M Luevano Phone #: 836-1804

Address/Location: 8305 Sapphire ST SW Albuquerque NM 87121

Complaint: To Whom I concern:

the follow complaint is To notify you at the Following

my address is 8305 Sapphire ST SW Alb. NM. 87121

I am currently having problems with my back yard. the Retaining wall  
or back Retaining wall has collapsed in To my back yard. this Required  
immediat action on presley part. on october 4th I call presley customer Service  
& Report the problem and they Told me they will send somebody To look at it. the  
following Monday & at this point. I have not see anybody.

Referred to: \_\_\_\_\_

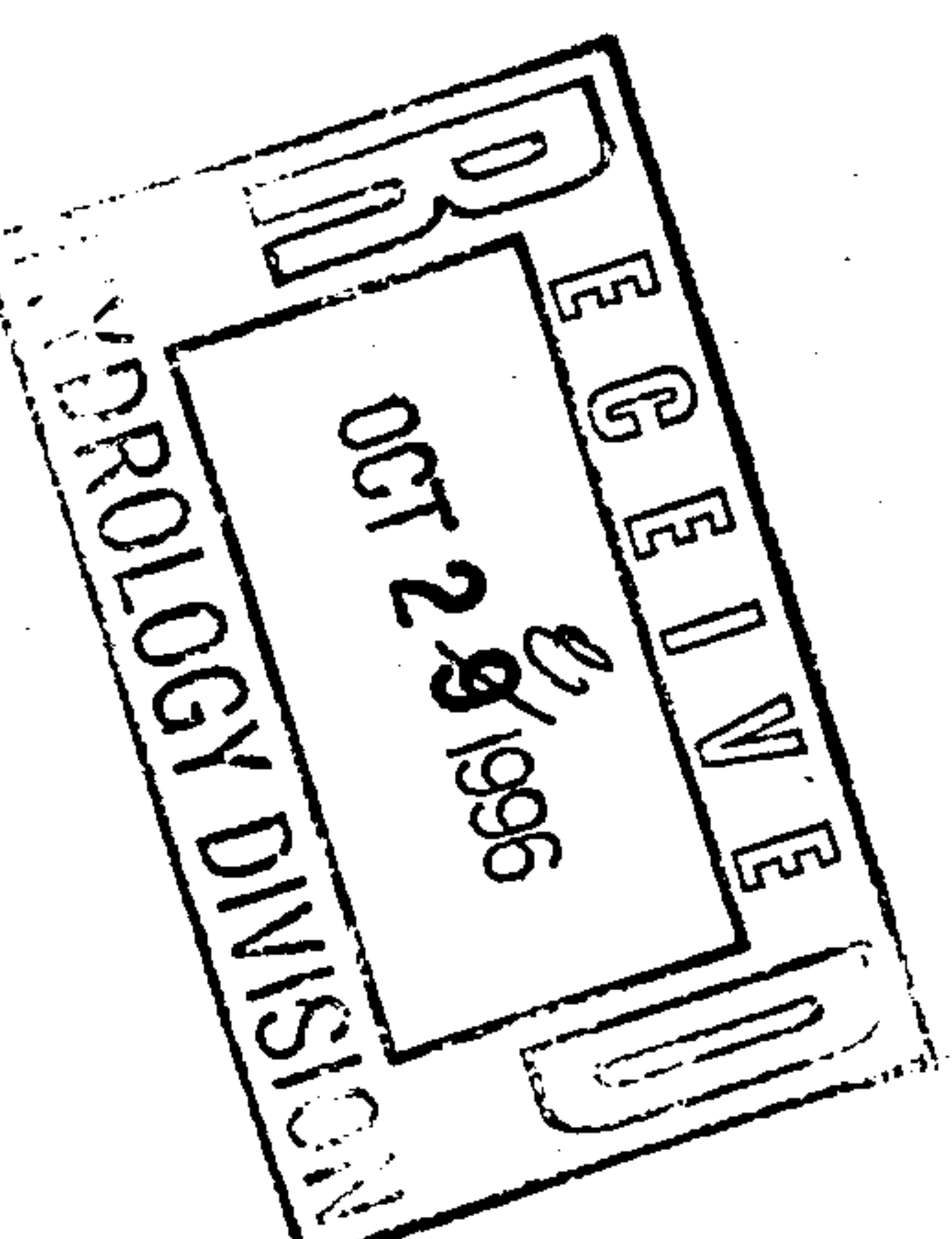
Investigation-Comments: LOT 2 - Sapphire

Follow-up: \_\_\_\_\_

Resolved by: \_\_\_\_\_ Date: \_\_\_\_\_

COMPLAINT FORM

PUBLIC WORKS DEPARTMENT  
HYDROLOGY DIVISION  
DEVELOPMENT SECTION  
768-2650



Date Complaint Received: \_\_\_\_\_

Zone Atlas/Drainage File No.: W10105X Complaint File No.: \_\_\_\_\_

Complainant: Ruck Ortega Phone #: 833-0233

Address/Location: 8309 Sapphire St. S.W.

Complaint: Dirt in backyard is collapsing underneath fence, leaving significant holes in which prevents us to landscape.

Referred to: \_\_\_\_\_

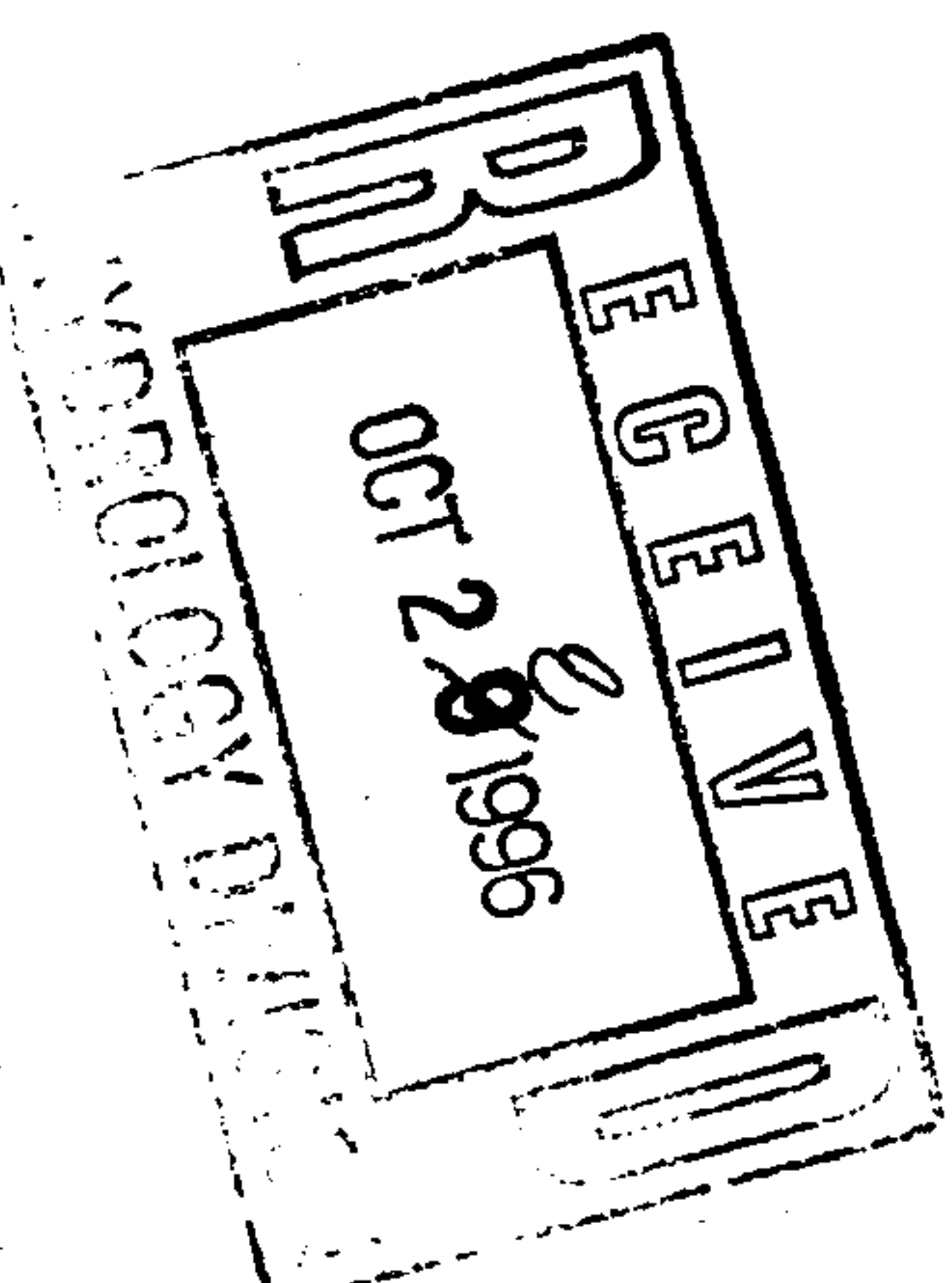
Investigation-Comments: Lot #1 - Sapphire St

Follow-up: \_\_\_\_\_

Resolved by: \_\_\_\_\_ Date: \_\_\_\_\_

COMPLAINT FORM

PUBLIC WORKS DEPARTMENT  
HYDROLOGY DIVISION  
DEVELOPMENT SECTION  
768-2650



1201-

Date Complaint Received: \_\_\_\_\_

Zone Atlas/Drainage File No.: M10105A Complaint File No.: \_\_\_\_\_

Complainant: JASON M. ULLIL Phone #: 352-2944

Address/Location: 1235 Diamond Pl. SW.

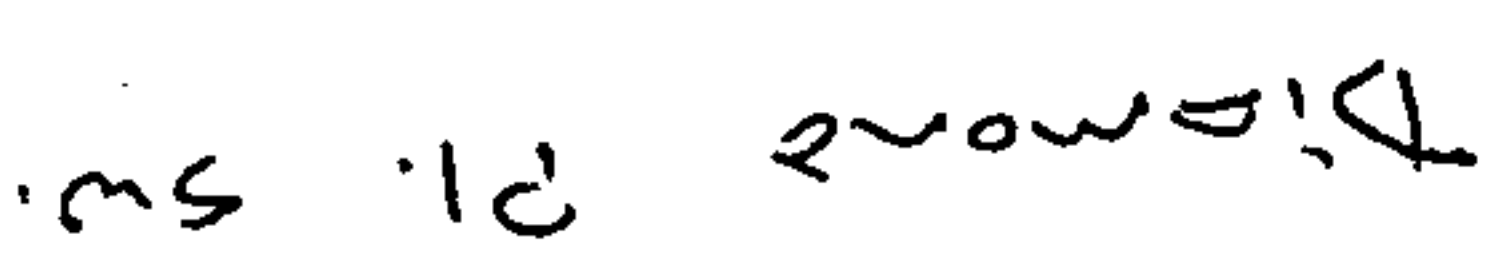
Complaint: I have many locations on my property in which the soil has eroded. The slope on the N.W. corner of my property is of much concern due to substantial erosion caused by late summer rains. Drainage is also a concern. Water, from my neighbors property to the north, drains to the north side of my property and puddles. I believe, there is not enough grade back towards Diamond St. Also, my neighbor to the south has expressed concern because water from my property drains to the north of his property and puddles at his house. My eroding slope and insufficient drainage of my property is a problem now and will worsen in the future. I have enclosed a diagram on the back of this paper.

Referred to: \_\_\_\_\_

Investigation-Comments: LOT 5

Follow-up: \_\_\_\_\_

Resolved by: \_\_\_\_\_ Date: \_\_\_\_\_

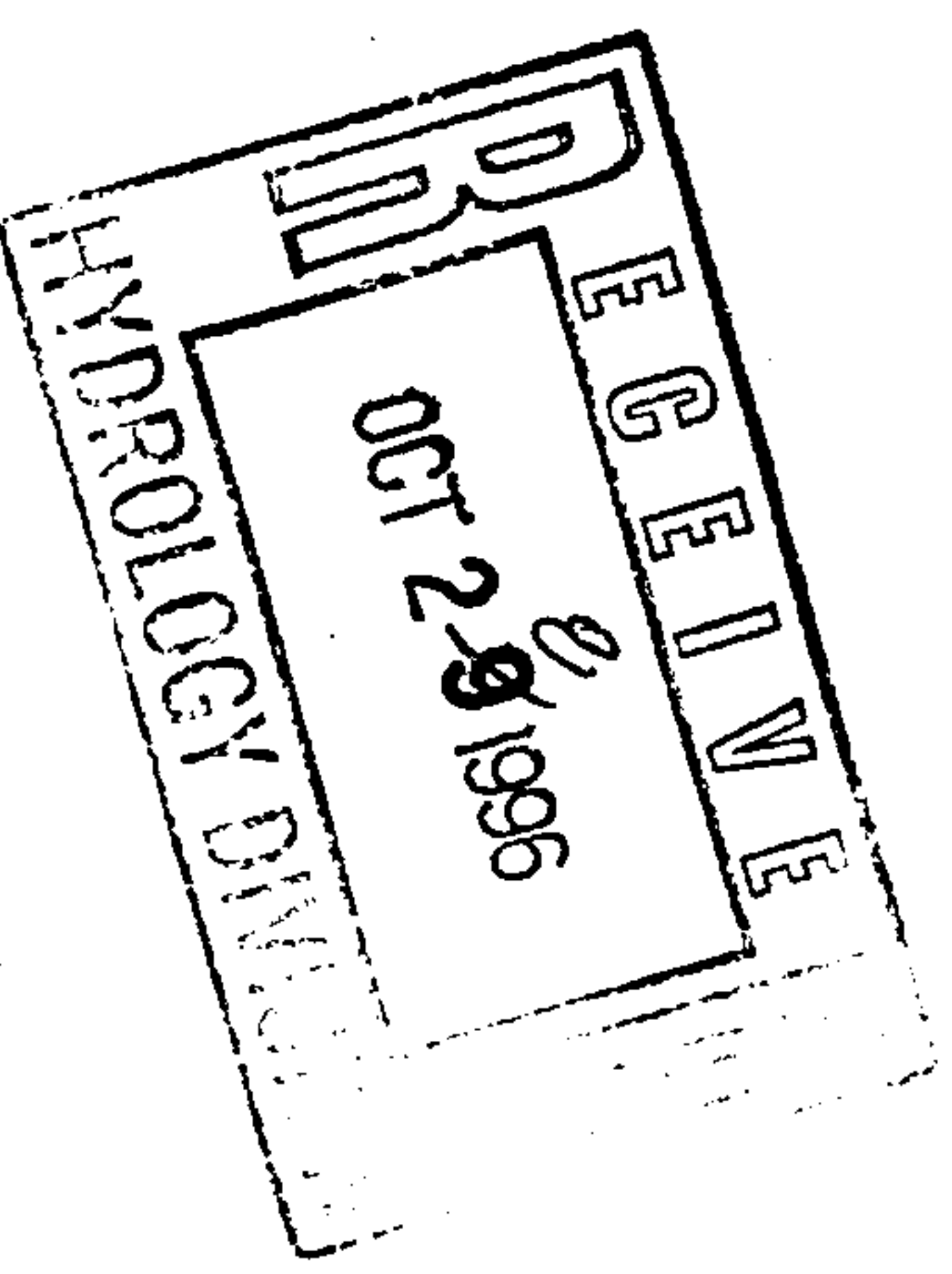
$z$ 

Side walk

water, puddle At neighbors property

COMPLAINT FORM

PUBLIC WORKS DEPARTMENT  
HYDROLOGY DIVISION  
DEVELOPMENT SECTION  
768-2650



Date Complaint Received: \_\_\_\_\_

Zone Atlas/Drainage File No.: MUD-D5A Complaint File No.: \_\_\_\_\_

Complainant: Johnny A. Aris Phone #: (505) 836-6657

Address/Location: 1828 Diamond Place S.W. Albu. N.M. 87121

Complaint: Drainage. Problems in back yard causing  
erosion that is becoming getting worse!  
It is splitting the foundation that holds our  
fence in place. Unless it is fixed it will  
become extremely financial! X X N-T-S  
Backyard X X W

Referred to: \_\_\_\_\_

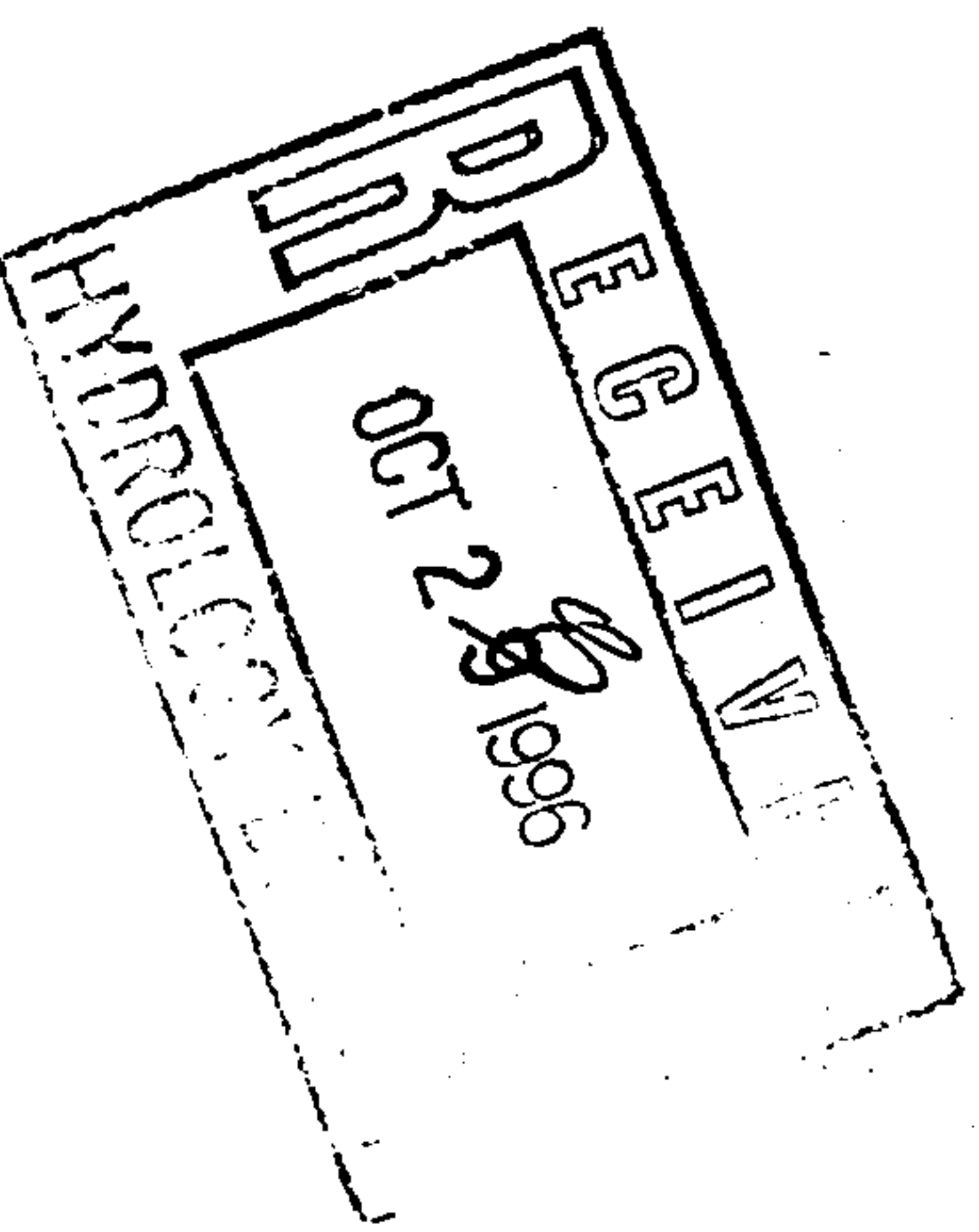
Investigation-Comments: LOT 18

Follow-up: \_\_\_\_\_

Resolved by: \_\_\_\_\_ Date: \_\_\_\_\_

COMPLAINT FORM

PUBLIC WORKS DEPARTMENT  
HYDROLOGY DIVISION  
DEVELOPMENT SECTION  
768-2650



Date Complaint Received: 10/22/96

Zone Atlas/Drainage File No.: W10-D5A Complaint File No.: \_\_\_\_\_

Complainant: Scott Pavelko Phone #: 833-5507

Address/Location: 1220 Diamond Place

Complaint: Due to early fall rains, I have incurred some damage to my backyard. There are deep crevices as well as moved earth altering the landscape. So far no one from Puget has repaired the damage or informed of what steps are being taken to prevent future flooding.

Referred to: \_\_\_\_\_

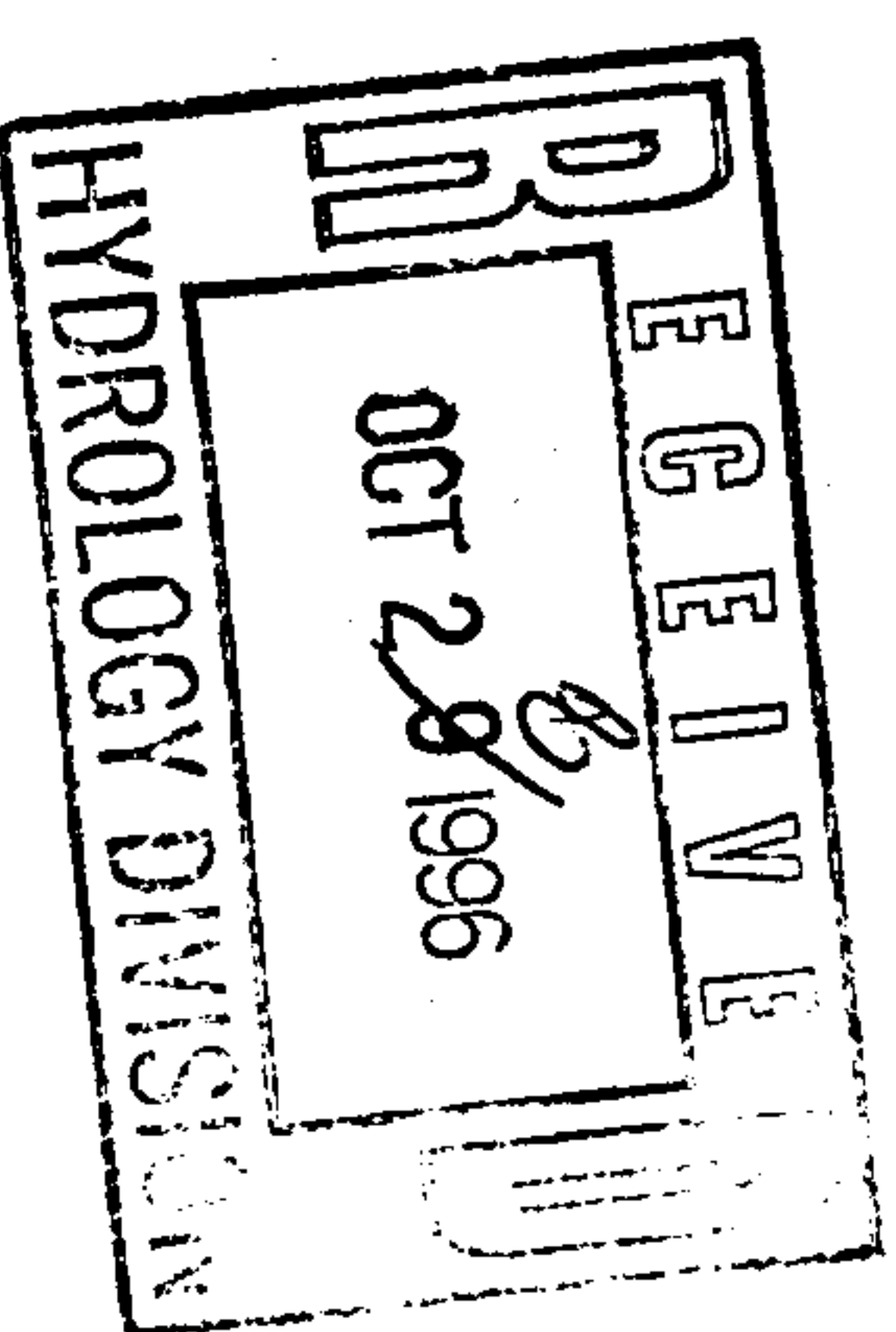
Investigation-Comments: LOT 16

Follow-up: \_\_\_\_\_

Resolved by: \_\_\_\_\_ Date: \_\_\_\_\_

COMPLAINT FORM

PUBLIC WORKS DEPARTMENT  
HYDROLOGY DIVISION  
DEVELOPMENT SECTION  
768-2650



Date Complaint Received: \_\_\_\_\_

Zone Atlas/Drainage File No.: M101051X Complaint File No.: \_\_\_\_\_

Complainant: Jose Antonio Ruiz Phone #: (505) 833 3426

Address/Location: 1205 Diamond Pl SW, Albuquerque, NM, 87121

Complaint: \_\_\_\_\_

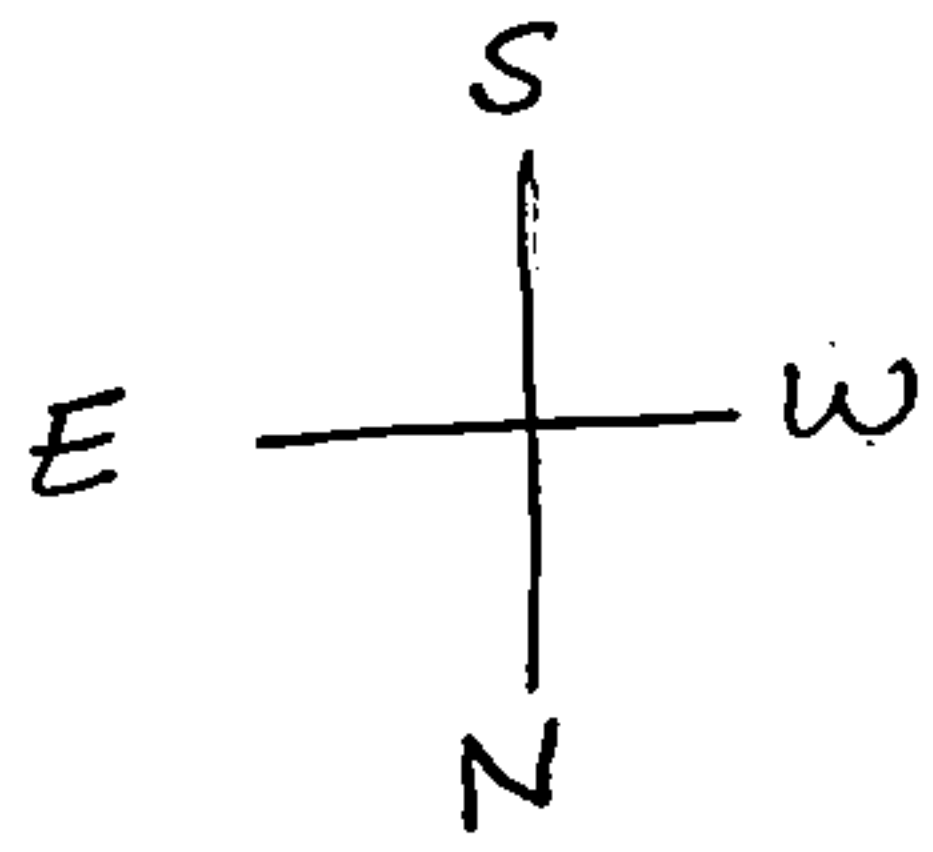
The damage on my back yard, made a hole at the right corner, so the fence is loose now, and effect my neighborhood. other side see the picture.

Referred to: \_\_\_\_\_

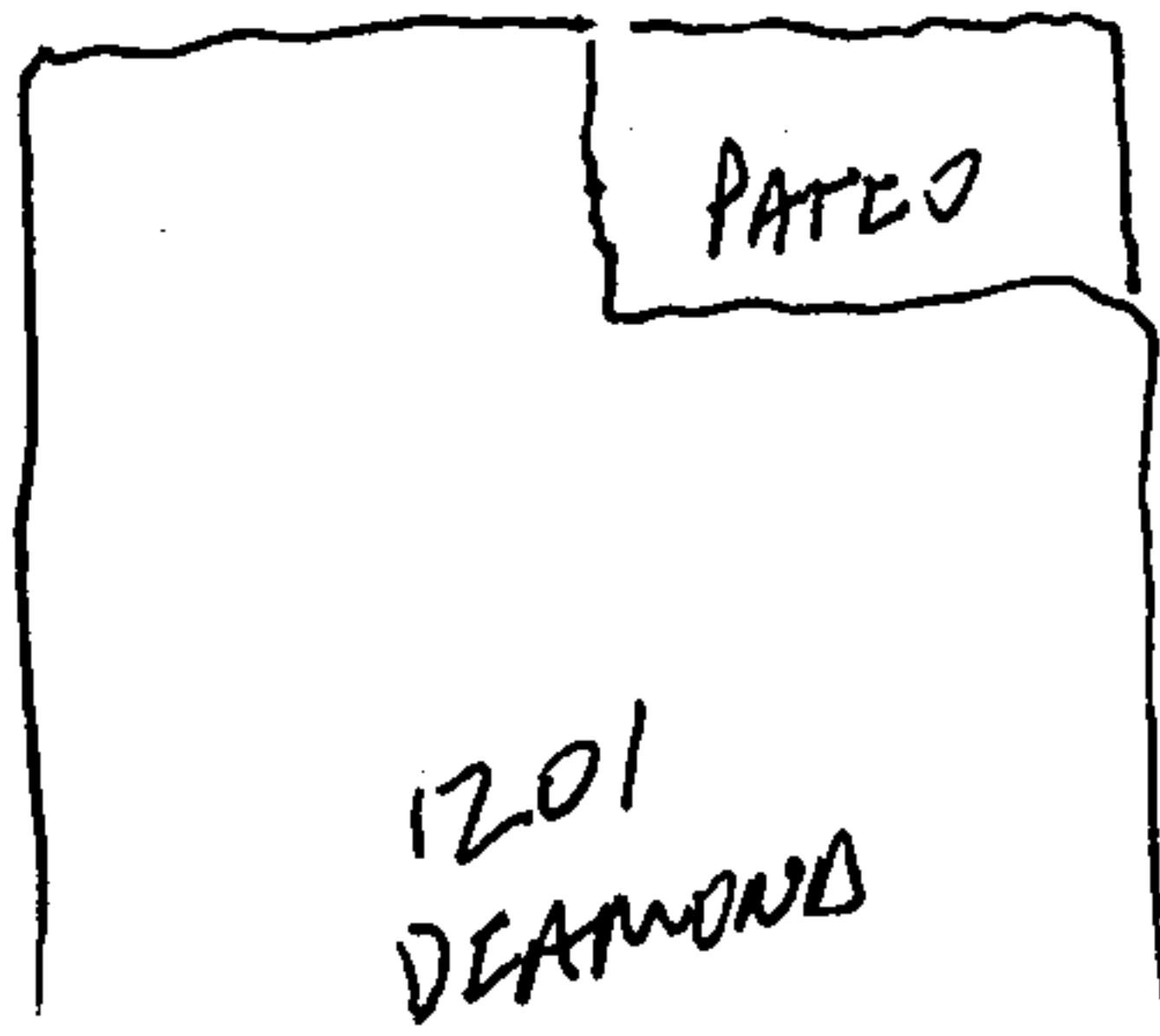
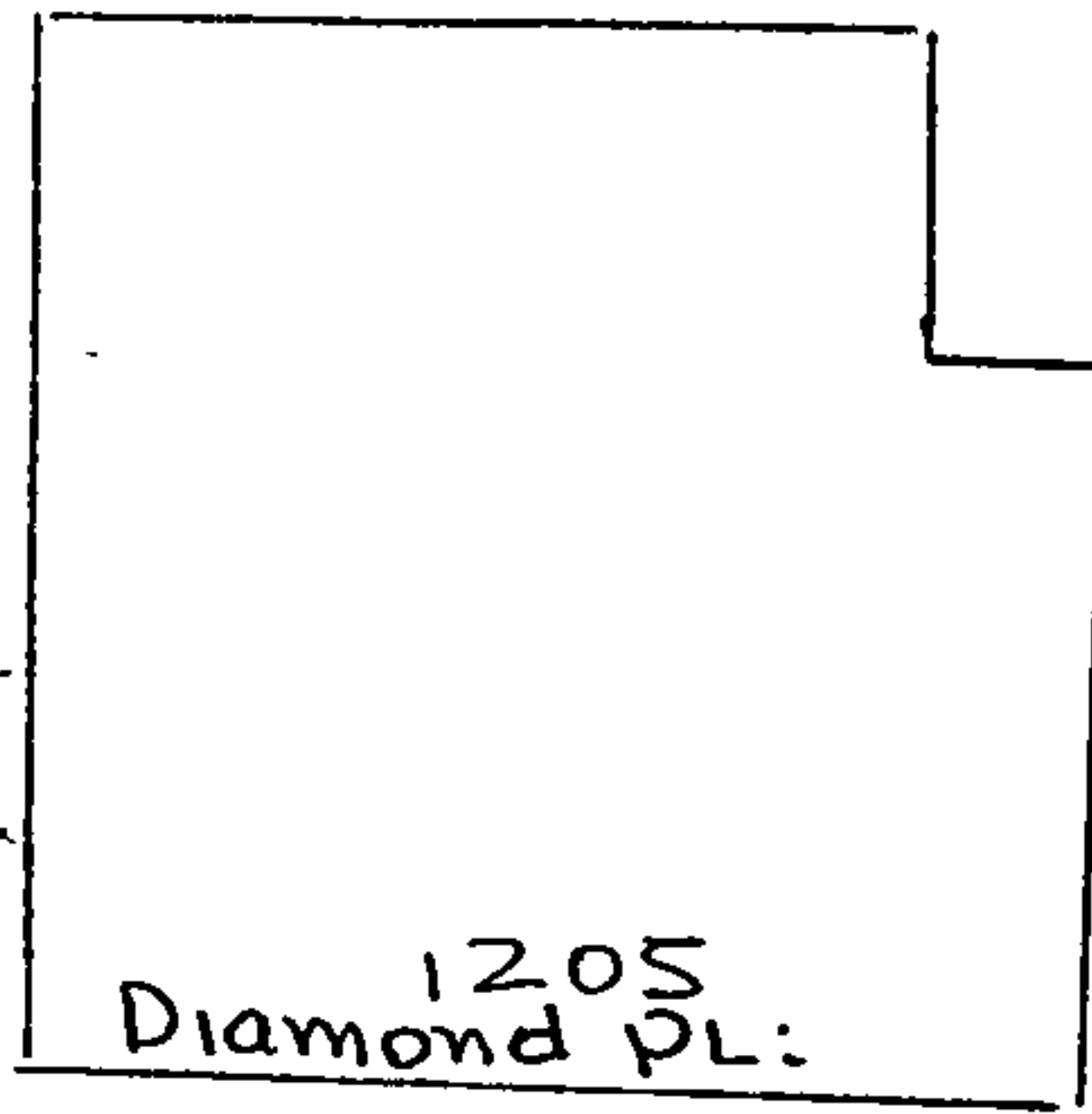
Investigation-Comments: Lot # 9

Follow-up: \_\_\_\_\_

Resolved by: \_\_\_\_\_ Date: \_\_\_\_\_



hole



## SUNRISE ESTATES SUBDIVISION RESTRICTIONS

A Declaration of Restrictions, Covenants and Conditions for the Creation and Maintenance of a Residential Development.

THIS DECLARATION is made as of November 27, 1995, by The Presley Companies, a California Corporation, with respect to that certain real property they own, situated in Bernalillo County, New Mexico, and more particularly described as follows:

All of the SUNRISE ESTATES SUBDIVISION, UNIT 1 as the same is shown on the Plat thereof recorded in the Bernalillo County, New Mexico Real Estate Records on August 4, 1995, in Volume 95C, Folio 286, as Document No. 95077436.

It is hereby declared that all of the described real property is subject to this Declaration which is for the purpose of creating and maintaining a residential development on the described real property and for the improvement and protection of the value, desirability and attractiveness of the described real property.

The Delcarant intends to create a residential development originally consisting of ninety-four (94) single family dwellings with each dwelling to be located on an individually owned lot on public streets, with portions of certain lots subject to easements for the benefit of the community.

This Declaration shall run with the described real property and shall be binding upon and inure to the benefit of Grantor and any subsequent Owner.

### ARTICLE 1

#### Definitions

Unless the context otherwise specifies or requires, the terms defined in this Article 1 shall have the meanings as defined in this Article for the purposes of these Declarations.

#### Section 1.01: Architectural Control Committee.

The terms "Architectural Control Committee" or "Committee" shall mean the architectural control committee created pursuant to Article 5.

#### Section 1.02: Grantor.

The term "Grantor" shall mean The Presley Companies, a California Corporation, its successors and assigns, who are assigned, in writing, all or part of Grantor's powers and responsibilities for all, or a specific area or portion of the subdivision and who accept such powers and responsibilities in writing. Each person or entity named as Grantor in an assignment may exercise the rights of Grantor provided by this Declaration for the area assigned, but no general power, such as the power to annex, shall be partially assigned, except for an assignment of all rights under this Declaration.

Section 1.03: Improvements.

The term "Improvements" shall include, without limitation, buildings, out-buildings, (including sheds and storage buildings), roads, driveways, parking areas, fences, retaining walls, privacy walls for fences, subdivision exterior walls or fences, stairs, decks, windbreaks, poles, antennas, signs, utility or communication installations (whether above or underground), and any structure and excavation of any type or kind.

Section 1.04: Lot.

The term "Lot" shall mean each of the ninety-four (94) Lots designated 1 through 28, Block A, Lots 1 through 22, Block B, Lots 1 through 8, Block C, Lots 1 through 18, Block D, and Lots 1 through 18, Block E, on the Plat together with the Improvements located on each such Lot, and any Lots subsequently annexed to the Subdivision Restrictions.

Section 1.05: Mortgage.

The term "Mortgage" shall mean a deed of trust, as well as a mortgage, and the term "Mortgagee" shall mean a beneficiary under, or a holder of, a deed of trust, as well as a Mortgagee.

Section 1.06: Owner.

The term "Owner" shall mean the persons or entities, including Grantor, holding the beneficial ownership of the fee, including the purchaser under a contract of sale, and shall not include persons holding only a security interest or a seller under a contract of sale. For the purposes of the Article entitled, "Permitted and Prohibited Uses of Property," unless the context otherwise requires, "Owner" shall include the family, invitee, licensees and tenants of any Owner.

Section 1.07: Plat.

The term "Plat" shall mean all of the real property shown on the Plat and comprising the plat of the SUNRISE ESTATES Subdivision, Unit 1, as recorded in the Bernalillo County, New Mexico real estate records on August 4, 1995.

Section 1.08: Subdivision.

The term "Subdivision" shall mean the Residential Development subdivision created by and subject to this Declaration.

Section 1.09: Subdivision Restrictions.

The term "Subdivision Restrictions" shall mean, with respect to all property within the

Subdivision, the limitations, easements, restrictions, covenants, and conditions set forth in this declaration, as this Declaration may from time to time be amended. The term "This Declaration" and the title to this Declaration shall have the same meaning as "Subdivision Restrictions."

## ARTICLE 2

### Property Subject to Subdivision Restrictions

#### Section 2.01: Initial Development

All of the property shown on the Plat.

#### Section 2.02: Subsequent Development

Grantor may, pursuant to the following provisions of this section, from time to time and in its sole discretion and without necessity of any approvals, annex real property owned by Grantor or other persons with the permission of such other persons. The annexation of any such property shall become effective when Grantor shall have recorded the following:

- a. A declaration, which may consist of more than one document and which shall, among other things, (i) describe the real property which is to be annexed, (ii) set forth or refer to such additional or other limitations, restrictions, covenants and conditions, applicable to such property, and (iii) declare that such property is held and shall be held, conveyed, hypothecated, encumbered, leased, rented, used, occupied and improved, subject to the Subdivision Restrictions of Sunrise Estates; and
- b. A subdivision plat with respect to the real property described in said declaration.

The annexation declaration, with respect to all or any part of the property described by it, shall provide for any or all of the following which shall become part of these Subdivision Restrictions as applicable to such property:

- (1) Such new land classifications not then provided, which Grantor deems appropriate for the development of such property; and

- (2) With respect to the land classification provided for by these Subdivision Restrictions, such additional or different limitations, restrictions, covenants and conditions with respect to use as Grantor deems appropriate for the development of such property; provided, however, that such additional or different limitations, restrictions, covenants and conditions applicable to Common Area lying within such annexed property shall not discriminate between

Owners.

ARTICLE 3  
Permitted and Prohibited Uses of Property

Section 3.01: Permitted Uses of Property Within the Subdivision.

a. Improvements and development within the Subdivision shall be limited to residential single family dwellings, either attached or detached having a minimum of 1,000 square feet of heated living area, associated parking, garages, roads and access ways, landscaped areas, and all public or private service and utility facilities related to such uses, including, but not limited to, drainage, sewer, gas, water, electric and communication facilities. No dwelling shall be used as a boarding house or divided into apartments or rooms for rental purposes. This subsection does not prevent the rental or lease of the whole dwelling by the Owner thereof, but any such rental or lease must be by a written agreement which requires the tenant to observe these Subdivision Restrictions. No dwelling may be leased or rented for a period of less than thirty (30) days.

b. Grantor shall, so long as Grantor is the owner of any Lot, have all of the rights of use set out in Article 7 entitled, "Limitation of Subdivision Restrictions on Grantor."

Section 3.02: Prohibited Uses of Property Within the Subdivision.

a. In no event shall any Lot be used for the purpose of mining, quarrying, drilling, boring, or exploring for, or removing, oil, gas or other hydrocarbons, minerals, rocks, stones, gravel or earth, or be used in any other way inconsistent with the Subdivision Restrictions.

b. No illegal, noxious or offensive activity shall be carried on within the Subdivision. No light shall be emitted from any Lot which is unreasonably bright as to cause unreasonable glare to any residences. No sound shall be emitted on or from any Lot which is unreasonably loud or annoying. No odor shall be emitted from any Lot which is noxious or offensive to others. Nothing shall be done or placed which may be, or become, a nuisance, or cause unreasonable embarrassment, disturbance, or annoyance to Owners in the enjoyment of their dwellings.

c. No signs whatsoever, including, but without limitation to, commercial or similar signs visible from other Lots, shall be erected or maintained upon any Lot, except:

1. Such signs as may be required by legal proceedings or are useful for such proceedings.
2. During the time of construction of any structure or other Improvement, job identification signs having a maximum face area of twenty-four (24) square feet per sign and of the type usually employed by contractors, subcontractors, and tradesmen.
3. Appropriate safety, directional, and identification and safety signs installed by Grantor, or required by law.

4. Customary "For Sale" or "For Rent" signs (24" x 24").
  5. Such residential or commercial identification signs as Grantor has the right to maintain, or as are specifically approved by THE PRESLEY COMPANIES.
- d. Except as provided otherwise by this Section, no mobile home, motor home, recreational vehicle, camper, trailer, boat, or similar facility, structure or recreational equipment shall be kept, placed, or maintained within the Subdivision at any time, unless enclosed within a standard size garage or within the side or rear yard so as not to be visible from any street, or the ground floor of neighboring homes. The provisions of this Section shall not apply to (I) temporary construction shelters or facilities maintained during, and used exclusively in connection with, the construction of any work or improvement permitted by this Declaration, (ii) a recreational vehicle parked in the driveway or the street for a period not to exceed 24 hours, and (iii) a guest's use of a recreational vehicle for a period not to exceed one week per thirty (30) days.
  - e. Any outside clotheslines or other outside clothes drying or airing facilities shall be maintained exclusively within a fenced yard in such a way as not to be visible from streets and the ground floor of neighboring dwellings.
  - f. No garbage, clippings from trees, shrubs or lawns, trash, ashes or other refuse may be thrown, dumped or allowed to accumulate on any land within the Subdivision. There shall be no burning of refuse out of doors, except for the burning of natural materials in connection with land clearance or fire control. No incinerators or other device for the burning of refuse indoors shall be constructed, installed or used by any person except in conformity with law.
  - g. No animals, livestock, horses, insects or poultry of any kind shall be kept, raised, or bred in the Subdivision. Dogs, cats and other household pets in reasonable numbers may be kept, providing they are not kept, raised or bred for commercial or hobby breeding purposes. Such household pets, except cats, must be restrained on a leash or otherwise under the direct control of an individual when in the Subdivision.
  - h. No exterior antenna, or satellite dishes, of any sort, shall be installed or maintained on any Lot or within the Subdivision, except those devices which are erected, installed, placed or maintained and used entirely under the eaves or enclosed within a building or structure or are not visible from any street and the ground level of other Lots.
  - I. Mechanical devices, other than heating and cooling devices, shall be substantially hidden from the street by placing them on the ground or on the rear portion of the roof.
  - j. No vehicles of any type shall be permanently or semi-permanently parked in any portion of the Subdivision visible from other Lots for purposes of repairs or reconstruction, or storage. A vehicle shall be deemed parked for storage if it is not driven out of the Subdivision for ten (10) consecutive days.

k. No trucks or other commercial vehicles larger than two tons shall be kept or maintained in the Subdivision, except within standard size garages, and except where customary or required for limited purposes of building, repairing, refinishing, or maintaining the Subdivision or a dwelling, or for the purpose of moving household goods or other necessary or customary furnishings, equipment or supplies in or out of the Subdivision.

l. Except temporarily during a construction period, all utility lines, including, but not limited to, electrical, gas, telephone, cable television, and other communications systems shall be underground, except for access ports and above ground transformers.

m. No portion of the Subdivision shall be used for any purpose or in any manner which would increase the rate at which insurance against loss or damage by fire and the perils covered by extended coverage, bodily injury, property damage liability insurance, covering any other dwelling may be obtained, or cause any other dwelling to be uninsurable or have such insurance canceled or suspended.

n. Recreational structures must be temporary in nature or must be approved by the Architectural Control Committee prior to installation.

#### Section 3.03: Encroachment Easements.

Should minor variations between Lot lines as shown on the Plat and actual physical Lot boundaries (such as walls, including interior party walls, and fences) occur, either due to original construction, reconstruction, repair or due to the settling, shifting or movement of structures, a valid easement shall exist for the encroaching improvements for so long as the encroachment exists.

### ARTICLE 4

#### Duties and Responsibilities of Owners

##### Section 4.01: Owner's Responsibility to Repair.

Each Owner shall be responsible for the regular maintenance and prompt repair of his dwelling, his Lot and his landscaping.

##### Section 4.02: Joint Maintenance by Owners.

a. Each wall which is built as part of the original construction of the Subdivision and placed on the dividing line between houses shall constitute a party wall. Each part of the structure of a building which is shared by more than one dwelling is a common structure. To the extent not inconsistent with the provisions of this Section, the general rules of law regarding party walls and liability for property damage due to negligence or willful acts or omission shall apply.

b. The cost of reasonable repair, maintenance and replacement of a party wall, common structure or joint utility shall be shared by the Owners who make use of the wall in proportion to such use.

c. Notwithstanding any other provisions of this Section, an Owner who, by his negligence or any willful act, causes a party wall or common structure to be exposed to the elements shall bear the whole cost of furnishing the necessary protection against such elements.

d. The right of any Owner to contribution from any other Owner under this Section shall be appurtenant to the Lot and shall pass to such Owner's successors in title.

Section 4.03: Maintenance of Landscaping.

Each Owner shall maintain the landscaping on his Lot in a neat and attractive manner. All grass, mass plantings and other plantings shall be mowed, trimmed and cut as necessary at regular intervals.

Section 4.04: Observance of Subdivision Restrictions.

Each Owner shall comply with the Subdivision Restrictions and will cause and be responsible for Owner's family, agents, guests, contractors, employees and any person renting or leasing Owner's dwelling to do likewise.

ARTICLE 5

Construction and Architectural Control

Section 5.01: Architectural Control Committee.

The Architectural Control Committee for the Subdivision is hereby established consisting of the following three persons:

MARK T. SHERMAN, LEWIS N. WILMOT, JAMES S. HICKS  
1909 Carlisle, NE Albuquerque, New Mexico 87110

The Committee shall have the right to appoint, reappoint and discharge members of the Committee at will. A majority of the members of the Committee may appoint one member of the Committee to act on behalf of, and for, the Committee. The Committee will dissolve and cease to exist when Grantor is no longer the Owner of any Lot or Property subject to the Subdivision Restrictions.

Section 5.02: Construction of Improvements.

(a) Before anyone shall commence on any Lot within the Subdivision the installation of, construction of, remodeling of, addition to, or alteration of any Improvement [the term "Improvements" is defined in Section 1.03, and includes, but is not limited to fencing and walls] of whatsoever nature, there shall be submitted by the Owner of the Lot to the Committee plans and specifications as follows:

(i) Preliminary or tentative plans and specifications which shall clearly show the nature of the work or installation proposed and the location thereof, on the Lot, which such preliminary or tentative plans shall include sufficient description of materials, colors, textures, etc...together with a landscaping plan as shall enable the Committee to evaluate whether the proposed construction, alteration, installation, etc... will be harmonious with the motif and style of the Subdivision and be compatible with surrounding homes;

(ii) After approval of the preliminary or tentative plans, including therein any requirements made by the Committee in the due and proper exercise of its discretion and powers, two complete sets of the final plans and specifications; and

(iii) No Improvement of any kind, installations, shall ever be, or permitted to be, erected, constructed, installed, placed or maintained on any Lot within the Subdivision, unless and until the final plans, specifications and elevations therefor shall have received written approval of the Committee. All such final plans shall include plot plans showing the location on the Lot of all Improvements proposed to be constructed and/or installed, planted, placed or maintained on the Lot and shall further include elevations, together with the proposed color scheme and textures for roofs and exteriors thereof, indicating the materials for same.

(b) The Committee shall approve or disapprove within thirty days after receipt thereof plans and specifications which have been submitted to it. One set of plans and specifications, with the Committee's approval or disapproval and requirements endorsed thereon, shall be returned to the applicant and the other copy thereof, with a duplicate endorsement thereon corresponding to the first set, shall be retained in the Committee's files.

In the event that the Committee shall fail to approve or disapprove the plans, specifications and other information within thirty days after receipt thereof by the Committee, then such approval shall not be required, provided that no structure, building or other Improvement shall be installed, erected, painted, textured, altered or modified which violates any of the Restrictions.

The Committee shall have the right and power to disapprove any plans, specification or details submitted to it, if the Committee shall find the plans and specifications are not in accord with all provisions of this Declaration, or if a design or color scheme submitted is not in harmony and accord with the Subdivision, or surrounding homes or if the plans and specifications are incomplete.

#### Section 5.03: Design Guidelines.

The Committee may from time to time adopt design guidelines for approval of Improvements. The committee may grant variances from its Design Guidelines. The initial Design Guidelines are as follows:

a. Garages:

All homes must have at least a two (2) car garage. Garages may not be converted to living space unless a substitute garage is constructed which is approved by the Committee or a garage for at least two (2) cars will remain after the conversion. No more than a three (3) car garage may face the street.

b. Landscaping.

The Owner shall be obligated to landscape the front yard of all Lots and the side yard on corner Lots within 120 days of the issuance of a certificate of occupancy for the dwellings pursuant to a landscape plan approved by the Committee.

Section 5.04: Liability.

Neither the Committee, the Grantor, nor any member thereof shall be liable to any Owner for any damage, loss, or prejudice suffered or claimed on account of:

- a. The approval of any plans, drawings, and specifications, whether or not defective,
- b. The construction or performance of any work, whether or not pursuant to approved plans, drawings, and specifications,
- c. The development or manner of development of any property within the Subdivision, or,
- d. The execution and recording of an estoppel certificate whether or not the facts therein are correct; provided, however, that the officer executing the certificate, with the actual knowledge possessed by him, has acted in good faith.

Without in any way limiting the generality of the foregoing, the Committee or any member thereof, may, but is not required to, consult with or hear any Owner with respect to any plans, drawings, or specification, or any other proposal submitted to it.

## ARTICLE 6

### Protection of Security Interests

Section 6.01: Limitation of Enforcement Against Mortgagee.

No violation by an Owner of the Subdivision Restrictions or enforcement of the Subdivision Restriction against an Owner shall defeat or render invalid the lien of any mortgagee made in good faith and for value against the property of such Owner, but, the Subdivision Restrictions shall be effective against any Owner whose title is acquired by foreclosure, trustee's sale, voluntary conveyance, or otherwise.

Section 6.02: Application of Subdivision Restrictions.

Except as provided in this Article or specifically provided elsewhere in the Subdivision restrictions, all mortgages and mortgagees are bound by the provisions of the Subdivision Restrictions.

## ARTICLE 7

Limitation of Subdivision Restrictions on GrantorSection 7.01: Limitation of Subdivision Restrictions on Grantor.

Grantor is undertaking the work of constructing the Subdivision. The completion of that work and the sale, rental and other disposition of the Lots is essential to the establishment of the Subdivision. In order that said work may be completed and said property be established and fully occupied as rapidly as possible, nothing in this Declaration shall be understood or construed to:

- a. Prevent Grantor or its agents, employees, and contractors from doing in the Subdivision whatever is reasonably necessary or advisable in connection with the completion of the infrastructure, homes and other improvements in the subdivision; or
- b. Prevent Grantor or its agents, employees, and contractors from erecting, constructing and maintaining on any part or parts of the Subdivision, such structures as may be reasonably necessary for the conduct of its business of completing the work and establishing the Subdivision, including, without limitation, sales offices, model units, general business offices for its staff, employees and contractor, and storage and parking facilities for materials and equipment, and disposing of the Subdivision in parcels by sale, lease or otherwise; or
- c. Prevent Grantor from conducting, on any part of the properties, its business of completing the work, and of establishing and disposing of the Subdivision;
- d. Prevent Grantor from maintaining such sign or signs on the Subdivision as may be necessary for its sale, lease, or disposition, or the sale, lease or disposition of any Lot.

Section 7.02: Use of Subdivision Name.

Grantor may use the name of the Subdivision and the Subdivision Restrictions in other subdivisions or projects, whether located adjacent to the Subdivision or not.

Section 7.03: Architectural Control.

Improvements by Grantor and Declarant to the Subdivision do not require approval of the Committee, but will be in compliance with these Subdivision Restrictions.

Section 7.04: No Amendment or Repeal.

As long as Grantor is the Owner of any Lot, in the Subdivision, the provision of this Article may not be amended or repealed without the consent of Grantor.

ARTICLE 8  
Miscellaneous Provisions

Section 8.01: Amendment to Repeal: Duration

- a. Each remedy provided for in the Subdivision Restrictions is cumulative and not exclusive, and is in addition to any remedy to provided by New Mexico law.
- b. The failure to enforce the provisions of any limitation, restriction, covenant, condition, obligation, lien, or charge of the Subdivision Restrictions shall not constitute a waiver of any right to enforce any such provision or any other provision of the Subdivision Restrictions.
- c. No breach of any of the provisions of the Subdivision Restriction shall cause any forfeiture of title or reversion or bestow any rights of re-entry whatsoever.
- d. Reasonable attorney's fees and costs may be awarded in any action brought to enforce the provisions of the Subdivision Restrictions.

Section 8.02: Construction: Compliance with Laws: Severability: Singular and Plural: Titles.

- a. All of the limitations, restrictions, covenants, and conditions of the Subdivision Restrictions shall be liberally construed together, to promote and effectuate the beneficial operation of the Subdivision.
- b. No provision of the Subdivision Restrictions shall be construed to excuse any person from observing any law or regulation of any governmental body having jurisdiction over such person or the Subdivision.
- c. Notwithstanding other provisions in this Section, the limitations, restrictions, covenants, and conditions of the Subdivision Restrictions shall be deemed independent and severable, and the invalidity or partial invalidity of any provision, or portion thereof, of any of such limitations, restrictions, covenants, or conditions shall not affect the validity or enforceability of any other provision.
- d. The singular shall include the plural, and the plural the singular, unless the context requires the contrary, and the masculine, feminine and neuter, as the context requires.
- e. The table of contents and all titles used in the Subdivision Restrictions, including those of Articles and Sections, are intended solely for convenience of reference and the same shall not, nor shall any of them affect that which is set forth in such Articles, Sections, nor any of the terms or provisions of the Subdivision Restrictions. Any numbered or lettered subdivision of a Section

is referred to as "subsection" or "subsections" and any indented portion of this Declaration which is unnumbered and unlettered shall be referred to as "Paragraph."

Section 8.03: Lot Splitting; Consolidation.

- a. No Lot within the Subdivision shall be split or further subdivided.
- b. No two or more Lots within the Subdivision shall be consolidated into one Lot.
- c. Nothing contained in this Section shall apply to the splitting of any Lots by Grantor or the consolidation of two or more Lots into one Lot by Grantor.

Section 8.04: Obligations of Owners; Avoidance; Termination.

- a. No Owner, through the abandonment of his Lot, may avoid the burdens or obligations imposed on him by the Subdivision Restrictions by virtue of his being an Owner.

Section 8.05: No Partition or Severance of Interests.

There shall be no partition or severance of any Lot, from the Subdivision and the Grantor, and Owners shall not seek to partition or sever any part of a Lot from the Subdivision, nor shall they have any right to maintain an action for judicial partition in connection with the Subdivision. This provision shall not prevent the partition of any Lot or Lots held in joint ownership as long as no physical partition takes place and there is no severance from any violation of the Subdivision Restrictions.

Section 8.06: Rights of Action.

Each Owner, or the Declarant at its option, shall have a right of action against other Owners for failure to comply with the provisions of the Subdivision Restrictions.

Section 8.07: Notices; documents; Delivery.

Any notice or other document permitted or required by the Subdivision Restrictions to be delivered may be delivered either personally or by mail. If delivery is made by mail, it shall be deemed to have been delivered seventy-two (72) hours after a copy of the same has been deposited in the United States mail, postage prepaid, addressed as follows:

If to an Owner: At any House within the Subdivision owned by the Owner.

If to Grantor: The Presley Companies, 1909 Carlisle, NE, Albuquerque, NM 87110.

If to Architectural Control Committee: 1909 Carlisle, NE, Albuquerque, NM 87110.

IN WITNESS WHEREOF, Declarant has executed this Declaration the day and year first above written

THE PRESLEY COMPANIES,  
a California Corporation

By: *Lewis N. Wilnot*  
Lewis N. Wilnot, Sr. Vice-President

STATE OF NEW MEXICO )  
 ) ss.  
COUNTY OF BERNALILLO )

On Dec. 14, 1995, before me, the undersigned, a Notary Public in and for said State, personally appeared Lewis N. Wilnot known to me to be the Senior Vice-President of THE PRESLEY COMPANIES, a California corporation, the person that executed the within instrument.

WITNESS my hand and official seal.

My Commission Expires: 8/30/98

*Sharon K Moore*  
Notary Public in and for said County and State

STATE OF NEW MEXICO  
COUNTY OF BERNALILLO  
FILED FOR RECORD

95 DEC 14 PM 2:13

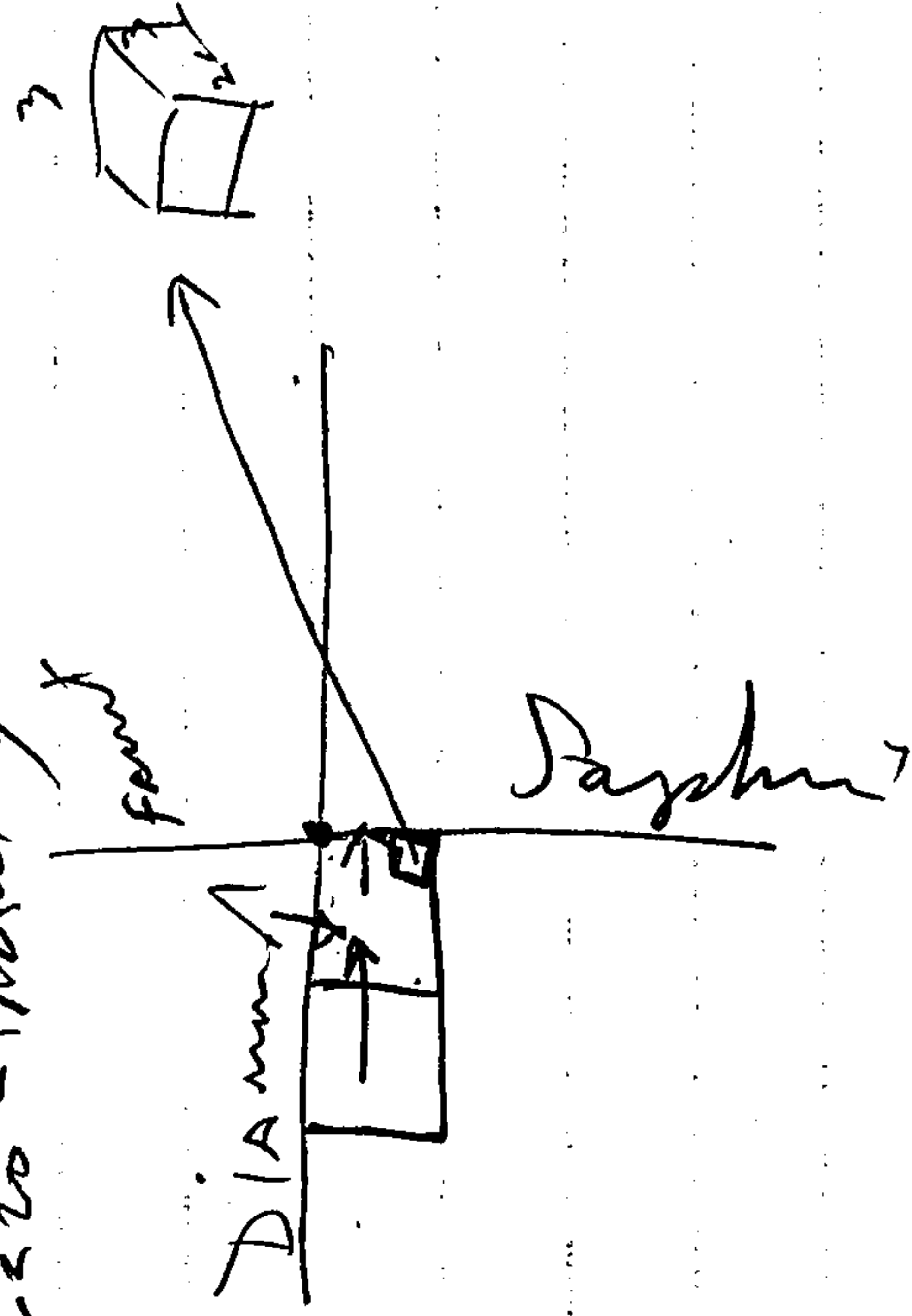
95-30 3717-3729  
JUDY D. WOODWARD  
Notary Public  
*Judy Woodward*

11:30 AM

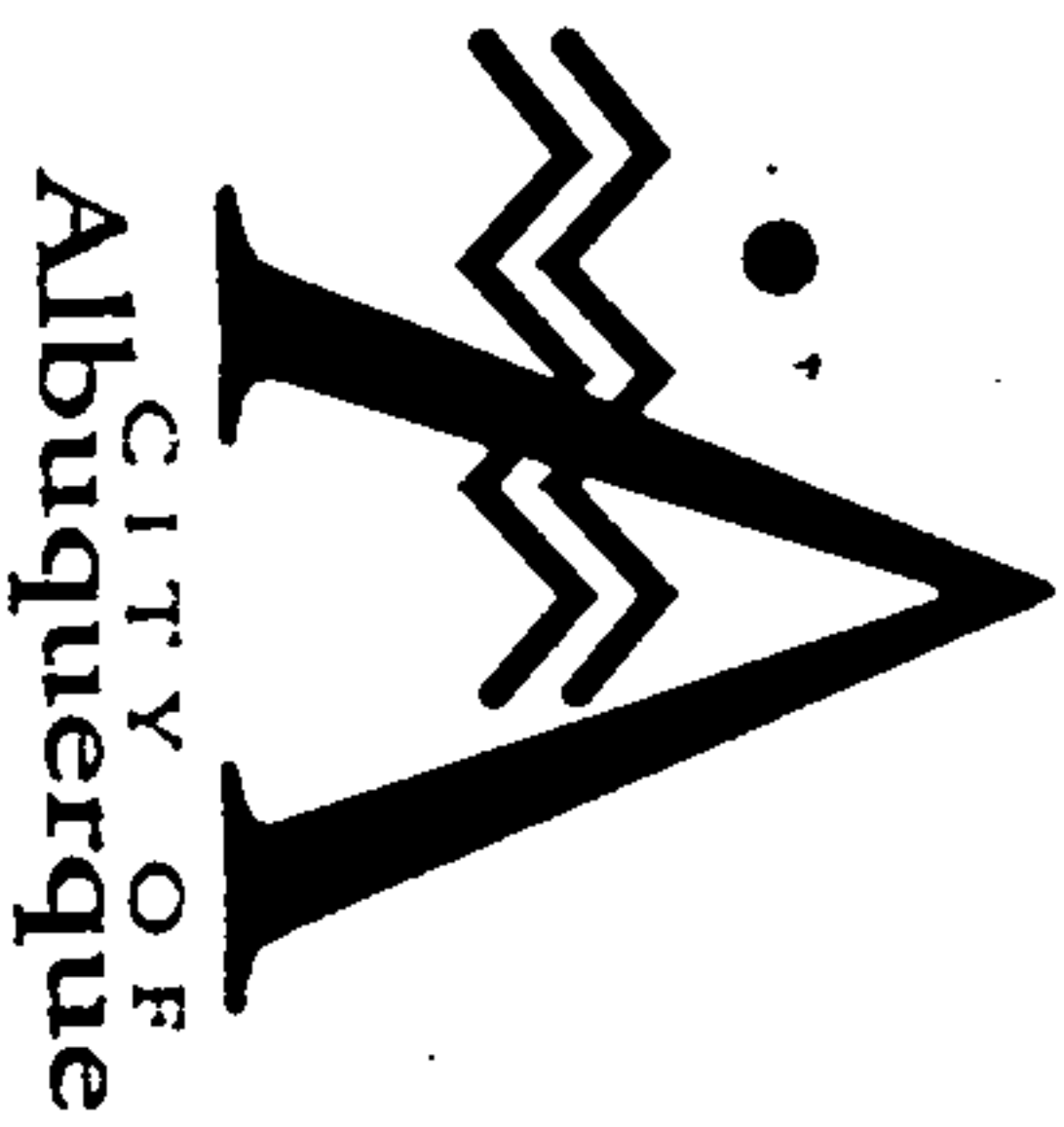
7/28/97

- Sam Hotchkiss - 1239 Diamond [Sashin]  
Did not comply with the  
Drainage plan  
Remot from regulation yard  
is sheding your property

- Bobbie Apencio - Prasky



Location



July 28, 1997

Martin J. Chávez, Mayor

R. Louis Costley III  
1201 Diamond Place SW  
Albuquerque, NM 87121-8331

**RE: SUNRISE ESTATES UNIT 1, LOT 10 (M10-D5A).**

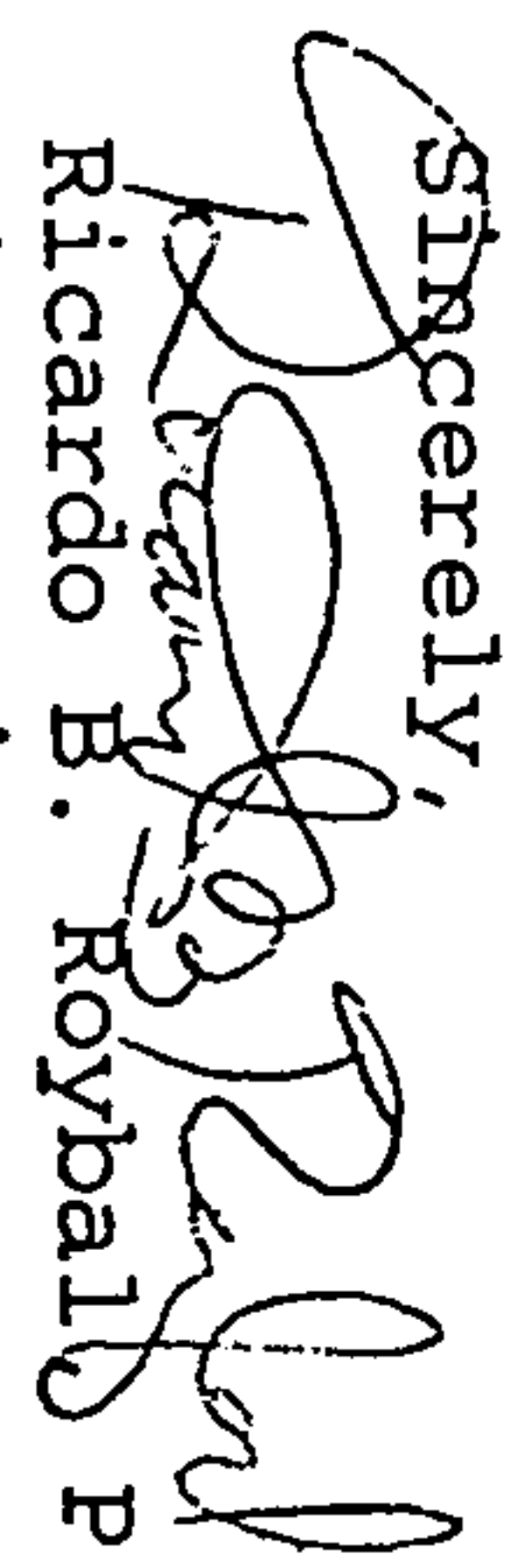
Dear Mr. Costly:

I am writing to request that surveyors be allowed to enter your property at 1201 Diamond Place SW, to obtain data. This data is essential to devise an appropriate plan to correct your drainage and erosion problems.

Please let me know when would be a convenient time for the survey party to come. It is not necessary that you be home when the survey is conducted however, you are encouraged and welcome to be present.

If I can be of further assistance, please feel free to contact me at 924-3979.

Sincerely,

  
Ricardo B. Roybal P.E.  
City Engineer

c: Leonard Espinosa - Presley Homes  
Fred Aguirre - City of Albuquerque

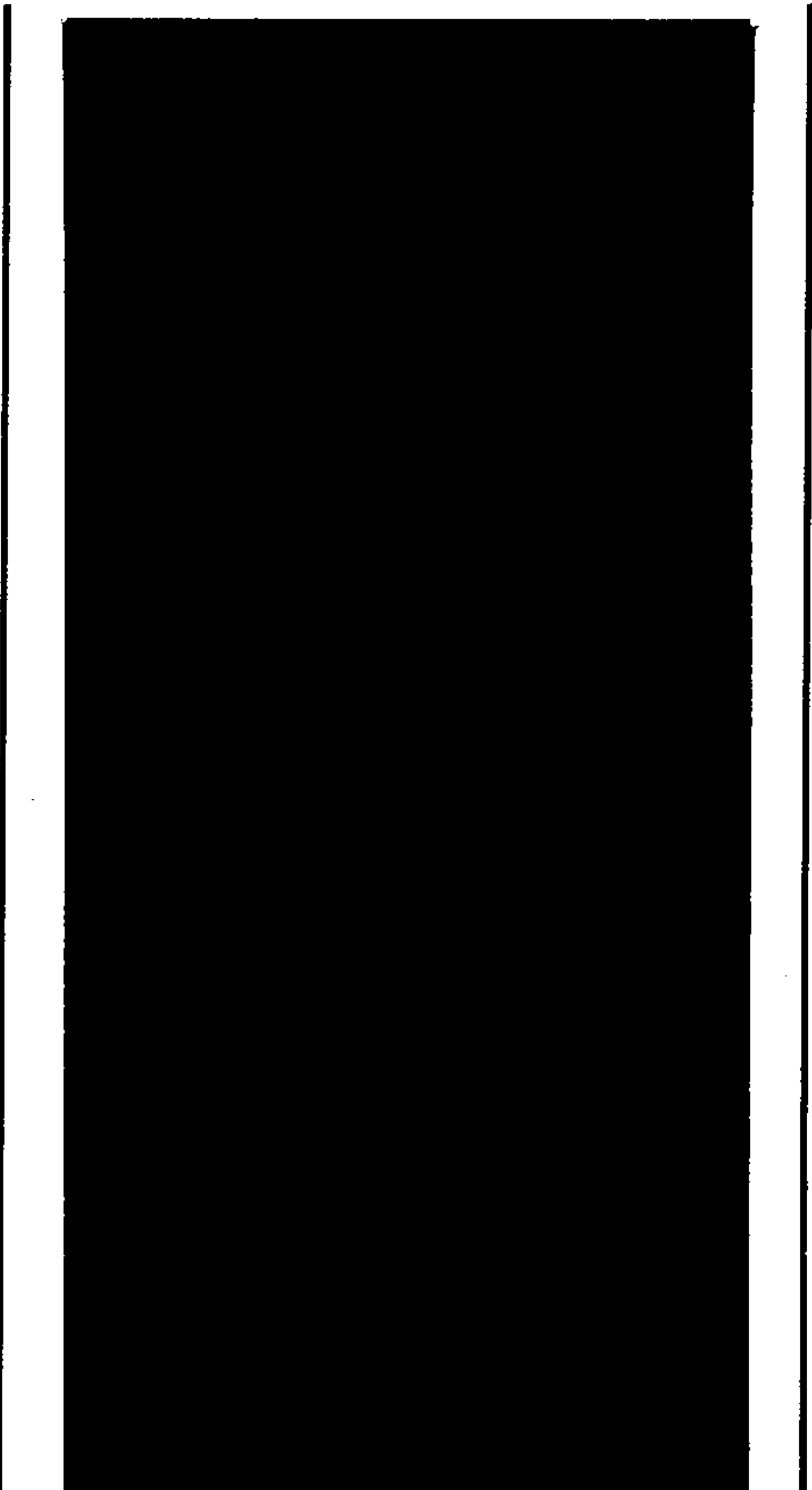
File

RBR/lam

Good for You, Albuquerque!

P.O. BOX 1293, Albuquerque, New Mexico 87103





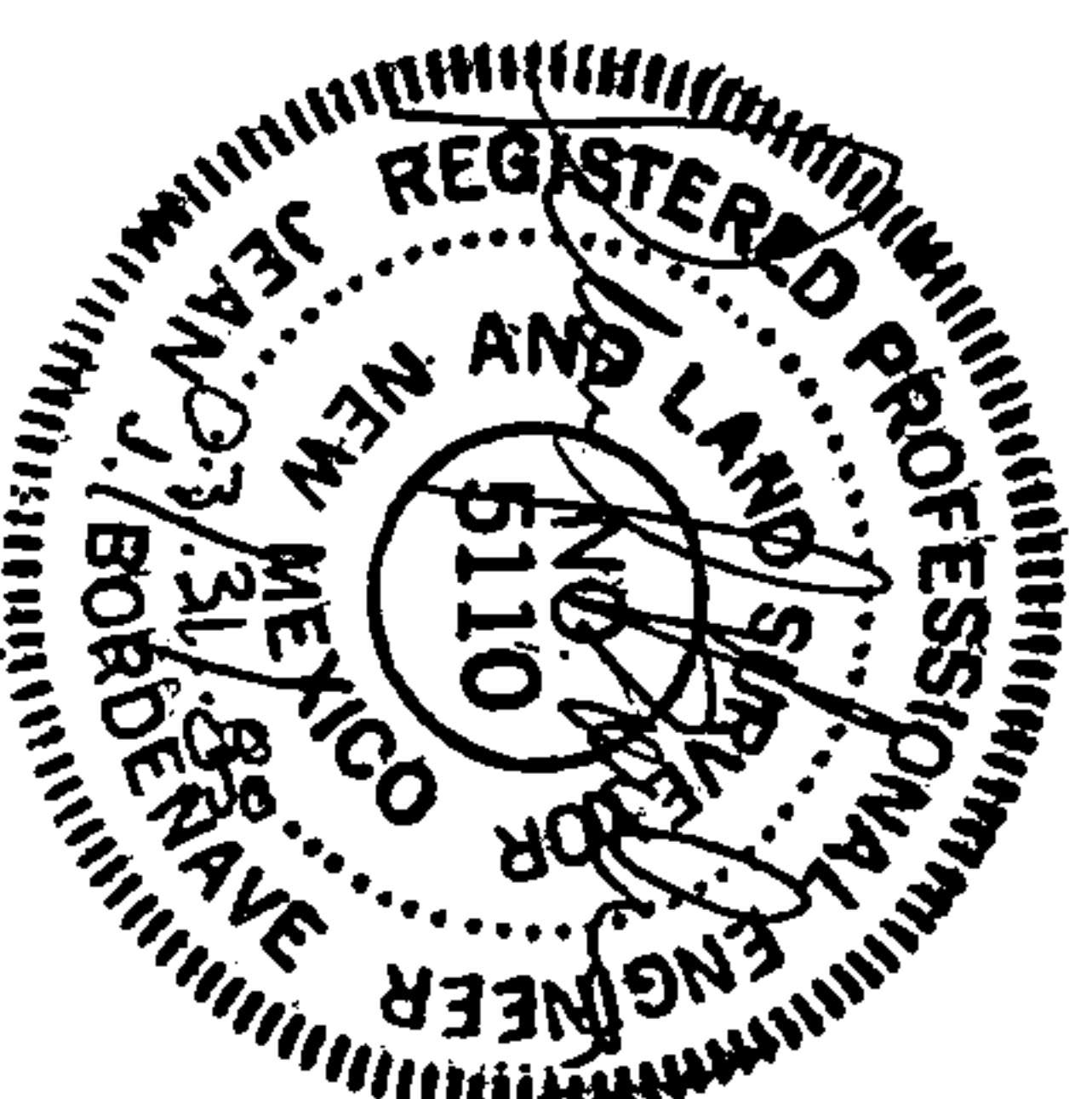
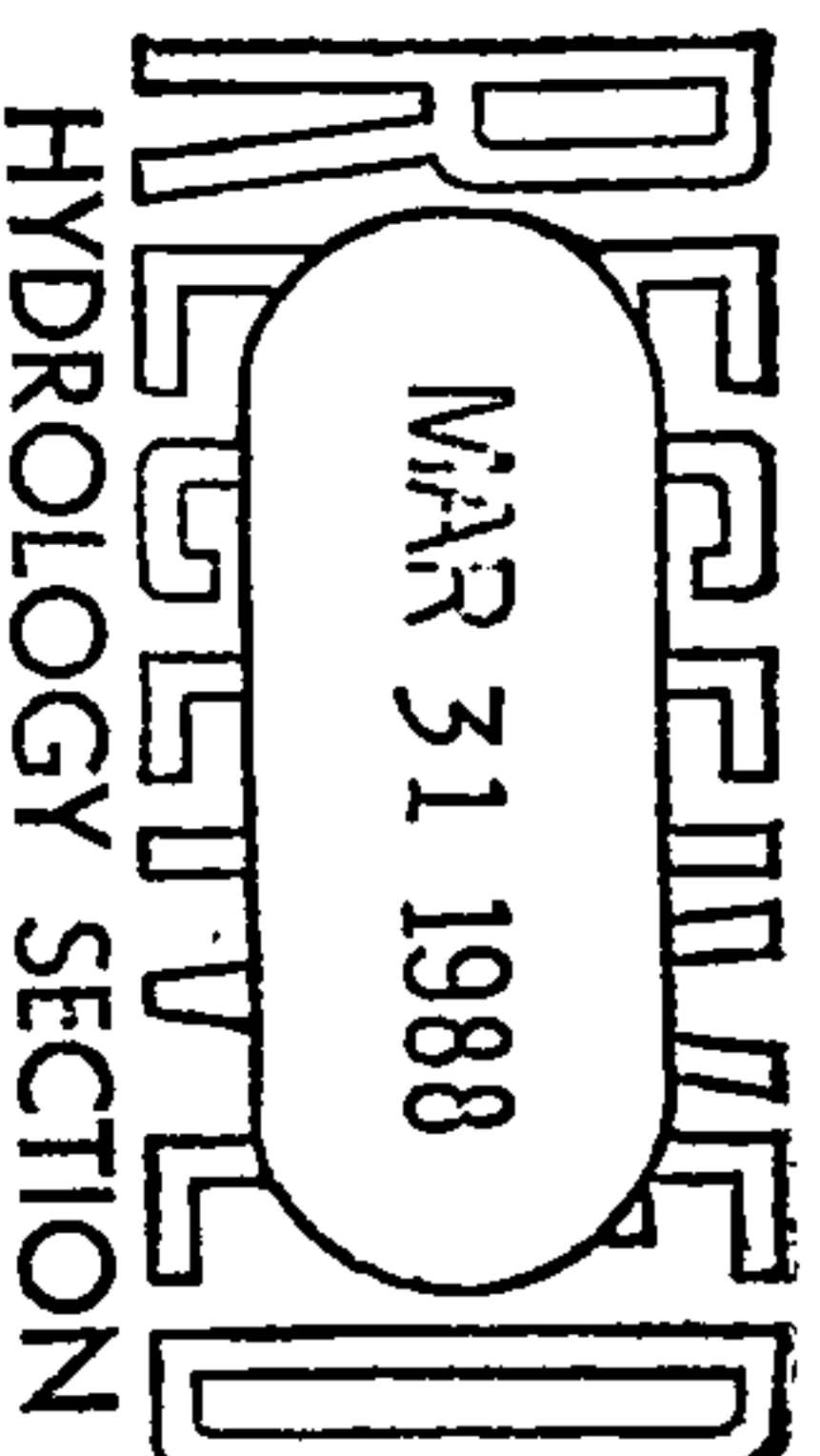
**DMJM**

Daniel, Mann, Johnson, & Mendenhall

DRAINAGE REPORT

FOR

VISTA NUEVA SUBDIVISION



Prepared For: Presley Company of New Mexico  
1909 Carlisle Blvd., NE  
Albuquerque, NM 87110  
(505) 265-5811

Prepared by: DMJM  
6501 Americas Parkway, NE  
Suite 690  
Albuquerque, NM 87112  
(505) 884-4031

# PIPE CULVERT ANALYSIS COMPUTATION OF CULVERT PERFORMANCE CURVE

March 16, 1990  
VISTA NUEVA SUBDIVISION  
UNGER/SAPPHIRE INTERSECTION

## PROGRAM INPUT DATA: DESCRIPTION

VALUE

Culvert Diameter (feet)..... 4.50  
FHWA Chart Number (1,2 or 3)..... 1  
Scale Number on Chart (Type of Culvert Entrance)..... 1  
Manning's Roughness Coefficient (n-value)..... 0.0130  
Entrance Loss Coefficient of Culvert Opening..... 0.50  
Culvert Length (feet)..... 110.0  
Culvert Slope (feet per foot)..... 0.0050

## PROGRAM RESULTS:

| Flow Tailwater<br>Rate<br>(cfs) | Headwater<br>Depth Inlet<br>(ft) | Headwater<br>Control<br>(ft) | Normal<br>Depth<br>(ft) | Critical<br>Depth<br>(ft) | Depth at<br>Outlet<br>(ft) | Outlet<br>Velocity<br>(fps) |
|---------------------------------|----------------------------------|------------------------------|-------------------------|---------------------------|----------------------------|-----------------------------|
| 150.0                           | 1.00                             | 6.56                         | 6.20                    | 4.50                      | 3.59                       | 4.50                        |
|                                 |                                  |                              |                         |                           |                            | 9.43                        |

=====

PIPE CULVERT ANALYSIS COMPUTER PROGRAM Version 1.7 Copyright (c)1986  
Dodson & Associates, Inc., 7015 W. Tidwell, #107, Houston, TX 77092  
(713) 895-8322. All Rights Reserved.

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| Existing Drainage Conditions | 3           |
| Proposed Drainage Conditions | 6           |
| Conclusions                  | 6           |
| Calculations                 | 7           |

Pocket

|                                                 |
|-------------------------------------------------|
| Vista Nueva Subdivision Drainage Plan           |
| Vista Nueva Grading Plan - Phase I              |
| Profiles of Offsite Temporary Drainage Channels |
| Offsite Drainage Map                            |
| Proposed Plat                                   |
| Existing Plat                                   |

PURPOSE:

The purpose of this report is to present the method for controlling surface runoff from the proposed development in a manner which is acceptable to the City of Albuquerque and the Albuquerque Metropolitan Flood Control Authority (AMAFCA). This report determines the excess runoff resulting from a 100-year/6-hour and 10-year/6-hour frequency storms falling within the project site and contributing drainage basins under existing and developed conditions.

In addition, the purpose of this report is to ensure the developer the project site will be protected from storm runoff and that the project will not increase the flooding potential to adjacent properties and downstream areas.

LOCATION and DESCRIPTION:

The proposed development is located southwest of the the intersection of Unser Boulevard S.W. and Arenal Road S.W. The site is more particularly described as Tract 'A' of Albuquerque South, Unit 1. The location of the site is graphically depicted on Vicinity Map M-10 (Figure 1).

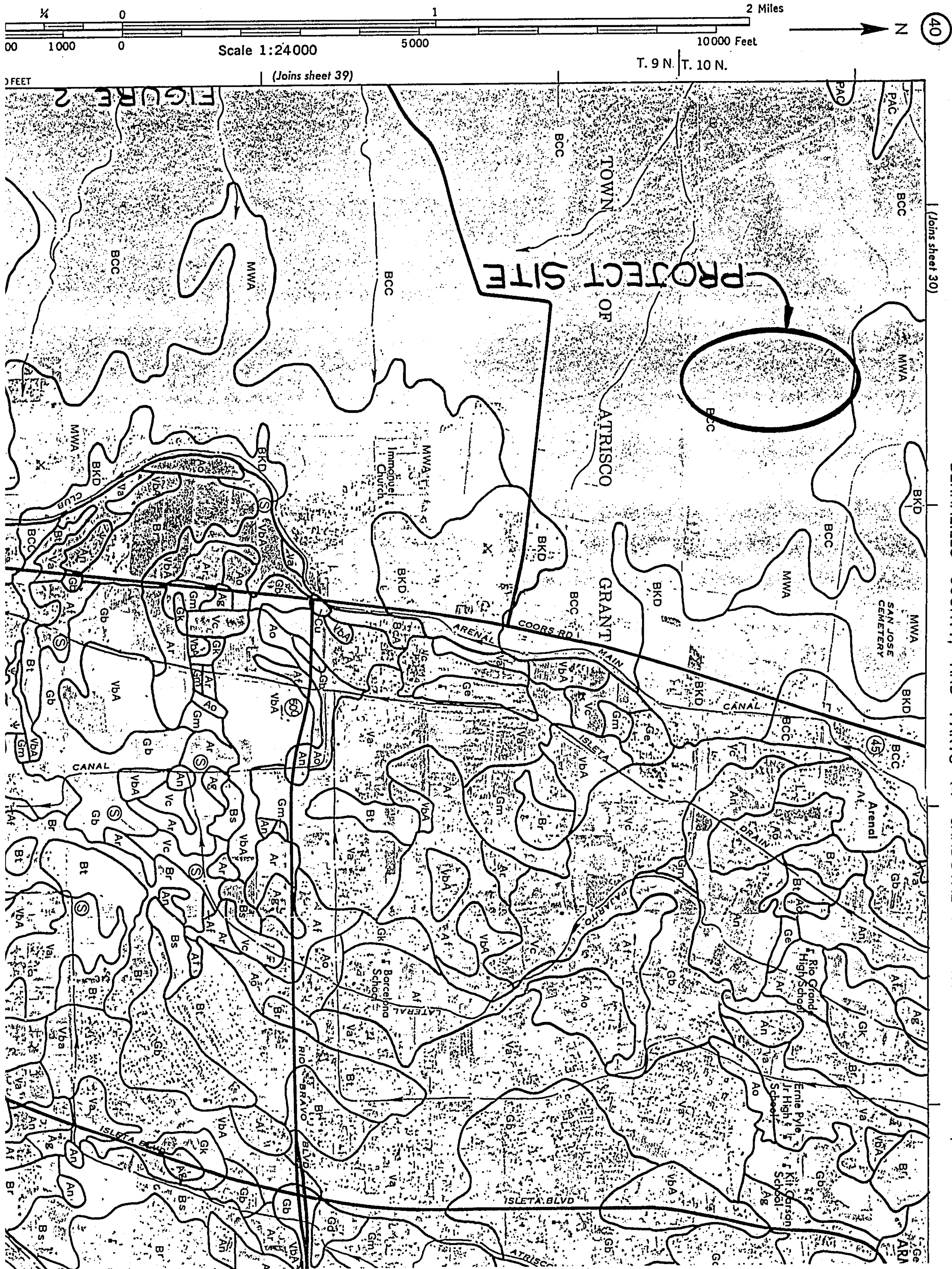
The project site contains approximately 51.79 acres and is presently undeveloped. The natural topography slopes from west to east at a grade of approximately two percent (2%) with a

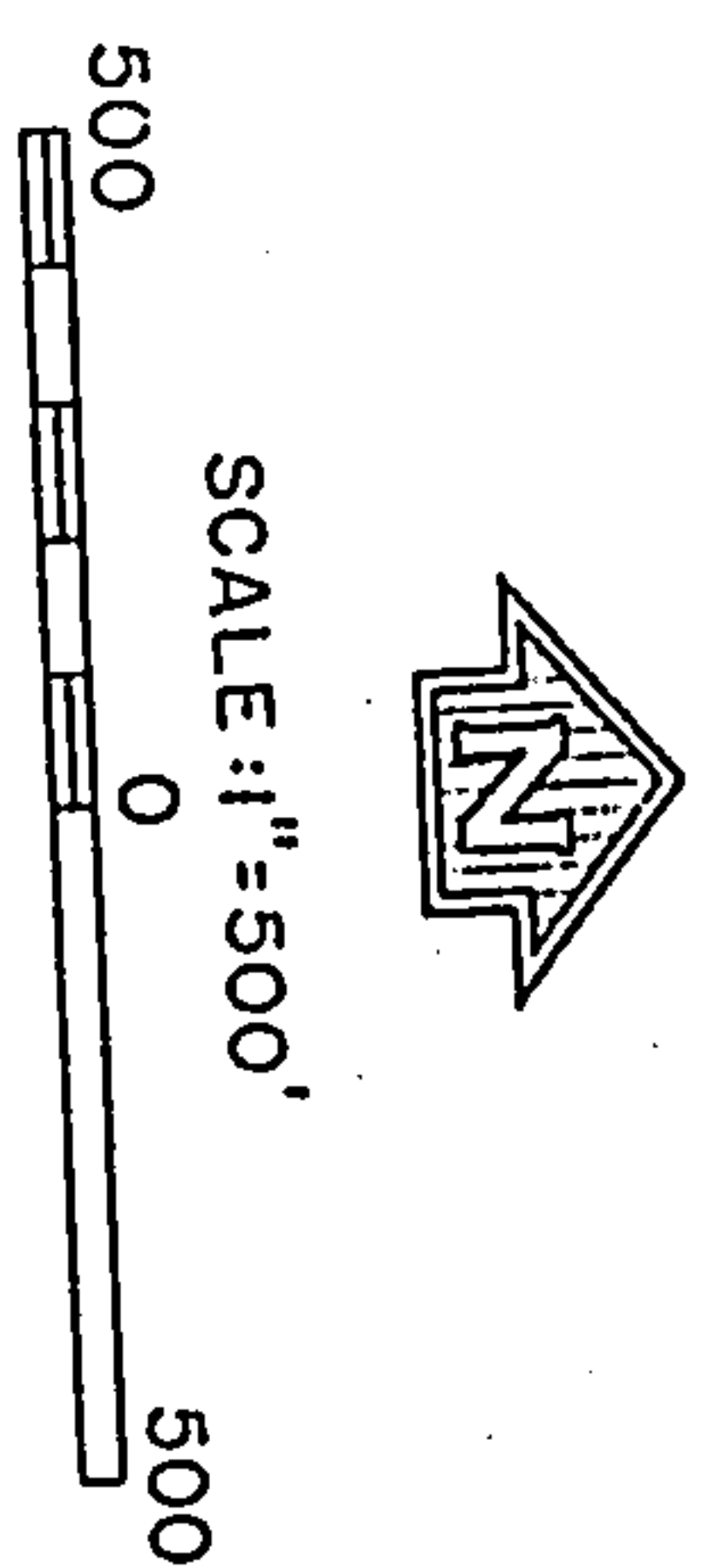
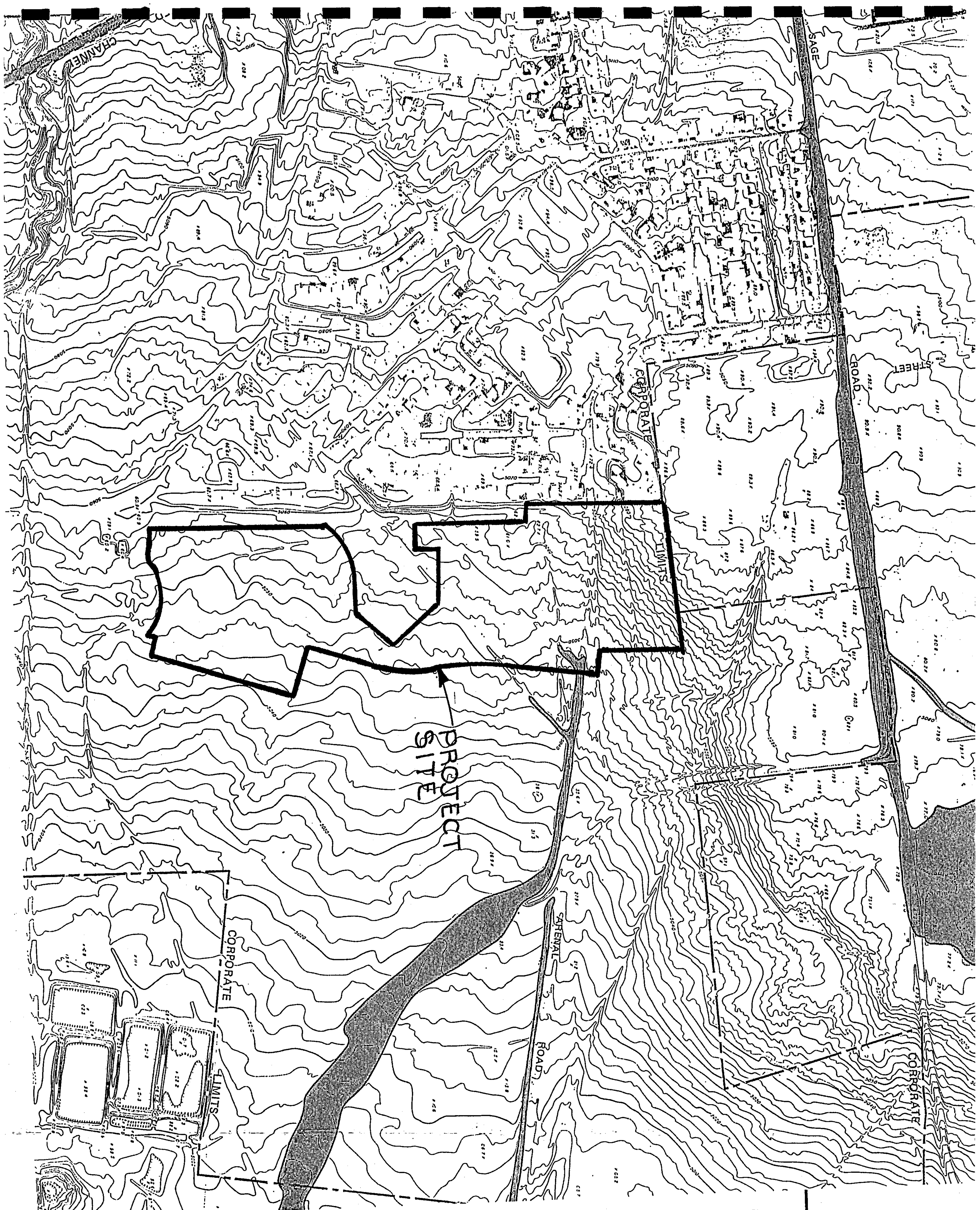


small area having a slope of approximately six percent (6%) in the northwest portion of the tract. The major soil groups present within the project site are Bluepoint loamy fine sand and Madurez-Wink association. The USDA Soil Conservation Service has classified these two soil series as hydrologic types 'A' and 'B' respectively. Plate 40 of the Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, 1977 graphically depicts the project site (Figure 2).

#### EXISTING DRAINAGE CONDITIONS:

The project site is currently undeveloped. A small area in the northeast corner of the site is inundated by the 100-year storm as indicated in FEMA Flood Map panel 33 (Figure 3). An extensive offsite area discharges its runoff across the site. The offsite drainage basins affecting the site are graphically depicted in figure 4 (Map pocket). Runoff from the offsite drainage basins are released onto the site at two discharge points located at the terminus of Sapphire Road and the site's west property line, and at the terminus of Kimela Drive and the site's west property line. The offsite flows then continue downstream through the site and the property immediately to the east within existing drainage easements (Exhibit #1 appendix) following natural drainage courses to the Amole Del Norte Diversion Channel right-of-way. Runoff produced by the site





NATIONAL FLOOD INSURANCE PROGRAM

# FLOODWAY FLOOD BOUNDARY AND FLOODWAY MAP

CITY OF  
ALBUQUERQUE,  
NEW MEXICO  
BERNALILLO COUNTY

PANEL 33 OF 50

COMMUNITY-PANEL NUMBER  
350002 0033

EFFECTIVE DATE:  
OCTOBER 14, 1983



Federal Emergency Management Agency

FIGURE 3

itself exists as overland sheet flow until it is captured by one of the natural drainage courses and continues downstream to the Amole Del Norte Diversion Channel right-of-way.

PROPOSED DRAINAGE CONDITIONS:

The project site will be developed into a residential subdivision with lots ranging in size from 50'x100' to 60'x120'. The portion of the site north of Mary Ann Binford Elementary School (Phase I) will be constructed prior to the portion south of the school (Phase II). All curb and gutter within the site will be mountable roll type unless the curb depth exceeds 0.53 feet in which case standard curb and gutter will be used. On and offsite runoff in Phase I will pass through the site as surface flows. On and offsite runoff in Phase II will be collected in an underground storm drain system within the Kimela Drive right-of-way. Storm runoff from both phases exits the site and passes beneath the Unser Blvd. right-of-way via underground storm drain systems located at Sapphire Road at Unser Blvd. (Phase I) and Kimela Drive at Unser Blvd. (Phase II). The storm runoff is then discharged into temporary earth lined open channels and continues downstream through existing temporary drainage easements to the Amole Del Norte Division Channel right-of-way where it is collected in a desiltation facility before being released in to the existing concrete lined channel.

CONCLUSION:

1. All criteria established by the Drainage Ordinance have been met.
2. The small portion of the site located within the existing flood hazard zone will be eliminated upon development of this project. A Letter of Map Revision (LOMR) will be prepared and submitted to the Federal Emergency Management Agency (FEMA) so the required revision to the FEMA Flood Maps can be made.
3. Storm runoff within Phase I will be surface flows.
4. Storm runoff within Phase II will be collected in an underground storm drain system within the Kimela Drive ROW.
5. No onsite detention is required.
6. An underground storm drain system will be required to pass storm runoff beneath the Unser Blvd. ROW.
7. Temporary open channels are required to pass storm runoff across the property to the east of the project site to the Amole Del Norte Diversion Channel right-of-way. *Head Maintenance Covenant*

8. A temporary desiltation facility is required in the Amole Del Norte Diversion Channel ROW before discharging storm runoff into the existing concrete lined channel. This facility will be required at the time of development of the Project Site. *Need*

*Maintenance Covenant*

9. All offsite drainage basins affecting the project site are analyzed using SCS methods assuming a totally developed condition.

10. Onsite drainage basins are analyzed using SCS methods. Computations for each sub-basin are made using the Rational Method.

DMJM

PROJECT

PROJECT NO.

PAGE

ALBUQUERQUE

Vista Nueva

6376.00

BY:

ME

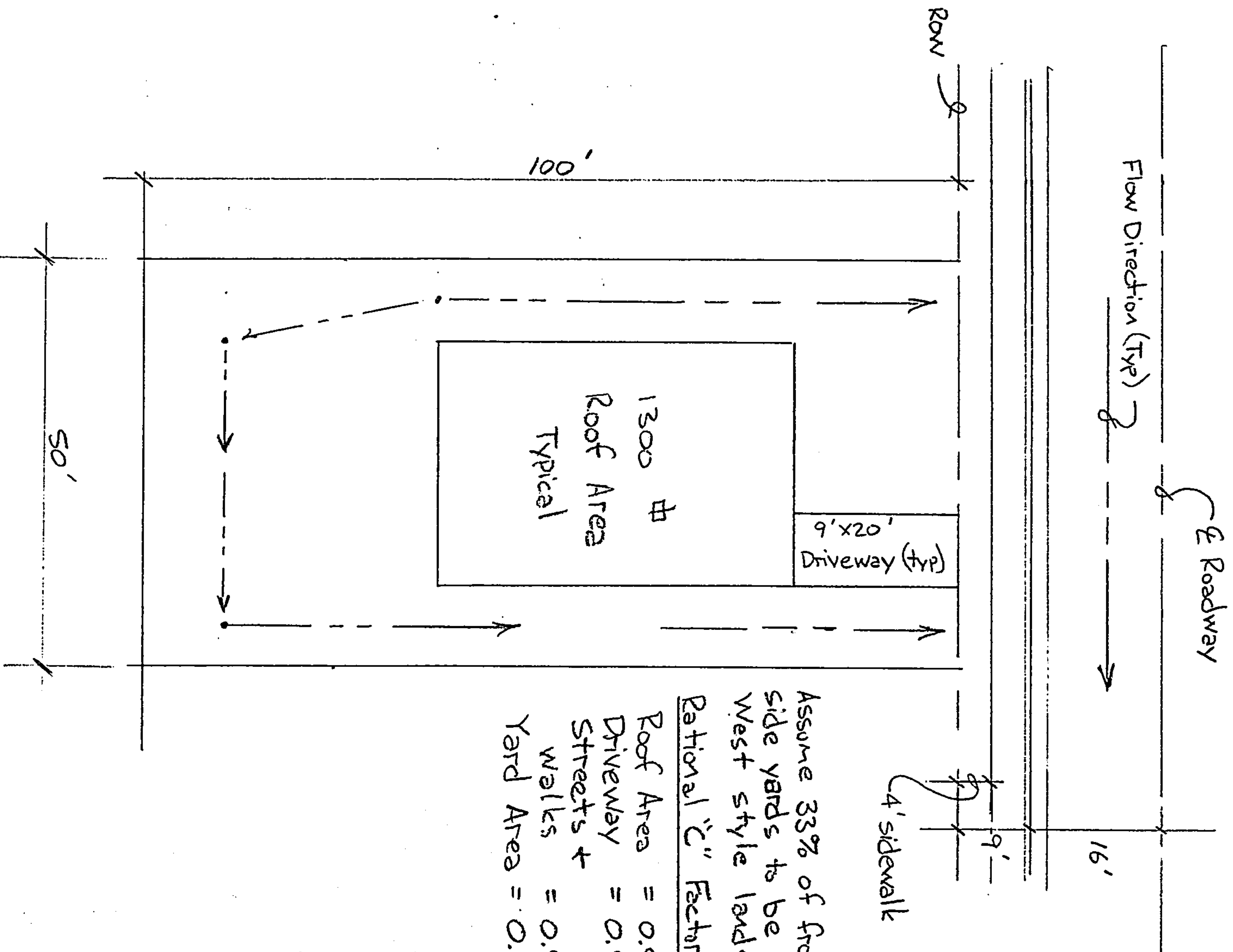
DATE:

12/17/87

SUBJECT

Internal Drainage

Typical Lot



Assume 33% of front + side yards to be South West style landscape.

Rational "C" Factors

Roof Area = 0.90

Driveway = 0.95

Streets +

walks = 0.95

Yard Area = 0.32

DMJM

PROJECT

PROJECT NO.

6376.00

PAGE

ALBUQUERQUE

Vista Nueva  
Subdivision

BY:

MK

DATE:

12/17/87

SUBJECT

Internal Drainage

Rational Formula Runoff Factor Computations:

| RUNOFF SOURCE |           |                          |       |                         |       |                         |       |                              |      |            |             |                        |
|---------------|-----------|--------------------------|-------|-------------------------|-------|-------------------------|-------|------------------------------|------|------------|-------------|------------------------|
| BASIN         | SUB-BASIN | PAVED AREA<br>$C = 0.95$ |       | ROOF AREA<br>$C = 0.90$ |       | YARD AREA<br>$C = 0.32$ |       | LANDSCAPE AREA<br>$C = 0.25$ |      | $\Sigma A$ | $\Sigma AC$ | Composite<br>$\bar{C}$ |
|               |           | $A^D$                    | AC    | $A^D$                   | AC    | $A^D$                   | AC    | $A^D$                        | AC   |            |             |                        |
| A             | 1         | 42470                    | 40347 | 35100                   | 31590 | 145060                  | 46419 | 0                            | 0    | 222630     | 118356      | 0.53                   |
|               | 2         | 29745                    | 28257 | 20800                   | 18720 | 78515                   | 25125 | 0                            | 0    | 129060     | 72103       | 0.56                   |
|               | 3         | 69548                    | 66071 | 22100                   | 19890 | 98752                   | 31601 | 0                            | 0    | 190400     | 117561      | 0.62                   |
|               | 4         | 53123                    | 50466 | 35100                   | 31590 | 137577                  | 44025 | 0                            | 0    | 225800     | 126081      | 0.56                   |
|               | 5         | 46298                    | 43983 | 15600                   | 14040 | 80402                   | 25729 | 23500                        | 5875 | 165800     | 89627       | 0.54                   |
|               | $\Sigma$  | -                        | -     | -                       | -     | -                       | -     | -                            | -    | 933690     | 523728      | 0.56                   |
| B             | 1         | 44153                    | 41945 | 29900                   | 26910 | 121862                  | 38996 | 0                            | 0    | 195915     | 107851      | 0.55                   |
|               | 2         | 32243                    | 30630 | 27300                   | 24570 | 133637                  | 42764 | 0                            | 0    | 193180     | 97964       | 0.51                   |
|               | 3         | 11213                    | 10652 | 6500                    | 5850  | 23892                   | 7646  | 0                            | 0    | 41605      | 24147       | 0.58                   |
|               | 4         | 49073                    | 46619 | 41600                   | 37440 | 130244                  | 41678 | 0                            | 0    | 220917     | 125737      | 0.57                   |
|               | 5         | 12630                    | 11999 | 7800                    | 7020  | 28207                   | 9026  | 0                            | 0    | 48637      | 28045       | 0.58                   |
|               | 6         | 46110                    | 43805 | 35100                   | 31590 | 118221                  | 37831 | 0                            | 0    | 199431     | 113225      | 0.57                   |
|               | 7         | 7965                     | 7567  | 3900                    | 3510  | 14113                   | 4516  | 0                            | 0    | 25978      | 15593       | 0.60                   |
|               | 8         | 43920                    | 41724 | 31200                   | 29080 | 137984                  | 44155 | 0                            | 0    | 213104     | 113959      | 0.53                   |
|               | 9         | 32610                    | 30980 | 9100                    | 8190  | 47104                   | 15073 | 23500                        | 5875 | 112314     | 60118       | 0.54                   |
|               | 10        | 58599                    | 55669 | 0                       | 0     | 0                       | 0     | 0                            | 0    | 58599      | 35669       | 0.95                   |
|               | 11        | 62640                    | 59508 | 0                       | 0     | 0                       | 0     | 21600                        | 5400 | 84240      | 64908       | 0.77                   |
|               | $\Sigma$  | -                        | -     | -                       | -     | -                       | -     | -                            | -    | 1393920    | 807216      | 0.58                   |

Paved Area:

- 32' street + 2-4' sidewalks = 41.25' width + 180<sup>D</sup> driveway/lot.
- 40' street + 2-4' sidewalks = 49.25' width + 180<sup>D</sup> driveway/lot.
- Unser Blvd. 58 ft. paved

Roof Area:

- Average 1300<sup>D</sup> per lot.

Yard Area:

- See typical lot sheet for "C" factor explanation.

Landscape Area:

- Dedicated Park land
- Unser Blvd. 20 ft. width landscaped

DMJM

PROJECT

PROJECT NO.

PAGE

ALBUQUERQUE

Vista Nueva

6376.00

BY:

MK

DATE:

12/17/87

SUBJECT

Interval Drainage

$$T_c = .0078 \frac{L^{0.77}}{C^{0.385}}$$

(Minimum  $T_c = 10 \text{ min}$ )

$$I = (2.2) (6.84) (T_c)^{-0.51}$$

(Point Rainfall = 2.2 inches DPM Vol #2 Plate 22.2 D-1)

$$Q_{100} = C I A$$

$$Q_{10} = (.657) Q_{100}$$

d + v from DPM Vol #2 Plates 22.3 D-1 + D-2

| POIN | Contributing<br>Sub-Basins | $\frac{Q}{S}$<br>( $\frac{cfs}{sq \text{ mi}}$ ) | $\frac{T_c}{S}$<br>( $\frac{min}{sq \text{ mi}}$ ) | $T_c^*$<br>(min) | I<br>( $\frac{in}{hr}$ )<br>@ $Q_{100}$ | C    | Area<br>A<br>(Acres) | $Q_{100}$<br>(cfs) | $Q_{10}$<br>(cfs) | $d^{**}$<br>Curb<br>depth<br>(ft)<br>@ $Q_{100}$ | $V^{**}$<br>Velocity<br>(fps)<br>@ $Q_{100}$ | Remarks<br><br>Crown |
|------|----------------------------|--------------------------------------------------|----------------------------------------------------|------------------|-----------------------------------------|------|----------------------|--------------------|-------------------|--------------------------------------------------|----------------------------------------------|----------------------|
| A1   | A1                         | .035                                             | 900                                                | 10               | 4.65                                    | 0.53 | 5.11                 | 12.59              | 8.57              | 0.40                                             | 4.8                                          | 32' street SE=2%     |
| A2   | A2                         | .038                                             | 630                                                | 10               | 4.65                                    | 0.56 | 2.96                 | 7.71               | 5.06              | 0.35                                             | 4.5                                          | 32' street SE=2%     |
| A3   | A1-A5                      | .026                                             | 1740                                               | 10               | 4.65                                    | 0.56 | 21.47                | 55.91              | 36.73             | 0.56                                             | 5.0                                          | 40' street Normal    |
| A4   | A4                         | .015                                             | 1080                                               | 10               | 4.65                                    | 0.56 | 5.22                 | 13.59              | 8.93              | 0.38                                             | 3.0                                          | 32' street Normal    |
| A5   | A4-A5                      | .013                                             | 1540                                               | 10               | 4.65                                    | 0.55 | 9.03                 | 23.09              | 15.17             | 0.52                                             | 2.6                                          | 32' street Normal    |
| B1   | B1                         | .01                                              | 790                                                | 10               | 4.65                                    | 0.55 | 4.50                 | 11.51              | 7.56              | 0.43                                             | 2.0                                          | 32' street Normal    |
| B2   | B2                         | .02                                              | 740                                                | 10               | 4.65                                    | 0.51 | 4.43                 | 10.51              | 6.90              | 0.35                                             | 3.2                                          | 32' street Normal    |
| B3   | B1-B3                      | .01                                              | 1050                                               | 10               | 4.65                                    | 0.53 | 9.89                 | 24.37              | 16.01             | 0.52                                             | 2.7                                          | 32' street Normal    |
| B4   | B4                         | .02                                              | 940                                                | 10               | 4.65                                    | 0.57 | 5.07                 | 13.44              | 8.83              | 0.37                                             | 3.4                                          | 32' street Normal    |
| B5   | B1-B5                      | .01                                              | 1340                                               | 10               | 4.65                                    | 0.55 | 16.08                | 41.12              | 27.02             | 0.65                                             | 3.3                                          | 32' street Normal    |
| B6   | B6                         | .018                                             | 900                                                | 10               | 4.65                                    | 0.57 | 4.58                 | 12.14              | 7.98              | 0.40                                             | 2.5                                          | 32' street Normal    |
| B7   | B1-B7                      | .01                                              | 1500                                               | 10               | 4.65                                    | 0.55 | 21.25                | 54.35              | 35.71             | 0.72                                             | 3.5                                          | 32' street Normal    |
| B8   | B8                         | .013                                             | 880                                                | 10               | 4.65                                    | 0.53 | 4.89                 | 12.05              | 7.92              | 0.39                                             | 2.6                                          | 32' street Normal    |
| B9   | B9                         | .005                                             | 530                                                | 10               | 4.65                                    | 0.54 | 2.58                 | 6.48               | 4.26              | 0.35                                             | 1.7                                          | 32' street Normal    |
| B10  | B1-B10                     | .01                                              | 1650                                               | 10               | 4.65                                    | 0.57 | 30.07                | 79.07              | 52.36             | 0.74                                             | 5.0                                          | 40' street Normal    |
| B11  | B11                        | .005                                             | 1030                                               | 10               | 4.65                                    | 0.77 | 1.93                 | 6.91               | 4.54              | 0.36                                             | 1.7                                          | Unsurf Blvd 2%       |

\* Since all computed  $T_c$ 's are less than or slightly in excess of 10 minutes  
a  $T_c = 10$  minutes will be used for all basins.

\*\* v+d are computed using the least slope in the reach

# HYDROGRAPH COMPUTATION WORKSHEET

DATE 12/18/87  
 COMPUTED BY MC  
 CHECK BY

Offsite Basin #2 + Onsite Basin A

Job # 6376.00

PROJECT Vista Nueva

LOCATION On Sapphire ≈ 100' W. of User

ANALYSIS POINT # "A"

(DR. AREA) A = 126.5 ACRES

T<sub>c</sub> 32 MIN

POINT RAINFALL 2.2 IN. FROM PLATE 22.2 D-1

CN = 81 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 0.74 IN. FROM PLATE 22.2 C-4

COMPUTED T<sub>p</sub> = 32 MIN. T<sub>p</sub> = T<sub>c</sub>  
 (Rounded to even minute)

q<sub>p</sub> = 45.4A = 179.5 CFS./INCH OF RUNOFF

(R x q<sub>p</sub>) = q<sub>peak</sub> = 132.8 CFS

t(COLUMN) = (t/T<sub>p</sub>) t = T<sub>p</sub>(t/T<sub>p</sub>)

y =  $\frac{Q}{Q_{peak}}$  Q = y(Q<sub>peak</sub>)

|    | (t/T <sub>p</sub> ) | t<br>(min.) | y    | Q<br>(cfs) |
|----|---------------------|-------------|------|------------|
| 1  | 0                   | 0           | 0    | 0          |
| 2  | .1                  | 3.2         | .03  | 3.98       |
| 3  | .2                  | 6.4         | .10  | 13.28      |
| 4  | .3                  | 9.6         | .190 | 25.23      |
| 5  | .4                  | 12.8        | .310 | 41.17      |
| 6  | .5                  | 16          | .470 | 62.42      |
| 7  | .6                  | 19.2        | .660 | 87.65      |
| 8  | .7                  | 22.4        | .820 | 108.90     |
| 9  | .8                  | 25.6        | .930 | 123.50     |
| 10 | .9                  | 28.8        | .990 | 131.47     |
| 11 | 1.0                 | 32          | 1.00 | 132.80     |
| 12 | 1.1                 | 35.2        | .990 | 131.47     |
| 13 | 1.2                 | 38.4        | .930 | 123.50     |
| 14 | 1.3                 | 41.6        | .860 | 114.21     |
| 15 | 1.4                 | 44.8        | .780 | 103.58     |
| 16 | 1.5                 | 48          | .680 | 90.30      |
| 17 | 1.6                 | 51.2        | .560 | 74.37      |
| 18 | 1.7                 | 54.4        | .460 | 61.09      |
| 19 | 1.8                 | 57.6        | .390 | 51.79      |
| 20 | 1.9                 | 60.8        | .330 | 43.82      |
| 21 | 2.0                 | 64          | .280 | 37.18      |
| 22 | 2.2                 | 70.4        | .207 | 27.49      |
| 23 | 2.4                 | 76.8        | .147 | 19.52      |
| 24 | 2.6                 | 83.2        | .107 | 14.21      |
| 25 | 2.8                 | 89.6        | .077 | 10.23      |
| 26 | 3.0                 | 96          | .055 | 7.30       |
| 27 | 3.2                 | 102.4       | .040 | 5.31       |
| 28 | 3.4                 | 108.8       | .029 | 3.85       |
| 29 | 3.6                 | 115.2       | .021 | 2.79       |
| 30 | 3.8                 | 121.6       | .015 | 1.99       |
| 31 | 4.0                 | 128         | .011 | 1.46       |
| 32 | 4.5                 | 144         | .005 | 0.66       |
| 33 | 5.0                 | 160         | .000 | 0          |

Analysis Point "A"

40' street Normal Crown

curb depth = 0.83 ft. } DPM Vol #2 Plate 22.3 D-2

Velocity = 6.2 fps

PLATE 22.2 F-1

# HYDROGRAPH COMPUTATION WORKSHEET

DATE 12/18/87  
 COMPUTED BY nk  
 CHECK BY \_\_\_\_\_

Offsite Basin #2

Job # 6376.00

PROJECT Vista Nueva

LOCATION Offsite Basin #2

ANALYSIS POINT # 1 (Sapphire @ West R)

(DR. AREA) A = 105 ACRES

T<sub>c</sub> 29 MIN.

POINT RAINFALL 2.2 IN. FROM PLATE 22.2 D-1

CN = 81 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 0.74 IN. FROM PLATE 22.2 C-4

COMPUTED T<sub>p</sub> = 29 MIN. T<sub>p</sub> = T<sub>c</sub>  
 (Rounded to even minute)

q<sub>p</sub> = 45.4A = 164.38 CFS./INCH OF RUNOFF  
 T<sub>p</sub>

(R X q<sub>p</sub>) = q<sub>peak</sub> = 121.64 CFS

t(COLUMN) = (t/T<sub>p</sub>) t = T<sub>p</sub>(t/T<sub>p</sub>)

y =  $\frac{Q}{Q_{peak}}$  Q = y(Q<sub>peak</sub>)

Analysis point #1

40' street Normal Crown  
 curb depth = 0.77 ft. } DPM Vol #2 Plate 22.3 D-2  
 Velocity = 6.0 fps

|    | (t/T <sub>p</sub> ) | t<br>(min.) | y    | Q<br>(cfs) |
|----|---------------------|-------------|------|------------|
| 1  | 0                   | 0           | 0    | 0          |
| 2  | .1                  | 2.9         | .03  | 3.65       |
| 3  | .2                  | 5.8         | .10  | 12.16      |
| 4  | .3                  | 8.7         | .190 | 23.11      |
| 5  | .4                  | 11.6        | .310 | 37.71      |
| 6  | .5                  | 14.5        | .470 | 57.17      |
| 7  | .6                  | 17.4        | .660 | 80.28      |
| 8  | .7                  | 20.3        | .820 | 99.74      |
| 9  | .8                  | 23.2        | .930 | 115.13     |
| 10 | .9                  | 26.1        | .990 | 120.42     |
| 11 | 1.0                 | 29          | 1.00 | 121.64     |
| 12 | 1.1                 | 31.9        | .990 | 120.42     |
| 13 | 1.2                 | 34.8        | .930 | 113.13     |
| 14 | 1.3                 | 37.7        | .860 | 104.61     |
| 15 | 1.4                 | 40.6        | .780 | 94.83      |
| 16 | 1.5                 | 43.5        | .680 | 82.72      |
| 17 | 1.6                 | 46.4        | .560 | 68.12      |
| 18 | 1.7                 | 49.3        | .460 | 55.95      |
| 19 | 1.8                 | 52.2        | .390 | 47.44      |
| 20 | 1.9                 | 55.1        | .330 | 40.14      |
| 21 | 2.0                 | 58          | .280 | 34.06      |
| 22 | 2.2                 | 63.8        | .207 | 25.18      |
| 23 | 2.4                 | 69.6        | .147 | 17.88      |
| 24 | 2.6                 | 75.4        | .107 | 13.02      |
| 25 | 2.8                 | 81.2        | .077 | 9.37       |
| 26 | 3.0                 | 87          | .055 | 6.64       |
| 27 | 3.2                 | 92.8        | .040 | 4.87       |
| 28 | 3.4                 | 98.6        | .029 | 3.53       |
| 29 | 3.6                 | 104.4       | .021 | 2.55       |
| 30 | 3.8                 | 110.2       | .015 | 1.82       |
| 31 | 4.0                 | 116         | .011 | 1.34       |
| 32 | 4.5                 | 130.5       | .005 | 0.61       |
| 33 | 5.0                 | 145         | .000 | 0          |

PLATE 22.2 F-1

# HYDROGRAPH COMPUTATION WORKSHEET

DATE 12/18/87  
 COMPUTED BY HK  
 CHECK BY \_\_\_\_\_

Offsite Basin #1

Job # 6376.00

PROJECT Vista Nueva

LOCATION Offsite Basin #1 (Future Development)

ANALYSIS POINT # A

(DR. AREA) A = 69 ACRES

T<sub>c</sub> 24 MIN

POINT RAINFALL 2.2 IN. FROM PLATE 22.2 D-1

CN = 81 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 0.74 IN. FROM PLATE 22.2 C-4

COMPUTED T<sub>p</sub> = 24 MIN. T<sub>p</sub> = T<sub>c</sub>  
 (Rounded to even minute)

q<sub>p</sub> =  $\frac{45.4A}{T_p}$  = 130.53 CFS./INCH OF RUNOFF

(R x q<sub>p</sub>) = q<sub>peak</sub> = 96.6 CFS

t(COLUMN)=(t/T<sub>p</sub>) t=T<sub>p</sub>(t/T<sub>p</sub>)

$y = \frac{Q}{Q_{peak}}$  Q = y(Q<sub>peak</sub>)

|    | (t/T <sub>p</sub> ) | t<br>(min.) | y    | Q<br>(cfs) |
|----|---------------------|-------------|------|------------|
| 1  | 0                   | 0           | 0    | 0          |
| 2  | .1                  | 2.4         | .03  | 2.90       |
| 3  | .2                  | 4.8         | .10  | 9.66       |
| 4  | .3                  | 7.2         | .190 | 18.35      |
| 5  | .4                  | 9.6         | .310 | 29.95      |
| 6  | .5                  | 12.0        | .470 | 45.40      |
| 7  | .6                  | 14.4        | .660 | 63.76      |
| 8  | .7                  | 16.8        | .820 | 79.21      |
| 9  | .8                  | 19.2        | .930 | 89.84      |
| 10 | .9                  | 21.6        | .990 | 95.63      |
| 11 | 1.0                 | 24          | 1.00 | 96.6       |
| 12 | 1.1                 | 26.4        | .990 | 95.63      |
| 13 | 1.2                 | 28.8        | .930 | 89.84      |
| 14 | 1.3                 | 31.2        | .860 | 83.08      |
| 15 | 1.4                 | 33.6        | .780 | 75.35      |
| 16 | 1.5                 | 36          | .680 | 65.69      |
| 17 | 1.6                 | 38.4        | .560 | 54.10      |
| 18 | 1.7                 | 40.8        | .460 | 44.44      |
| 19 | 1.8                 | 43.2        | .390 | 37.67      |
| 20 | 1.9                 | 45.6        | .330 | 31.88      |
| 21 | 2.0                 | 48          | .280 | 27.05      |
| 22 | 2.2                 | 52.8        | .207 | 20.00      |
| 23 | 2.4                 | 57.6        | .147 | 14.20      |
| 24 | 2.6                 | 62.4        | .107 | 10.34      |
| 25 | 2.8                 | 67.2        | .077 | 7.44       |
| 26 | 3.0                 | 72          | .055 | 5.31       |
| 27 | 3.2                 | 76.8        | .040 | 3.86       |
| 28 | 3.4                 | 81.6        | .029 | 2.80       |
| 29 | 3.6                 | 86.4        | .021 | 2.03       |
| 30 | 3.8                 | 91.2        | .015 | 1.45       |
| 31 | 4.0                 | 96          | .011 | 1.06       |
| 32 | 4.5                 | 108         | .005 | 0.48       |
| 33 | 5.0                 | 120         | .000 | 0          |

HYDROGRAPH COMPUTATION WORKSHEET

DATE 12/21/87  
COMPUTED BY MC  
CHECK BY \_\_\_\_\_

Offsite Basin # 3

Job # 6376.00

PROJECT Vista Nueva

North 1/2 Tract "C"

Future

LOCATION + Adjoining User R/W (Development)

ANALYSIS POINT # A

(DR. AREA) A = 10.45 ACRES

T<sub>c</sub> 12 MIN.

POINT RAINFALL 2.2 IN. FROM PLATE 22.2 D-1

CN = 81 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 0.74 IN. FROM PLATE 22.2 C-4

COMPUTED T<sub>p</sub> = 12 MIN. T<sub>p</sub> = T<sub>c</sub>  
(Rounded to even minute)

q<sub>p</sub> = 45.4A = 39.54 CFS./INCH OF RUNOFF  
T<sub>p</sub>

(R x q<sub>p</sub>) = q<sub>peak</sub> = 29.26 CFS

t(COLUMN) = (t/T<sub>p</sub>) t = T<sub>p</sub>(t/T<sub>p</sub>)

y = Q Q = y(q<sub>peak</sub>)  
q<sub>peak</sub>

|    | (t/T <sub>p</sub> ) | t<br>(min.) | y    | q<br>(cfs) |
|----|---------------------|-------------|------|------------|
| 1  | 0                   | 0           | 0    | 0          |
| 2  | .1                  | 1.2         | .03  | 0.88       |
| 3  | .2                  | 2.4         | .10  | 2.93       |
| 4  | .3                  | 3.6         | .190 | 5.56       |
| 5  | .4                  | 4.8         | .310 | 9.07       |
| 6  | .5                  | 6.0         | .470 | 13.75      |
| 7  | .6                  | 7.2         | .660 | 17.31      |
| 8  | .7                  | 8.4         | .820 | 23.99      |
| 9  | .8                  | 9.6         | .930 | 27.21      |
| 10 | .9                  | 10.8        | .990 | 28.97      |
| 11 | 1.0                 | 12          | 1.00 | 29.26      |
| 12 | 1.1                 | 13.2        | .990 | 28.97      |
| 13 | 1.2                 | 14.4        | .930 | 27.21      |
| 14 | 1.3                 | 15.6        | .860 | 25.16      |
| 15 | 1.4                 | 16.8        | .780 | 22.82      |
| 16 | 1.5                 | 18.0        | .680 | 19.90      |
| 17 | 1.6                 | 19.2        | .560 | 16.39      |
| 18 | 1.7                 | 20.4        | .460 | 13.46      |
| 19 | 1.8                 | 21.6        | .390 | 11.41      |
| 20 | 1.9                 | 22.8        | .330 | 9.66       |
| 21 | 2.0                 | 24.0        | .280 | 8.19       |
| 22 | 2.2                 | 26.4        | .207 | 6.06       |
| 23 | 2.4                 | 28.8        | .147 | 4.30       |
| 24 | 2.6                 | 31.2        | .107 | 3.13       |
| 25 | 2.8                 | 33.6        | .077 | 2.25       |
| 26 | 3.0                 | 36.0        | .055 | 1.61       |
| 27 | 3.2                 | 38.4        | .040 | 1.17       |
| 28 | 3.4                 | 40.8        | .029 | 0.85       |
| 29 | 3.6                 | 43.2        | .021 | 0.61       |
| 30 | 3.8                 | 45.6        | .015 | 0.44       |
| 31 | 4.0                 | 48.0        | .011 | 0.32       |
| 32 | 4.5                 | 54.0        | .005 | 0.15       |
| 33 | 5.0                 | 60.0        | .000 | 0          |

DMJM / AHA

PROJECT

PROJECT NO.

PAGE

ALBUQUERQUE

Vista Nueva

6376.00

BY:

MC

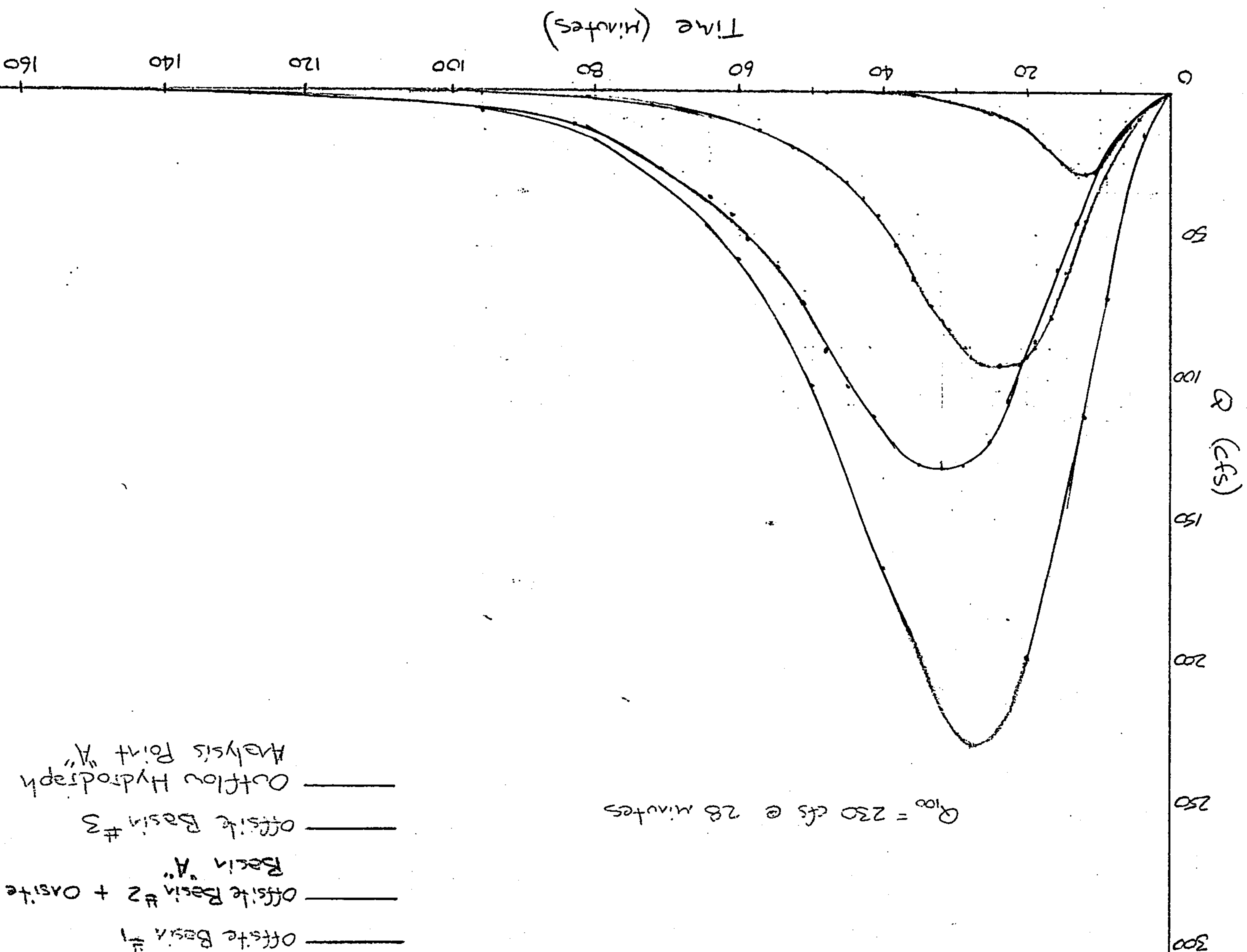
DATE:

12/21/87

SUBJECT

Onsite + Offsite Hydrograph Analysis Point "A"

Onsite Basin "A" + Offsite Basins 1, 2 + 3.



HYDROGRAPH COMPUTATION WORKSHEET

DATE 3-11-88  
COMPUTED BY NK  
CHECK BY           

Offsite Basin # 5

Job 6376.00

PROJECT Vista Nueva

LOCATION Kimela at West Property Line

ANALYSIS POINT # 2

(DR. AREA) A = 56 ACRES

T<sub>c</sub> 23 MIN

POINT RAINFALL 2.2 IN. FROM PLATE 22.2 D-1

CN = 81 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 0.74 IN. FROM PLATE 22.2 C-4

COMPUTED T<sub>p</sub> = 23 MIN. T<sub>p</sub> = T<sub>c</sub>  
(Rounded to even minute)

q<sub>p</sub> =  $\frac{45.4A}{T_p}$  =  $\frac{110.54}{23}$  CFS./INCH OF RUNOFF

(R x q<sub>p</sub>) = q<sub>peak</sub> = 81.80 CFS

t(COLUMN) = (t/T<sub>p</sub>)      t = T<sub>p</sub>(t/T<sub>p</sub>)

y =  $\frac{Q}{Q_{peak}}$       Q = y(q<sub>peak</sub>)

Analysis Point #2

40' Street w/ Normal Crown

S = 0.010 ft/ft

curb depth = 0.71 ft } DPM Vol #2 Plate 22.3 D-2  
velocity = 4.7 fps }

|    | (t/T <sub>p</sub> ) | t<br>(min.) | y    | Q<br>(cfs) |
|----|---------------------|-------------|------|------------|
| 1  | 0                   | 0           | 0    | 0          |
| 2  | .1                  | 2.3         | .03  | 2.45       |
| 3  | .2                  | 4.6         | .10  | 8.18       |
| 4  | .3                  | 6.9         | .190 | 15.54      |
| 5  | .4                  | 9.2         | .310 | 25.36      |
| 6  | .5                  | 11.5        | .470 | 38.45      |
| 7  | .6                  | 13.8        | .660 | 53.99      |
| 8  | .7                  | 16.1        | .820 | 67.08      |
| 9  | .8                  | 18.4        | .930 | 76.07      |
| 10 | .9                  | 20.7        | .990 | 80.93      |
| 11 | 1.0                 | (23)        | 1.00 | 81.80      |
| 12 | 1.1                 | 25.3        | .990 | 80.98      |
| 13 | 1.2                 | 27.6        | .930 | 76.07      |
| 14 | 1.3                 | 29.9        | .860 | 70.35      |
| 15 | 1.4                 | 32.2        | .780 | 63.80      |
| 16 | 1.5                 | 34.5        | .680 | 55.62      |
| 17 | 1.6                 | 36.8        | .560 | 45.81      |
| 18 | 1.7                 | 39.1        | .460 | 37.63      |
| 19 | 1.8                 | 41.4        | .390 | 31.90      |
| 20 | 1.9                 | 43.7        | .330 | 26.99      |
| 21 | 2.0                 | 46.0        | .280 | 22.90      |
| 22 | 2.2                 | 50.6        | .207 | 16.93      |
| 23 | 2.4                 | 55.2        | .147 | 12.02      |
| 24 | 2.6                 | 59.8        | .107 | 8.75       |
| 25 | 2.8                 | 64.4        | .077 | 6.30       |
| 26 | 3.0                 | 69          | .055 | 4.50       |
| 27 | 3.2                 | 73.6        | .040 | 3.27       |
| 28 | 3.4                 | 78.2        | .029 | 2.37       |
| 29 | 3.6                 | 82.8        | .021 | 1.72       |
| 30 | 3.8                 | 87.4        | .015 | 1.23       |
| 31 | 4.0                 | 92          | .011 | 0.90       |
| 32 | 4.5                 | 103.5       | .005 | 0.41       |
| 33 | 5.0                 | 115         | .000 | 0          |

PLATE 22.2 F-1

HYDROGRAPH COMPUTATION WORKSHEET

DATE 3-11-88  
COMPUTED BY MC  
CHECK BY           

Offsite Basin # 7 (Mary Ann Binford School) Job # 6376.00

PROJECT Vista Nueva

LOCATION East end of Mary Ann Binford

ANALYSIS POINT # 3 Elementary School  
Property

(DR. AREA) A = 10 ACRES

T<sub>c</sub> 10 MIN

POINT RAINFALL 2.2 IN. FROM PLATE 22.2 D-1

CN = 81 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 0.74 IN. FROM PLATE 22.2 C-4

COMPUTED T<sub>p</sub> = 10 MIN. T<sub>p</sub> = T<sub>c</sub>  
(Rounded to even minute)

q<sub>p</sub> =  $\frac{45.4A}{t_p}$  = 45.4 CFS./INCH OF RUNOFF

(R X q<sub>p</sub>) = q<sub>peak</sub> = 33.60 CFS

t(COLUMN)=(t/T<sub>p</sub>)      t=T<sub>p</sub>(t/T<sub>p</sub>)

$y = \frac{Q}{Q_{peak}}$       Q = y(Q<sub>peak</sub>)

|    | (t/T <sub>p</sub> ) | t<br>(min.) | y    | Q<br>(cfs) |
|----|---------------------|-------------|------|------------|
| 1  | 0                   | 0           | 0    | 0          |
| 2  | .1                  | 1           | .03  | 1.01       |
| 3  | .2                  | 2           | .10  | 3.36       |
| 4  | .3                  | 3           | .190 | 6.38       |
| 5  | .4                  | 4           | .310 | 10.42      |
| 6  | .5                  | 5           | .470 | 15.79      |
| 7  | .6                  | 6           | .660 | 22.18      |
| 8  | .7                  | 7           | .820 | 27.55      |
| 9  | .8                  | 8           | .930 | 31.25      |
| 10 | .9                  | 9           | .990 | 33.26      |
| 11 | 1.0                 | 10          | 1.00 | 33.6       |
| 12 | 1.1                 | 11          | .990 | 33.26      |
| 13 | 1.2                 | 12          | .930 | 31.25      |
| 14 | 1.3                 | 13          | .860 | 28.90      |
| 15 | 1.4                 | 14          | .780 | 26.21      |
| 16 | 1.5                 | 15          | .680 | 22.85      |
| 17 | 1.6                 | 16          | .560 | 18.82      |
| 18 | 1.7                 | 17          | .460 | 15.46      |
| 19 | 1.8                 | 18          | .390 | 13.10      |
| 20 | 1.9                 | 19          | .330 | 11.09      |
| 21 | 2.0                 | 20          | .280 | 9.41       |
| 22 | 2.2                 | 22          | .207 | 6.96       |
| 23 | 2.4                 | 24          | .147 | 4.94       |
| 24 | 2.6                 | 26          | .107 | 3.60       |
| 25 | 2.8                 | 28          | .077 | 2.59       |
| 26 | 3.0                 | 30          | .055 | 1.85       |
| 27 | 3.2                 | 32          | .040 | 1.34       |
| 28 | 3.4                 | 34          | .029 | 0.97       |
| 29 | 3.6                 | 36          | .021 | 0.71       |
| 30 | 3.8                 | 38          | .015 | 0.50       |
| 31 | 4.0                 | 40          | .011 | 0.37       |
| 32 | 4.5                 | 45          | .005 | 0.17       |
| 33 | 5.0                 | 50          | .000 | 0          |

HYDROGRAPH COMPUTATION WORKSHEET

DATE 01/05/88  
COMPUTED BY MC  
CHECK BY           

Offsite Basin #5 + #7 + Onsite Basin "B" Sol # 6376.00

PROJECT Vista Nueva

LOCATION Offsite Basin #5 + Basin "B"

ANALYSIS POINT # B (Kinelo @ Uscat Blvd)

(DR. AREA) A = 98 ACRES

T<sub>c</sub> 28 MIN

POINT RAINFALL 2.2 IN. FROM PLATE 22.2 D-1

CN = 81 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 0.74 IN. FROM PLATE 22.2 C-4

COMPUTED T<sub>p</sub> = 28 MIN. T<sub>p</sub> = T<sub>c</sub>  
(Rounded to even minute)

q<sub>p</sub> = 45.4A = 158.90 CFS./INCH OF RUNOFF  
T<sub>p</sub>

(R X q<sub>p</sub>) = Q<sub>peak</sub> = 117.59 CFS

t(COLUMN)=(t/T<sub>p</sub>) t=T<sub>p</sub>(t/T<sub>p</sub>)

$$y = \frac{Q}{Q_{peak}} \quad Q = y(Q_{peak})$$

|    | (t/T <sub>p</sub> ) | t<br>(min.) | y    | Q<br>(cfs) |
|----|---------------------|-------------|------|------------|
| 1  | 0                   | 0           | 0    | 0          |
| 2  | .1                  | 2.8         | .03  | 3.53       |
| 3  | .2                  | 5.6         | .10  | 11.76      |
| 4  | .3                  | 8.4         | .190 | 22.34      |
| 5  | .4                  | 11.2        | .310 | 36.45      |
| 6  | .5                  | 14          | .470 | 55.27      |
| 7  | .6                  | 16.8        | .660 | 77.61      |
| 8  | .7                  | 19.6        | .820 | 96.42      |
| 9  | .8                  | 22.4        | .930 | 109.35     |
| 10 | .9                  | 25.2        | .990 | 116.41     |
| 11 | 1.0                 | 28          | 1.00 | 117.59     |
| 12 | 1.1                 | 30.8        | .990 | 116.41     |
| 13 | 1.2                 | 33.6        | .930 | 109.35     |
| 14 | 1.3                 | 36.4        | .860 | 101.12     |
| 15 | 1.4                 | 39.2        | .780 | 91.72      |
| 16 | 1.5                 | 42          | .680 | 79.96      |
| 17 | 1.6                 | 44.8        | .560 | 65.85      |
| 18 | 1.7                 | 47.6        | .460 | 54.09      |
| 19 | 1.8                 | 50.4        | .390 | 45.86      |
| 20 | 1.9                 | 53.2        | .330 | 38.80      |
| 21 | 2.0                 | 56          | .280 | 32.92      |
| 22 | 2.2                 | 61.6        | .207 | 24.34      |
| 23 | 2.4                 | 67.2        | .147 | 17.29      |
| 24 | 2.6                 | 72.8        | .107 | 12.58      |
| 25 | 2.8                 | 78.4        | .077 | 9.05       |
| 26 | 3.0                 | 84          | .055 | 6.47       |
| 27 | 3.2                 | 89.6        | .040 | 4.70       |
| 28 | 3.4                 | 95.2        | .029 | 3.41       |
| 29 | 3.6                 | 100.8       | .021 | 2.47       |
| 30 | 3.8                 | 106.4       | .015 | 1.76       |
| 31 | 4.0                 | 112         | .011 | 1.29       |
| 32 | 4.5                 | 126         | .005 | 0.59       |
| 33 | 5.0                 | 140         | .000 | 0          |

HYDROGRAPH COMPUTATION WORKSHEET

DATE 01/05/88  
COMPUTED BY PK  
CHECK BY           

Offite Basin #4

Tab # 6376.00

PROJECT Vista Nueva

LOCATION Offite Basin #4

ANALYSIS POINT # B (Kinels e Unser Blvd)

(DR. AREA) A = 5.56 ACRES

T<sub>c</sub> 10 MIN

POINT RAINFALL 2.2 IN. FROM PLATE 22.2 D-1

CN = 81 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 0.74 IN. FROM PLATE 22.2 C-4

COMPUTED T<sub>p</sub> = 10 MIN. T<sub>p</sub> = T<sub>c</sub>  
(Rounded to even minute)

q<sub>p</sub> =  $\frac{45.4A}{T_p}$  = 25.24 CFS./INCH OF RUNOFF

(R x q<sub>p</sub>) = q<sub>peak</sub> = 18.68 CFS

t(COLUMN)=(t/T<sub>p</sub>)      t=T<sub>p</sub>(t/T<sub>p</sub>)

y =  $\frac{Q}{Q_{peak}}$       Q = y(Q<sub>peak</sub>)

|    | (t/T <sub>p</sub> ) | t<br>(min.) | y    | Q<br>(cfs) |
|----|---------------------|-------------|------|------------|
| 1  | 0                   | 0           | 0    | 0          |
| 2  | .1                  | 1           | .03  | 0.56       |
| 3  | .2                  | 2           | .10  | 1.87       |
| 4  | .3                  | 3           | .190 | 3.55       |
| 5  | .4                  | 4           | .310 | 5.79       |
| 6  | .5                  | 5           | .470 | 8.79       |
| 7  | .6                  | 6           | .660 | 12.33      |
| 8  | .7                  | 7           | .820 | 15.32      |
| 9  | .8                  | 8           | .930 | 17.37      |
| 10 | .9                  | 9           | .990 | 18.49      |
| 11 | 1.0                 | 10          | 1.00 | 18.68      |
| 12 | 1.1                 | 11          | .990 | 18.49      |
| 13 | 1.2                 | 12          | .930 | 17.37      |
| 14 | 1.3                 | 13          | .860 | 16.06      |
| 15 | 1.4                 | 14          | .780 | 14.57      |
| 16 | 1.5                 | 15          | .680 | 12.70      |
| 17 | 1.6                 | 16          | .560 | 10.46      |
| 18 | 1.7                 | 17          | .460 | 8.59       |
| 19 | 1.8                 | 18          | .390 | 7.28       |
| 20 | 1.9                 | 19          | .330 | 6.16       |
| 21 | 2.0                 | 20          | .280 | 5.23       |
| 22 | 2.2                 | 22          | .207 | 3.97       |
| 23 | 2.4                 | 24          | .147 | 2.75       |
| 24 | 2.6                 | 26          | .107 | 2.00       |
| 25 | 2.8                 | 28          | .077 | 1.44       |
| 26 | 3.0                 | 30          | .055 | 1.03       |
| 27 | 3.2                 | 32          | .040 | 0.75       |
| 28 | 3.4                 | 34          | .029 | 0.54       |
| 29 | 3.6                 | 36          | .021 | 0.39       |
| 30 | 3.8                 | 38          | .015 | 0.28       |
| 31 | 4.0                 | 40          | .011 | 0.21       |
| 32 | 4.5                 | 45          | .005 | 0.09       |
| 33 | 5.0                 | 50          | .000 | 0          |

# HYDROGRAPH COMPUTATION WORKSHEET

DATE 3-11-82  
 COMPUTED BY PK  
 CHECK BY \_\_\_\_\_

Basin #7 + Basin B9

Job # 6376.00

PROJECT Vista Nueva

LOCATION Street A at Kinels Dr.

ANALYSIS POINT # 4

(DR. AREA) A = 12.53 ACRES

T<sub>c</sub> 18 MIN

POINT RAINFALL 2.2 IN. FROM PLATE 22.2 D-1

CN = \_\_\_\_\_ FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = \_\_\_\_\_ IN. FROM PLATE 22.2 C-4

COMPUTED T<sub>p</sub> = 18 MIN. T<sub>p</sub> = T<sub>c</sub>  
 (Rounded to even minute)

q<sub>p</sub> =  $\frac{45.4A}{T_p}$  = \_\_\_\_\_ CFS./INCH OF RUNOFF

(R X q<sub>p</sub>) = q<sub>peak</sub> = 40.03 CFS

t(COLUMN) = (t/T<sub>p</sub>) t = T<sub>p</sub>(t/T<sub>p</sub>)

y =  $\frac{Q}{Q_{peak}}$  Q = y(Q<sub>peak</sub>)

|    | (t/T <sub>p</sub> ) | t<br>(min.) | y    | Q<br>(cfs) |
|----|---------------------|-------------|------|------------|
| 1  | 0                   | 0           | 0    | 0          |
| 2  | .1                  | 1.8         | .03  | 1.20       |
| 3  | .2                  | 3.6         | .10  | 4.01       |
| 4  | .3                  | 5.4         | .190 | 7.62       |
| 5  | .4                  | 7.2         | .310 | 12.42      |
| 6  | .5                  | 9           | .470 | 19.84      |
| 7  | .6                  | 10.8        | .660 | 26.45      |
| 8  | .7                  | 12.6        | .820 | 32.87      |
| 9  | .8                  | 14.4        | .930 | 37.27      |
| 10 | .9                  | 16.2        | .990 | 39.68      |
| 11 | 1.0                 | 18          | 1.00 | 40.03      |
| 12 | 1.1                 | 19.8        | .990 | 39.68      |
| 13 | 1.2                 | 21.6        | .930 | 37.27      |
| 14 | 1.3                 | 23.4        | .860 | 34.47      |
| 15 | 1.4                 | 25.2        | .780 | 31.26      |
| 16 | 1.5                 | 27          | .680 | 27.25      |
| 17 | 1.6                 | 28.8        | .560 | 22.44      |
| 18 | 1.7                 | 30.6        | .460 | 18.44      |
| 19 | 1.8                 | 32.4        | .390 | 15.63      |
| 20 | 1.9                 | 34.2        | .330 | 13.23      |
| 21 | 2.0                 | 36          | .280 | 11.22      |
| 22 | 2.2                 | 39.6        | .207 | 8.3        |
| 23 | 2.4                 | 43.2        | .147 | 5.89       |
| 24 | 2.6                 | 46.8        | .107 | 4.29       |
| 25 | 2.8                 | 50.4        | .077 | 3.09       |
| 26 | 3.0                 | 54.0        | .055 | 2.20       |
| 27 | 3.2                 | 57.6        | .040 | 1.60       |
| 28 | 3.4                 | 61.2        | .029 | 1.16       |
| 29 | 3.6                 | 64.8        | .021 | 0.84       |
| 30 | 3.8                 | 68.4        | .015 | 0.60       |
| 31 | 4.0                 | 72.0        | .011 | 0.44       |
| 32 | 4.5                 | 81.0        | .005 | 0.20       |
| 33 | 5.0                 | 90.0        | .000 | 0          |

23  
35.85

DMJM / AHA

PROJECT

PROJECT NO.

6376.00

PAGE

ALBUQUERQUE

Vista Nueva

BY:

MC

DATE:

1/5/88

SUBJECT

Oxite + Offsite Hydrograph Analysis Point "B"

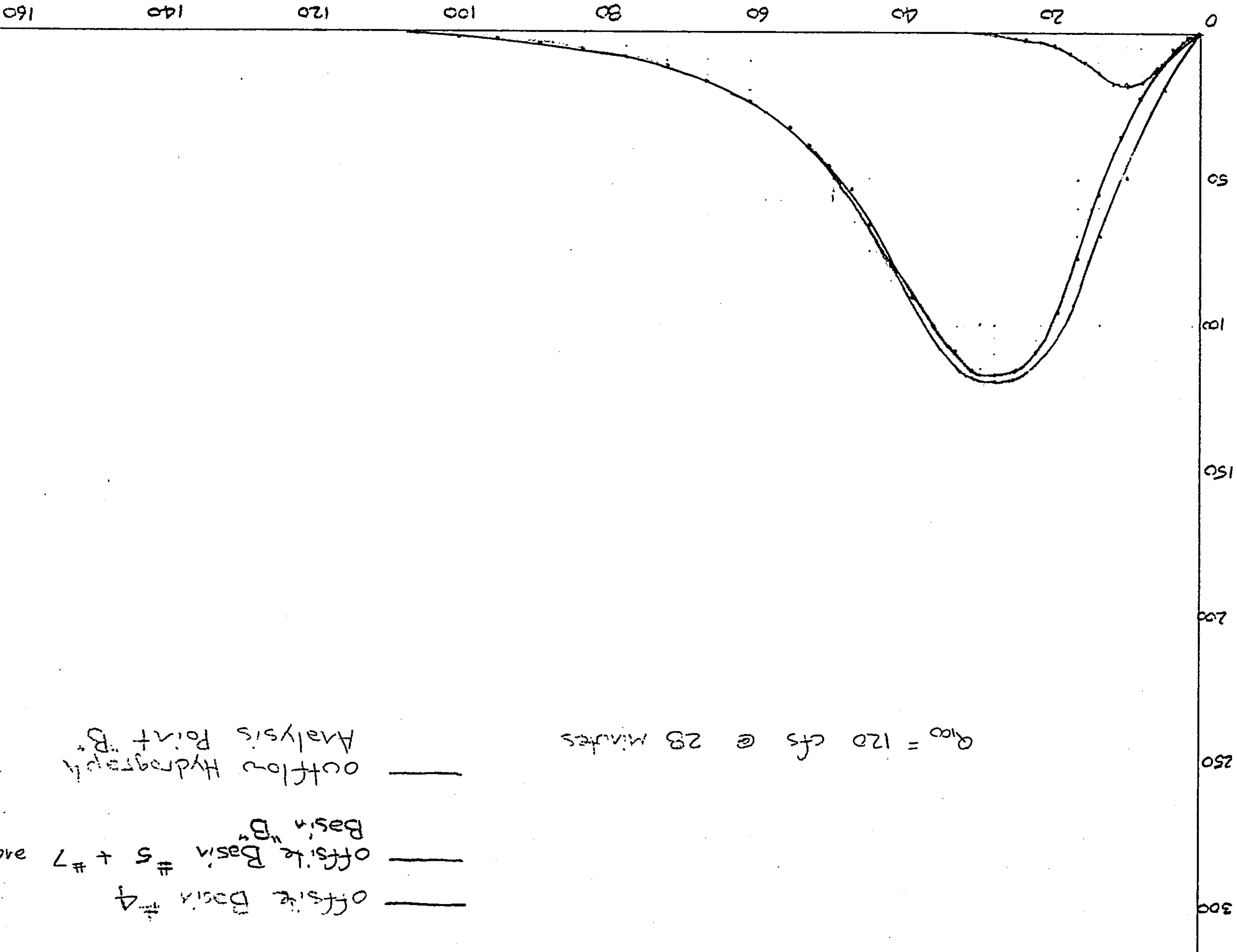
Oxite Basin "B" + Offsite Basins 4 + 5

$Q$  (cfs)

Time (minutes)

$Q_{100} = 120$  cfs @ 28 minutes

— Offsite Basin #4  
— Offsite Basin #5 + #7 and  
— Outflow Hydrograph Analysis Point "B"



DMJM

PROJECT

PROJECT NO.

6376.00

PAGE

ALBUQUERQUE

Vista Nueva

BY:

WK

DATE:

12/21/87

SUBJECT

Catch Basin Design (Sump Condition)

Capacity of Type 'A' Catch Basin in Sump Condition

Assumptions:

1. One half of grate is totally clogged
2. Open portion of grate acts as an orifice ( $C = 0.5$ )
3. Curb opening acts as a weir ( $C = 2.6$ )

$$Q_{Total} = Q_{Orifice} + Q_{Weir}$$

$$Q_{Orifice} = CA (2gh)^{1/2}$$

$$= (0.5)(2.95)[(64.4)(0.87)]^{1/2}$$

$$= 11.04 \text{ cfs}$$

$$C = 0.5$$

$$A = 2.95 \text{ ft}^2 \left( \frac{1}{2} \text{ Type 'A' effective grate area} \right)$$

$$h = 0.87' \text{ Maximum water surface elevation above normal gutter flow line}$$

$$Q_{Weir} = CLH^{1.5}$$

$$= (2.6)(6.45)(0.52)^{1.5}$$

$$= 6.29 \text{ cfs}$$

$$C = 2.6$$

$$L = 6.45' \text{ Length of curb opening}$$

$$H = 0.52' \text{ (Height of curb opening + assume draw down to this height.)}$$

$$Q_{Total} = 11.04 + 6.29$$

$$Q_{Total} = 17.32 \text{ cfs}$$

Capacity of type 'A' catch basin in sump condition.

DMJM / AHA

PROJECT

PROJECT NO.

6376.00

PAGE

ALBUQUERQUE

Vista Nueva

BY:

MK

DATE:

12/21/87

SUBJECT

Catch Basin Design (Sump Condition)

Catch Basin #A1

(South curb of Sapphire at Unser)

Assume Unser Blvd  $\frac{1}{2}$  R/W adjacent to offsite Basin #3 drains into catch basin #1 in a sump condition.

Length

= 1100 ft

(Unser Blvd ROW)

Width

= 78 ft

(Unser Blvd  $\frac{1}{2}$  ROW)

Rational "C" Factor

= 0.78

(75% paved, 25% landscape)

Slope

= 0.005

(Assumed)

 $T_c = 13$  minutes $I = 2.2 (6.84 (T_c)^{-.51}) = 4.07$  in/hr $Q = CIA$  $Q_{100} = (0.78)(4.07)(1100)(78)(\frac{1}{43560})$  $Q_{100} = 6.25$  cfs into CB #1 (sump condition) $\therefore$  Use: 1-Type "A" catch basin

Catch Basin #A2

(North curb of Sapphire at Unser)

Assume Unser Blvd  $\frac{1}{2}$  R/W adjacent to offsite Basin #1 drains into catch basin #2 in a sump condition.

Length

= 1900 ft

Width

= 78 ft

Rational "C" Factor

= 0.78

Slope

= 0.025

(Assumed)

 $T_c = 11$  minutes $I = (2.2)(6.84 (T_c)^{-.51}) = 4.43$  in/hr $Q_{100} = CIA$  $Q_{100} = (0.78)(4.43)(1900)(78)(\frac{1}{43560})$  $Q_{100} = 11.76$  cfs into CB #2 (sump condition) $\therefore$  Use: 1-Type "A" catch basin

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6376.00

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MK

DATE:

11/18/88

SUBJECT

Special Storm Drain Inlet at Sapphire &amp; Unser

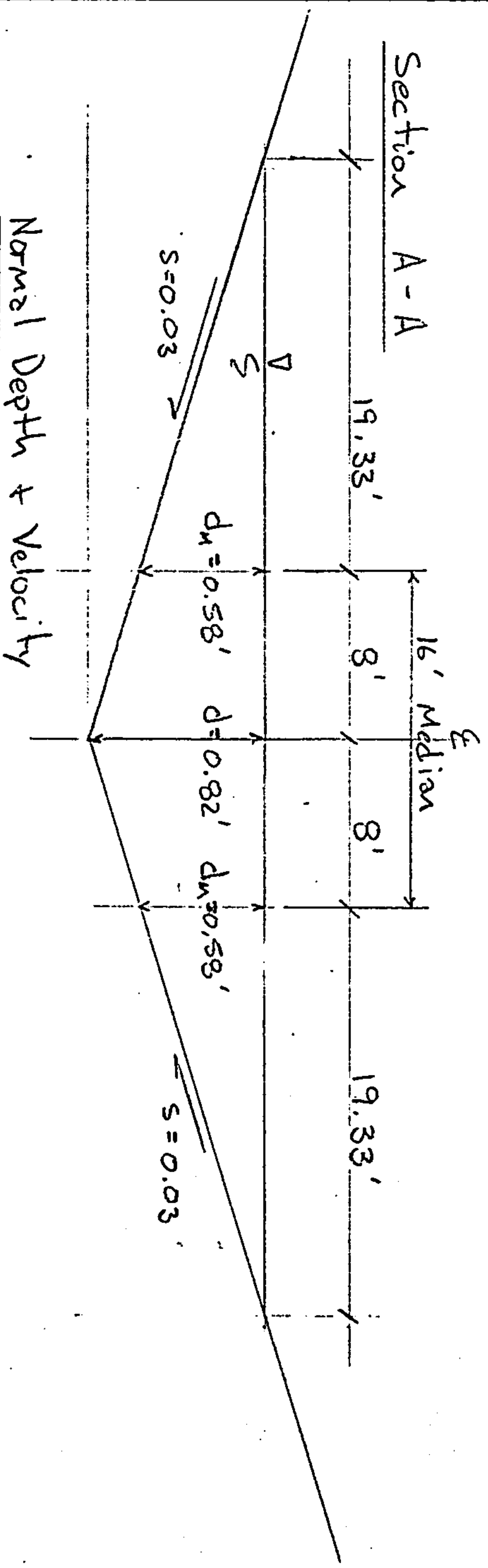
Q = 132.8 cfs (osite Basin #2 + Basin "A")

Street Slope = 0.015 ft/ft. assumed

Street Cross Slope = 0.03 ft/ft. inverted crown

Manning's  $n = 0.017$ 

Median Width = 16.0'



$$Q = \frac{1.486}{n} AR^{2/3} S^{1/2}$$

$$AR^{2/3} = 12.40$$

by trial &amp; error

$$\Rightarrow d = 0.82 \text{ ft}$$

$$\Rightarrow V = 5.91 \text{ fps}$$

$$d_{critical} = 1.00 \text{ ft}$$

$$V_{critical} = 4.01 \text{ fps}$$

depth at median flowline ( $d_m$ )

$$d_m = 0.82 - .03 (8)$$

$$d_m = 0.58 \text{ ft.}$$

Length of Median (from upstream return) required to capture all remaining street flow on each side.

1. Median has tundra type curb
2. Assume channel in median is sufficient to carry all flow
3. Assume the flowline of the median acts as a curb inlet.
4. Reference: Wastewater Engineering: Collection, Treatment, Disposal; Metcalf & Eddy, Inc. 1972 Chapter 5 - (street Inlets)

ALBUQUERQUE

Vista Nueva

6376.00

DATE:

BY:

1/18/88

SUBJECT

Special Storm Drain Inlet at Sapphire &amp; Unser (Continued)

Total flow at median flowline

$$Q = 0.56 \frac{Z}{N} S^{\frac{1}{2}} d^{\frac{8}{3}}$$

Z = Reciprocal of street cross slope

$$N = 0.017$$

$$S = 0.015$$

$$d = 0.58 \text{ ft}$$

$$Q = 0.56 \left( \frac{33.33}{0.017} \right) (0.015)^{\frac{1}{2}} (.58)^{\frac{8}{3}}$$

$$Q = 31.46 \text{ cfs}$$

Required length of median (w/ roundover curb)

$$L = Q (0.2 (g)^{\frac{1}{2}} d^{\frac{3}{2}})^{-1}$$

$$L = 31.46 (0.2 (32.2)^{\frac{1}{2}} (0.58)^{\frac{1.5}{2}})^{-1}$$

$$L = 62.76 \text{ ft on each side of the median}$$

∴ USE 70.00'

Channel inside median1. concrete lined channel ( $n = 0.013$ ) with 4' bottom and 2:1 side slopes2.  $S = 0.015$  (channel slope)

$$Q = \frac{1.486}{N} A R^{\frac{2}{3}} S^{\frac{1}{2}}$$

$$132.8 = \frac{1.486}{.013} A R^{\frac{2}{3}} (0.015)^{\frac{1}{2}}$$

$$A R^{\frac{2}{3}} = 9.49$$

by trial and error

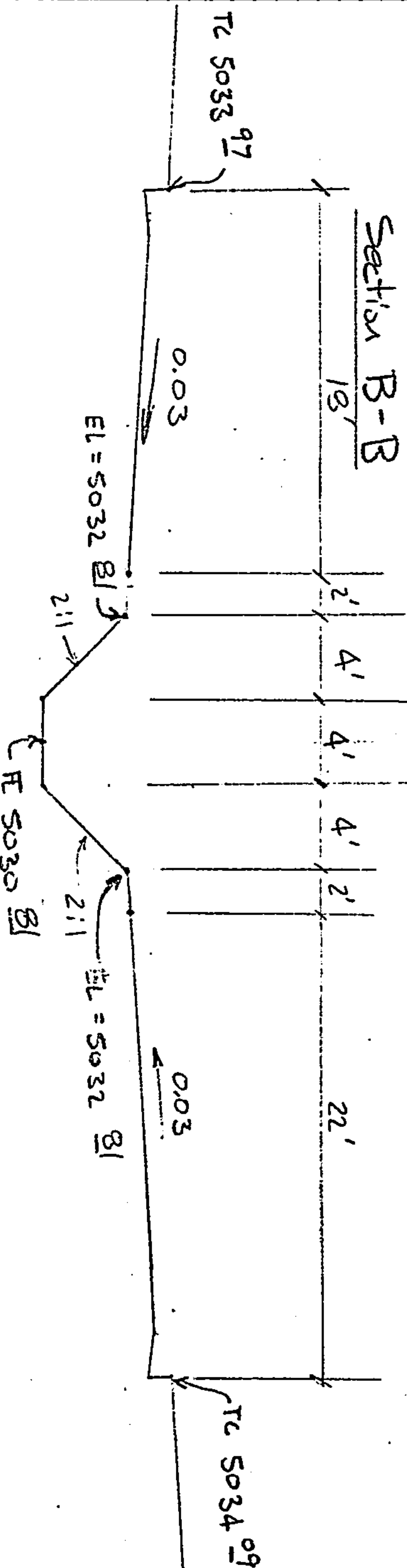
$$d = 1.43 \text{ ft.}$$

$$V = 13.49 \text{ fps}$$

Freeboard:

$$5034.30 \text{ @ R} - (5030.81 + 1.43) = 2.06 \text{ ft}$$

Section B-B



PROJECT  
Vista Nueva Storm Sewer

PROJECT NO. 6376.00

BY: MK

**SUBJECT**

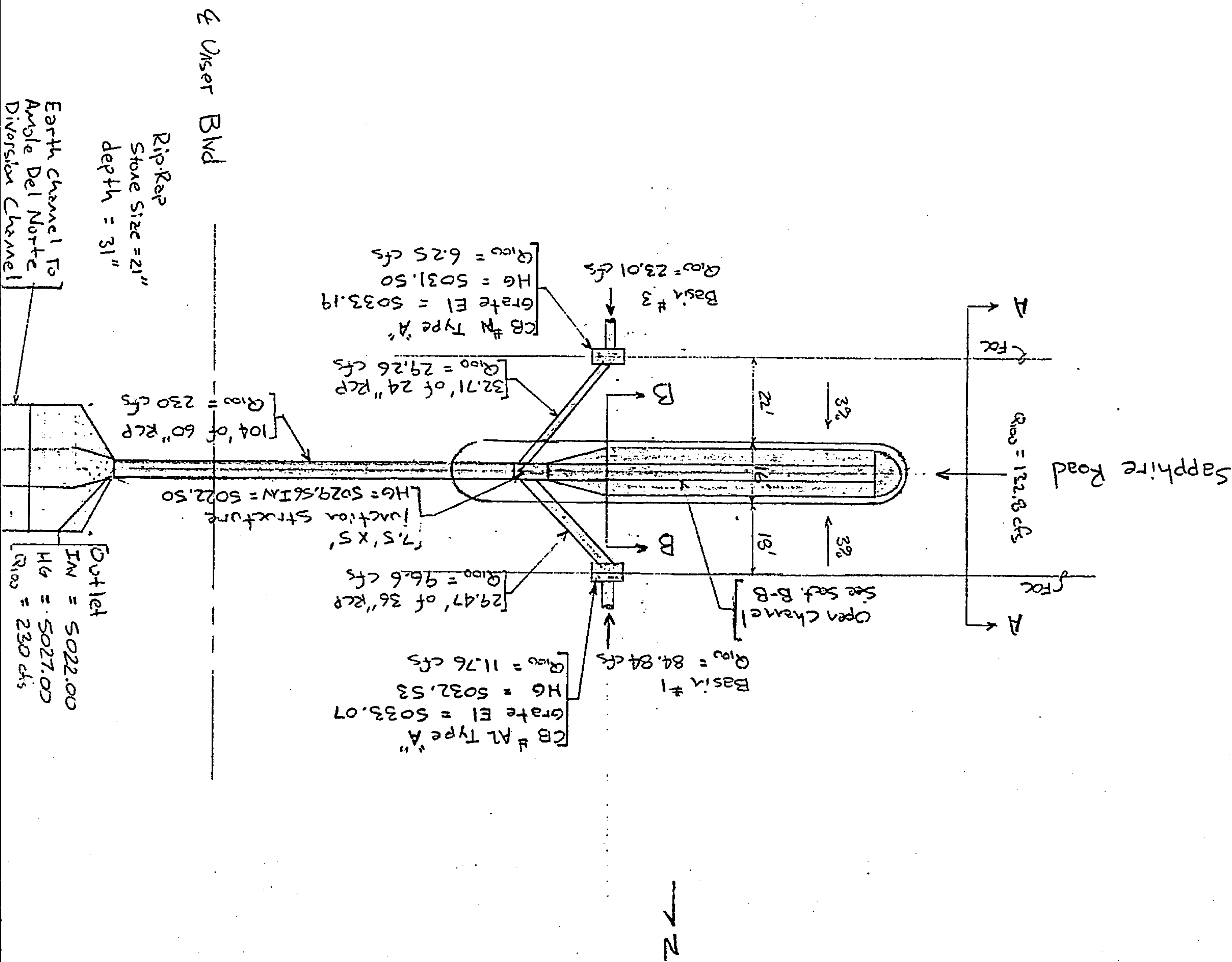
DATE: 1-22-88

Line #1 - On Sapphire at User Blvd

SHEET 1 OF 1

[illegible]

|                                                   |     |         |
|---------------------------------------------------|-----|---------|
| PROJECT                                           |     | PAGE    |
| DMJM / AHA<br>ALBUQUERQUE<br>Vista Nueva          |     |         |
| SUBJECT                                           |     |         |
| Storm Sewer layout on Sapphire at Unser (Line #1) |     |         |
| PROJECT NO.                                       | BY: | DATE:   |
| 6376.00                                           | MK  | 1-22-88 |



# DMAJM

PROJECT

PROJECT NO.

PAGE

Vista Nueva

6376.00

BY

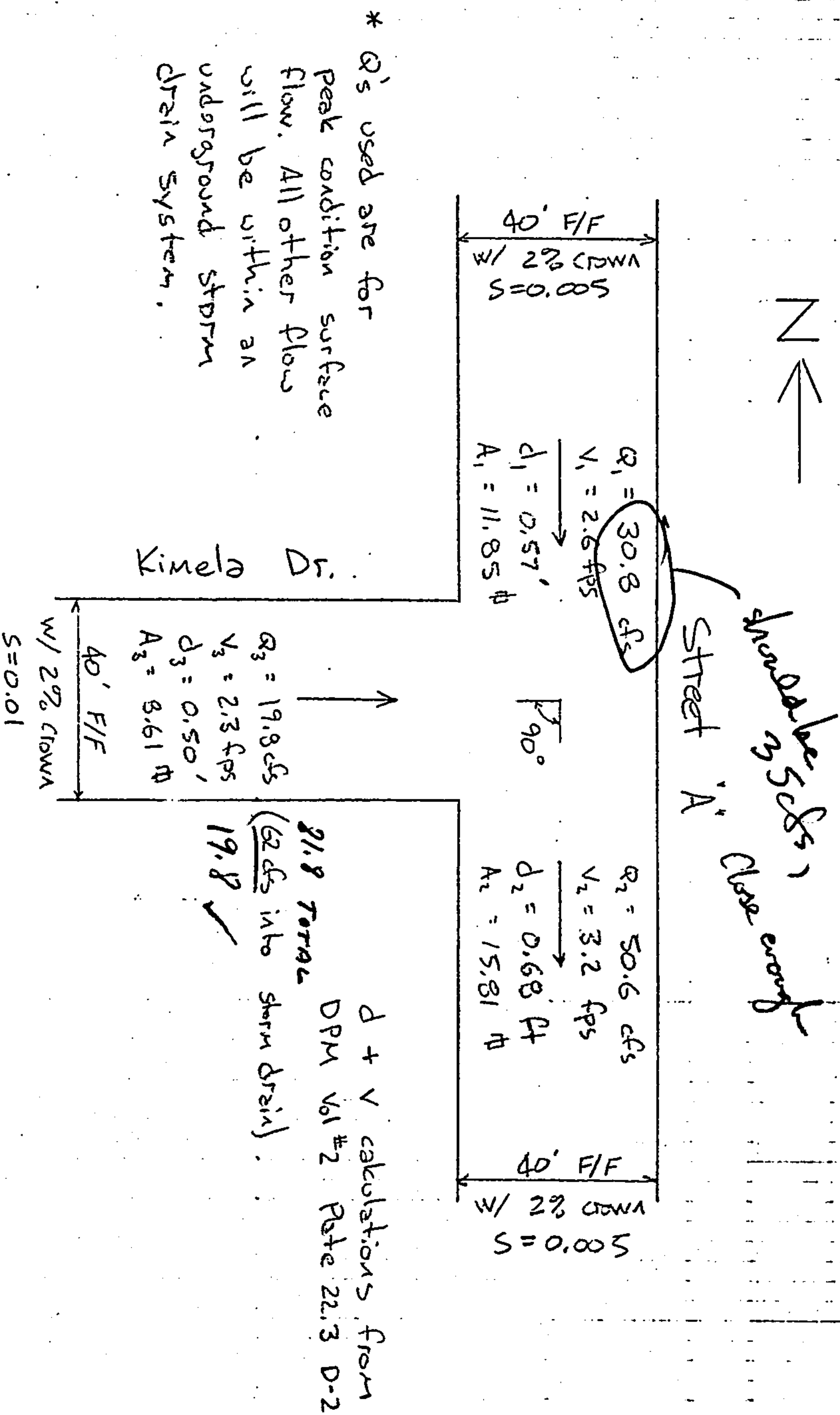
HK

DATE

3/28/88

SUBJECT

Street Capacity: Kimela / Street "A" Intersection



Depth (at flowline of curb) at junction by Thompson Eq<sup>n</sup> ( $d_j$ )

$$\Delta Y = \frac{Q_2 V_2 - Q_1 V_1 - Q_3 V_3 \cos \theta}{\frac{3}{2} (A_1 + 4 \left( \frac{A_1 + A_2 + A_3}{3} \right) + A_4)}$$

$$\Delta Y = 0.20 \text{ ft}$$

$$d_j = d_1 + \Delta Y = 0.57 + 0.20$$

$$d_j = 0.77 \text{ ft} < 0.87 \text{ ft} \text{ ok}$$

Kimela  
storm  
sewer  
+ Street  
Capacity

# DMJM

PROJECT

Vista Nueva

PROJECT NO.

6376.00

PAGE

SUBJECT

Street Capacity: Kinela / Street "A" / Street "E" Intersection

BY

MC

DATE

3/28/88

N  
←

Street "A"

Kinela Q

40' F/F  
W/ 2% CROWN  
S=0.005  
Q<sub>3</sub> = 32.6 cfs (13 cfs to storm drain)  
V<sub>3</sub> = 2.7 fps  
d<sub>3</sub> = 0.58'  
A<sub>3</sub> = 12.07 ft<sup>2</sup>

40' F/F  
W/ 2% CROWN  
S=0.01  
Q<sub>2</sub> = 33.6 cfs  
V<sub>2</sub> = 3.4 fps  
d<sub>2</sub> = 0.53'  
A<sub>2</sub> = 9.88 ft<sup>2</sup>

Street "E"

32' F/F  
W/ 2% CROWN  
S=0.01  
Q<sub>1</sub> = 1 cfs  
V<sub>1</sub> = 1.5 fps  
d<sub>1</sub> = 0.19 ft  
A<sub>1</sub> = 0.67 ft<sup>2</sup>

62  
18  
80 cfs  
now in S.D.

\* Q's used are for peak condition surface flow. All other flow will be within an underground storm drain system

Depth (at flowline of curb) at junction by Thompson Eq<sup>1</sup> (d<sub>j</sub>)

$$\Delta y = \frac{Q_2 V_2 - Q_1 V_1 - Q_3 V_3 \cos \theta}{\frac{g}{6} (A_1 + 4 \frac{A_1 + A_2 + A_3}{3} + A_3)}$$

$$\Delta y = 0.52 \text{ ft}$$

$$d_j = d_1 + \Delta y = 0.19 + 0.52$$

$$d_j = 0.71 \text{ ft} < 0.87 \text{ ft} \text{ ok}$$

# DMJM

PROJECT

PROJECT NO.

PAGE

Vista Nueva

6376.00

BY

DATE

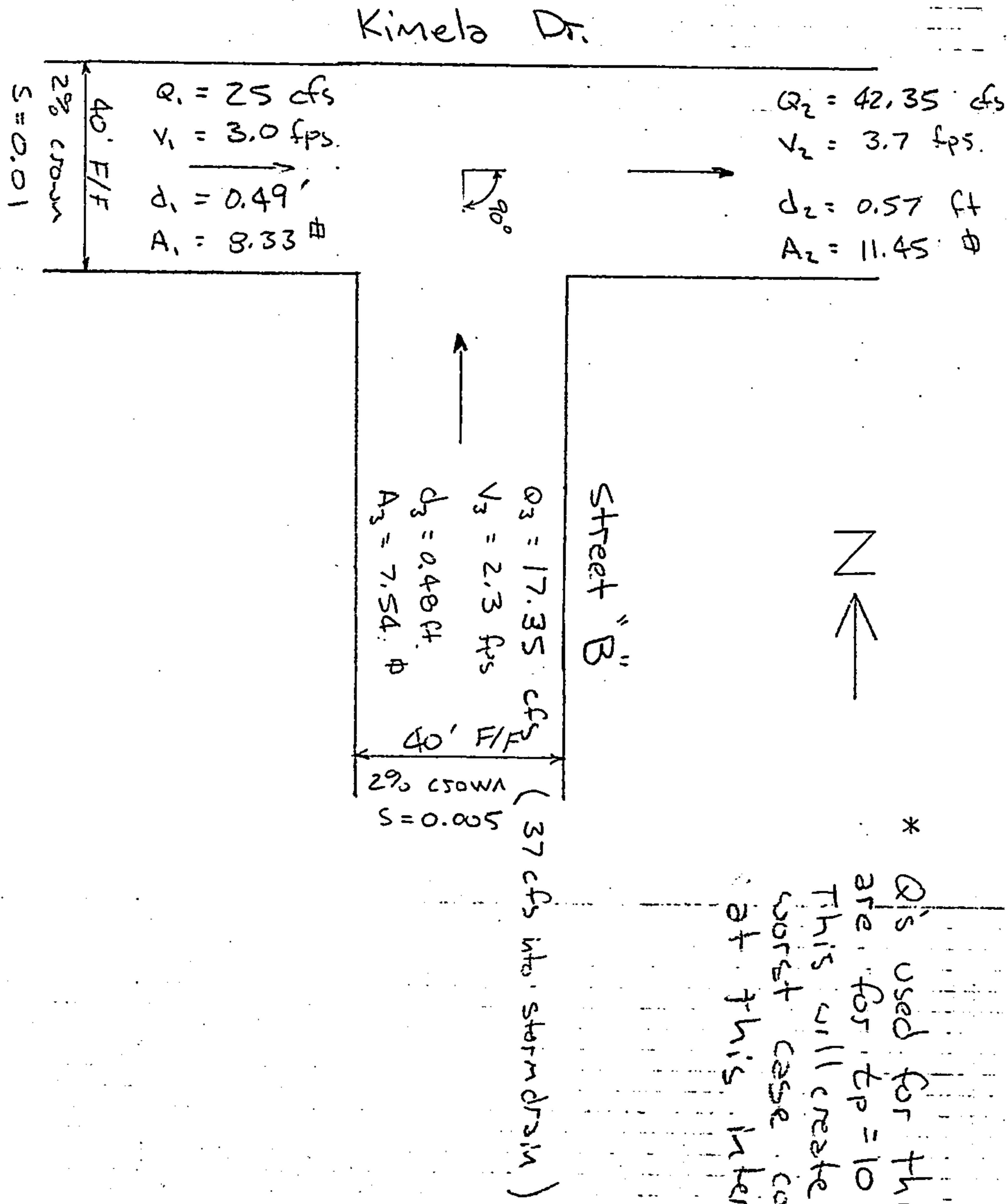
NK

3/28/88

SUBJECT

Street Capacity: Kimela / Street "B" Intersection

\*  $Q$ 's used for this case are for  $tp = 10$  minutes. This will create the worst case condition at this intersection



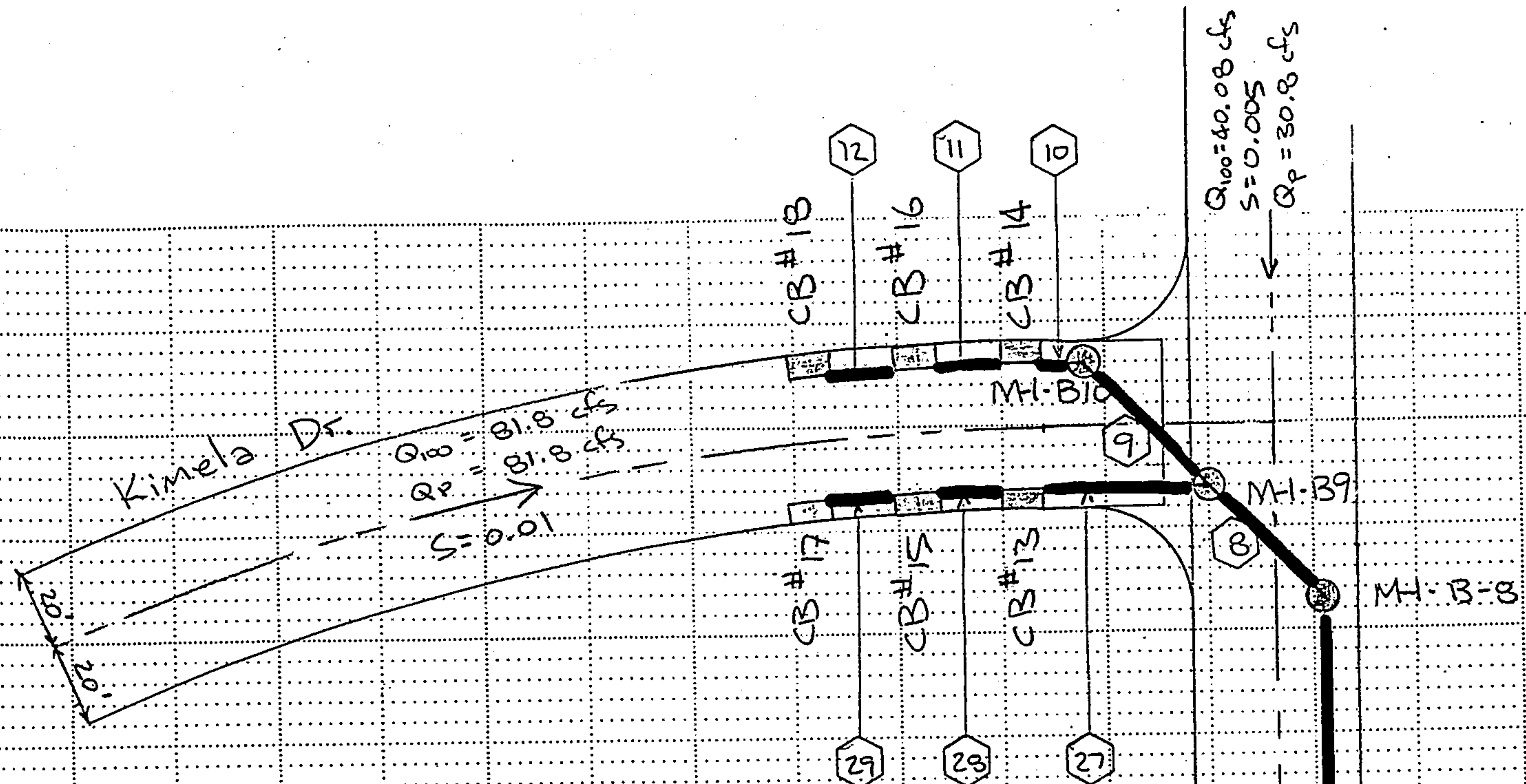
Depth (at flowline of curb) at junction by Thompson Eq. 1 ( $d_1$ )

$$\Delta y = \frac{Q_2 V_1 - Q_1 V_2 - Q_3 V_3 \cos \theta}{\frac{g}{6} (A_1 + 4 \frac{A_1 + A_2 + A_3 + A_2}{3})}$$

$$\Delta y = 0.27 \text{ ft.}$$

$$d_1' = d_1 + \Delta y = 0.49 + 0.27$$

$$d_1' = 0.76 \text{ ft.} < 0.87 \text{ ft. ok}$$



| CB # | Type   | Q <sub>100</sub> (cfs) | Q <sub>p</sub> (cfs) | HGL (Elev.) | Grate (Elev.) |
|------|--------|------------------------|----------------------|-------------|---------------|
| 1    | A Sump | 17.21                  | 5.65                 | 37.69       | 38.2          |
| 2    | A Sump | 13.71                  | 5.45                 | 37.05       | 38.2          |
| 3    | DBI-C  | 5                      | 5                    | 36.99       | 38.5          |
| 4    | DBI-C  | 5                      | 5                    | 37.19       | 38.5          |
| 5    | A      | 7                      | 7                    | 37.35       | 38.8          |
| 6    | A      | 7                      | 7                    | 37.55       | 38.8          |
| 7    | A      | 9.5                    | 1.85                 | 39.58       | 40.1          |
| 8    | A      | 9.5                    | 1.85                 | 39.37       | 40.1          |
| 9    | DBI-C  | 9                      | 0                    | 38.92       | 39.9          |
| 10   | DBI-C  | 9                      | 0                    | 38.71       | 39.9          |
| 11   | A      | 9                      | 9                    | 39.80       | 41.0          |
| 12   | A      | 9                      | 9                    | 40.15       | 41.0          |
| 13   | DBI-C  | 9                      | 9                    | 44.95       | 47.64         |
| 14   | DBI-C  | 9                      | 9                    | 45.53       | 47.64         |
| 15   | DBI-C  | 11                     | 11                   | 46.18       | 47.89         |
| 16   | DBI-C  | 11                     | 11                   | 46.76       | 47.89         |
| 17   | A      | 11                     | 11                   | 47.06       | 48.14         |
| 18   | A      | 11                     | 11                   | 47.64       | 48.14         |

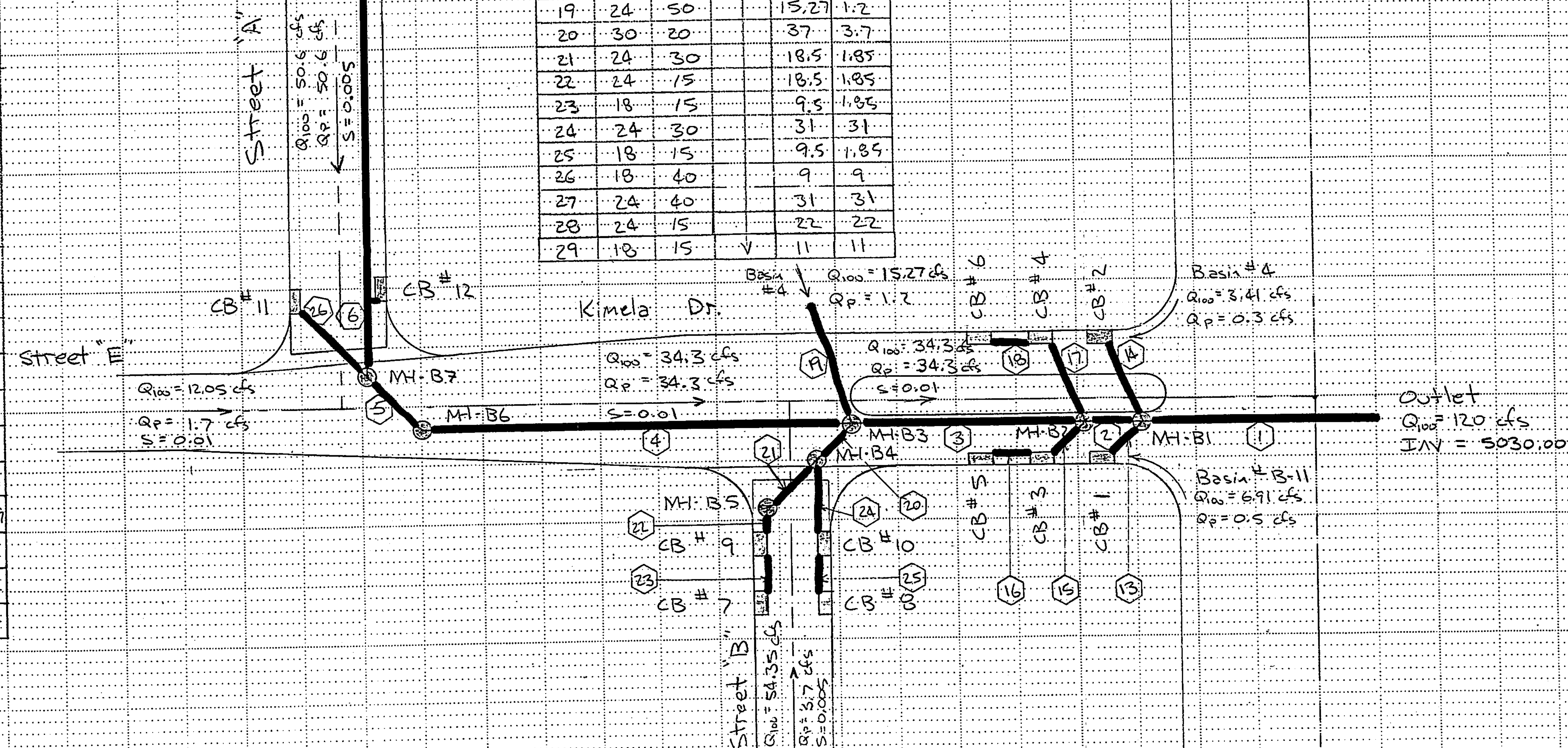
| Pipe # | Size (in) | Length (ft) | Pipe Type | Q <sub>100</sub> (cfs) | Q <sub>p</sub> (cfs) |
|--------|-----------|-------------|-----------|------------------------|----------------------|
| 1      | 48        | 100         | RCP       | 120                    | 120                  |
| 2      | 48        | 25          |           | 108.9                  | 108.9                |
| 3      | 42        | 95          |           | 84.9                   | 84.9                 |
| 4      | 42        | 180         |           | 80                     | 80                   |
| 5      | 42        | 35          |           | 80                     | 80                   |
| 6      | 36        | 35          |           | 71                     | 71                   |
| 7      | 36        | 210         |           | 62                     | 62                   |
| 8      | 36        | 40          |           | 62                     | 62                   |
| 9      | 24        | 40          |           | 31                     | 31                   |
| 10     | 24        | 15          |           | 31                     | 31                   |
| 11     | 24        | 15          |           | 22                     | 22                   |
| 12     | 18        | 15          |           | 11                     | 11                   |
| 13     | 18        | 20          |           | 17.21                  | 5.65                 |
| 14     | 18        | 35          |           | 13.71                  | 5.45                 |
| 15     | 18        | 20          |           | 12                     | 12                   |
| 16     | 18        | 15          |           | 7                      | 7                    |
| 17     | 18        | 35          |           | 12                     | 12                   |
| 18     | 18        | 15          |           | 7                      | 7                    |
| 19     | 24        | 50          |           | 15.27                  | 1.2                  |
| 20     | 30        | 20          |           | 37                     | 3.7                  |
| 21     | 24        | 30          |           | 18.5                   | 1.85                 |
| 22     | 24        | 15          |           | 18.5                   | 1.85                 |
| 23     | 18        | 15          |           | 9.5                    | 1.85                 |
| 24     | 24        | 30          |           | 31                     | 31                   |
| 25     | 18        | 15          |           | 9.5                    | 1.85                 |
| 26     | 18        | 40          |           | 9                      | 9                    |
| 27     | 24        | 40          |           | 31                     | 31                   |
| 28     | 24        | 15          |           | 22                     | 22                   |
| 29     | 18        | 15          |           | 11                     | 11                   |

Vista Nueva Phase II  
Storm Sewer Layout

1" = 50'

Q<sub>100</sub> = 6 hr - 100 yr maximum flow  
Q<sub>p</sub> = flow rate at the time the storm drain system peaks (Q = 120 cfs at outlet)

Unset Blvd.



DAVID/Adam, Hamlyn, Anderson

PROJECT  
Vista Nueva

PROJECT NO. 6376.00

BY: MK

DATE: 3-29-88

SHEET 1 OF 2

Phase II Storm Sewer (Mainline)

| STRUCTURE | STATION | S.D. SIZE | Q     | A      | V     | K     | S <sub>f</sub> | L   | Δ | LOSSES         |                |                |                |                 |                   |                 | E.G. | h <sub>v</sub> | H.G.    |
|-----------|---------|-----------|-------|--------|-------|-------|----------------|-----|---|----------------|----------------|----------------|----------------|-----------------|-------------------|-----------------|------|----------------|---------|
|           |         |           |       |        |       |       |                |     |   | H <sub>f</sub> | H <sub>b</sub> | H <sub>j</sub> | H <sub>r</sub> | H <sub>mn</sub> | H <sub>misc</sub> | ΣH <sub>L</sub> |      |                |         |
| Outlet    |         |           |       |        |       |       |                |     |   |                |                |                |                |                 |                   | 0               |      |                |         |
| 1         |         | 48        | 120   | 12.566 | 9.55  | 1436  | .006983        | 100 |   | 0.70           |                |                |                |                 |                   | 0.7             |      | 1.42           | 5034.00 |
| MH # B1   |         |           |       |        |       |       |                |     |   |                |                | 0.63           |                |                 |                   | 0.63            |      | 1.42           | 35.33   |
| 2         |         | 48        | 108.9 | 12.566 | 8.67  | 1436  | .005751        | 25  |   | 0.14           |                |                |                |                 |                   | 0.14            |      | 1.17           | 35.47   |
| MH # B2   |         |           |       |        |       |       |                |     |   |                |                | 0.40           |                |                 |                   | 0.40            |      | 1.17           | 35.87   |
| 3         |         | 42        | 84.9  | 9.621  | 8.82  | 1006  | .007122        | 95  |   | 0.68           |                |                |                |                 |                   | 0.68            |      | 1.21           | 36.55   |
| MH # B3   |         |           |       |        |       |       |                |     |   |                |                | 0.32           |                |                 |                   | 0.32            |      | 1.07           | 36.87   |
| 4         |         | 42        | 80    | 9.621  | 8.32  | 1006  | .006324        | 180 |   | 1.14           |                |                |                |                 |                   | 1.14            |      | 1.07           | 38.21   |
| MH # B6   |         |           |       |        |       |       |                |     |   |                | 0.15           |                |                | 0.05            |                   | 0.2             |      | 1.07           | 38.43   |
| 5         |         | 42        | 80    | 9.621  | 8.32  | 1006  | .006324        | 35  |   | 0.22           |                |                |                |                 |                   | 0.22            |      | 1.07           | 39.03   |
| MH # B7   |         |           |       |        |       |       |                |     |   |                |                | 0.60           |                |                 |                   | 0.60            |      | 1.57           | 39.43   |
| 6         |         | 36        | 71    | 7.068  | 10.05 | 666.9 | .0113343       | 35  |   | 0.40           |                |                |                |                 |                   | 0.40            |      | 1.57           | 40.15   |
| CB # 12   |         |           |       |        |       |       |                |     |   |                |                | 0.72           |                |                 |                   | 0.72            |      | 1.19           | 41.97   |
| 7         |         | 36        | 62    | 7.068  | 8.77  | 666.9 | .008643        | 210 |   | 1.82           |                |                |                |                 |                   | 1.82            |      | 1.19           | 42.20   |
| MH # B8   |         |           |       |        |       |       |                |     |   |                | 0.17           |                |                | 0.06            |                   | 0.23            |      | 1.19           | 42.55   |
| 8         |         | 36        | 62    | 7.068  | 8.77  | 666.9 | .008643        | 40  |   | 0.35           |                |                |                |                 |                   | 0.35            |      | 1.19           | 42.68   |
| MH # B9   |         |           |       |        |       |       |                |     |   |                |                | 0.13           |                |                 |                   | 0.13            |      | 1.53           | 43.43   |
| 9         |         | 24        | 31    | 3.124  | 9.92  | 226.2 | .0188151       | 40  |   | 0.75           |                |                |                |                 |                   | 0.75            |      | 1.53           | 43.73   |
| MH # B10  |         |           |       |        |       |       |                |     |   |                | 0.22           |                |                | .08             |                   | 0.30            |      | 1.53           | 44.01   |
| 10        |         | 24        | 31    | 3.124  | 9.92  | 226.2 | .0188151       | 15  |   | 0.28           |                |                |                |                 |                   | 0.28            |      |                |         |

**DAMIAN/Adam, Hamlyn, Anderson**

PROJECT  
Vista Nueva

|             |         |
|-------------|---------|
| PROJECT NO. | 6376.00 |
|-------------|---------|

BY: JK

DATE: 3-29-88

SHEET 2 OF 2

**SUBJECT**

## Phase II Storm Sewer (Mainline)

[illegible]

PROJECT  
Vista Nueva

PROJECT NO. 6376.00

BY: NK

**SUBJECT**

DATE: 3-31-88

## Phase II Storm Survey

**SHEET OF**

[illegible]

PROJECT  
Vista Nueva

PROJECT NO. 6376,00

BY:           

SUBJECT

DATE: 3-31-88

## Phase II Storm Sewer

SHEET OF

[illegible]

[illegible]

BY: NY

DATE: 3-31-2000

**SHEET OF**

[illegible]

DMJM / AHA

PROJECT

PROJECT NO.

6376.00

PAGE

ALBUQUERQUE

Vista Nueva

BY:

RK

DATE:

12/22/87

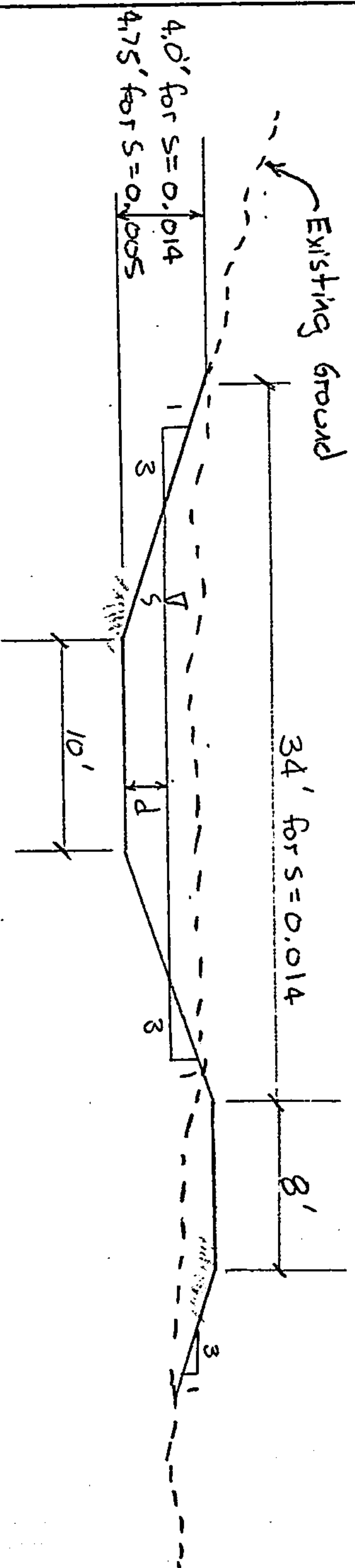
SUBJECT

Temporary Drainage Channel "A"

$$Q_{100} = 230 \text{ cfs}$$

$$S = 0.014 \text{ ft/ft} + S = 0.005 \text{ ft/ft}$$

$$K = 0.03 \text{ (earth channel)}$$



Normal Depth + Velocity :  $S = 0.014$

$$Q = \frac{1.486}{n} AR^{2/3} S^{1/2}$$

$$AR^{2/3} = 39.243$$

by trial + error

$$\Rightarrow d = 1.97 \text{ ft}$$

$$\Rightarrow V = 7.32 \text{ fps}$$

(DPM Vol #2 Section 22.3 F.S.2)  
(Bank protection not required)

Freeboard :

Freeboard Required : 2.0' (DPM Vol #2 Section 22.3 F.4.a)

Freeboard Provided = 4.0 - 1.97 = 2.03 ft > 2.0' ok ✓

Normal Depth + Velocity :  $S = 0.005$

$$d = 2.57 \text{ ft}$$

$V = 5.05 \text{ fps} < 8 \text{ fps}$  (Bank protection not required)

Freeboard Required = 2.0 ft

Freeboard Provided = 4.75 - 2.57 = 2.18 ft > 2.0' ok ✓

DMJM / AHA  
ALBUQUERQUE

PROJECT

Vista Nueva

PROJECT NO.  
6376.00

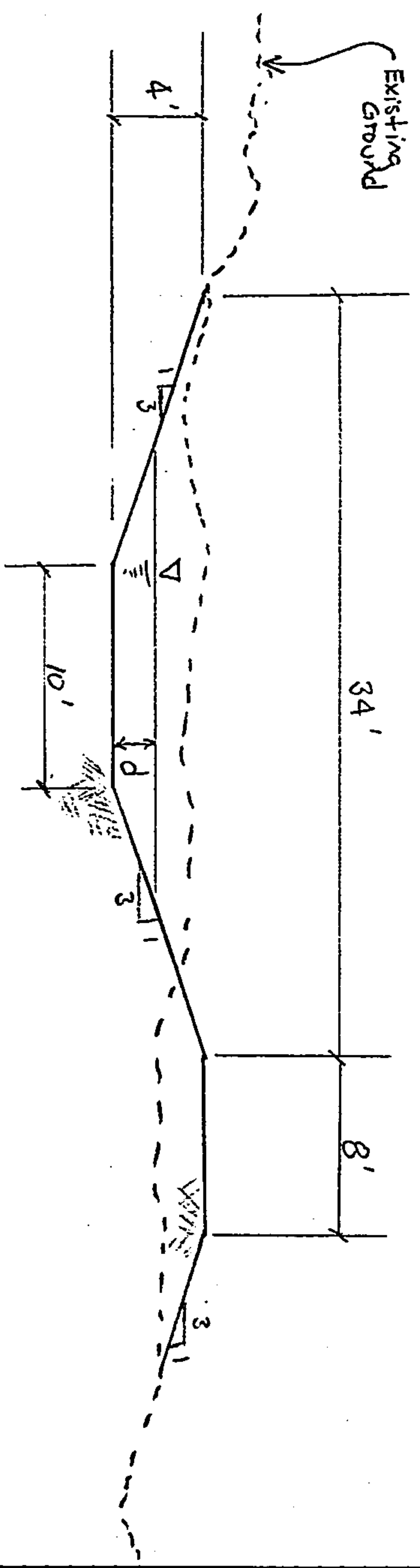
PAGE

SUBJECT

Temporary Drainage Channel "B"

BY: WK  
DATE: 2/05/82

$Q_{100} = 120 \text{ cfs}$   
 $S = 0.005 \text{ ft/ft} + 0.0165 \text{ ft/ft}$   
 $n = 0.03 \text{ (earth channel)}$



Normal Depth + Velocity :  $S = 0.0165$

$$Q = \frac{1.486}{n} AR^{2/3} S^{1/2}$$

$$AR^{2/3} = 8.87$$

by trial + error

$$\Rightarrow d = 1.33 \text{ ft.}$$

$$\Rightarrow V = 6.42 \text{ fps} < 8 \text{ fps (DPM Vol 1 \#2 Section 22.3 F.5.2) Bank Protection not Required}$$

Freeboard :

Freeboard Required : 2.0 ft (DPM Vol 1 \#2 Section 22.3 F.4.2)

Freeboard Provided : 4.0 - 1.4 = 2.6 ft > 2.0 ok ✓

Normal Depth + Velocity :  $S = 0.005$

$$\Rightarrow d = 1.84 \text{ ft.}$$

$$\Rightarrow V = 4.21 \text{ fps} < 8 \text{ fps (No bank protection required)}$$

Freeboard

Freeboard Required : 2.0 ft

Freeboard Provided : 4.0 - 1.84 = 2.16 ft > 2.0 ok ✓

HYDROGRAPH COMPUTATION WORKSHEET

DATE 1-25-82  
COMPUTED BY MC  
CHECK BY \_\_\_\_\_

Offsite Basin # 6

Sub # 6376.00

PROJECT Vista Nueva

LOCATION Amole Desil-tation Pond

ANALYSIS POINT # C

(DR. AREA) A = 104 ACRES

T<sub>c</sub> 30 MIN

POINT RAINFALL 2.2 IN. FROM PLATE 22.2 D-1

CN = 70 FROM PLATES 22.2 C-2, 22.2 C-3

RUNOFF VOLUME R = 0.35 IN. FROM PLATE 22.2 C-4

COMPUTED T<sub>p</sub> = 30 MIN. T<sub>p</sub> = T<sub>c</sub>  
(Rounded to even minute)

q<sub>p</sub> =  $\frac{45.4A}{T_p}$  =  $\frac{157.39}{30}$  CFS./INCH OF RUNOFF

(R X q<sub>p</sub>) = q<sub>peak</sub> = 55.09 CFS

t(COLUMN)=(t/T<sub>p</sub>)      t=T<sub>p</sub>(t/T<sub>p</sub>)

y =  $\frac{Q}{q_{peak}}$       Q = y(q<sub>peak</sub>)

|    | (t/T <sub>p</sub> ) | t<br>(min.) | y    | Q<br>(cfs) |
|----|---------------------|-------------|------|------------|
| 1  | 0                   | 0           | 0    | 0          |
| 2  | .1                  | 3           | .03  | 1.65       |
| 3  | .2                  | 6           | .10  | 5.51       |
| 4  | .3                  | 9           | .190 | 10.47      |
| 5  | .4                  | 12          | .310 | 17.08      |
| 6  | .5                  | 15          | .470 | 25.89      |
| 7  | .6                  | 18          | .660 | 36.36      |
| 8  | .7                  | 21          | .820 | 45.17      |
| 9  | .8                  | 24          | .930 | 51.25      |
| 10 | .9                  | 27          | .990 | 54.54      |
| 11 | 1.0                 | 30          | 1.00 | 55.09      |
| 12 | 1.1                 | 33          | .990 | 54.54      |
| 13 | 1.2                 | 36          | .930 | 51.25      |
| 14 | 1.3                 | 39          | .860 | 47.38      |
| 15 | 1.4                 | 42          | .780 | 42.97      |
| 16 | 1.5                 | 45          | .680 | 37.46      |
| 17 | 1.6                 | 48          | .560 | 30.85      |
| 18 | 1.7                 | 51          | .460 | 25.34      |
| 19 | 1.8                 | 54          | .390 | 21.49      |
| 20 | 1.9                 | 57          | .330 | 18.18      |
| 21 | 2.0                 | 60          | .280 | 15.43      |
| 22 | 2.2                 | 66          | .207 | 11.40      |
| 23 | 2.4                 | 72          | .147 | 8.10       |
| 24 | 2.6                 | 78          | .107 | 5.89       |
| 25 | 2.8                 | 84          | .077 | 4.24       |
| 26 | 3.0                 | 90          | .055 | 3.03       |
| 27 | 3.2                 | 96          | .040 | 2.20       |
| 28 | 3.4                 | 102         | .029 | 1.60       |
| 29 | 3.6                 | 108         | .021 | 1.16       |
| 30 | 3.8                 | 114         | .015 | 0.83       |
| 31 | 4.0                 | 120         | .011 | 0.61       |
| 32 | 4.5                 | 135         | .005 | 0.28       |
| 33 | 5.0                 | 150         | .000 | 0          |

PLATE 22.2 F-1

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PROJECT Visto Nueva

PROJECT NO.

6376.06

PAGE

BY:

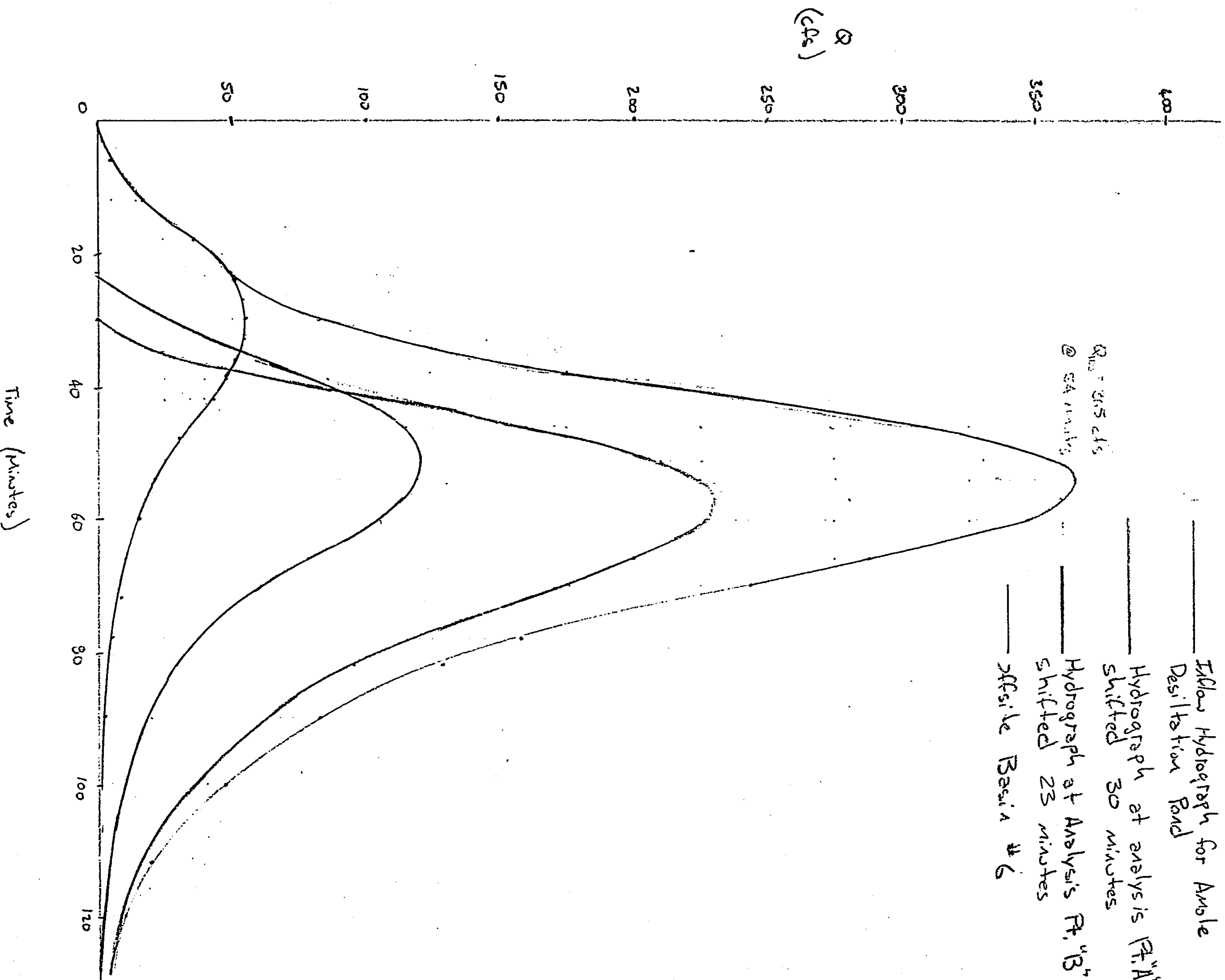
ME

DATE:

1-25-88

SUBJECT

Inflow Hydrograph for Arroyo Del Norte Channel: Analysis Point "C"



|     |         |
|-----|---------|
| BY: | DATE:   |
| pk  | 1-25-88 |

## Earth Channel in Anole D&I Norte ROW

$V = 0.03$  (earth channel)



$$Q = \frac{1.436}{N} AR^{2/3} S^{1/2}$$

$$AR^{2/3} = 164.77$$

by trial + error

$$\Rightarrow d = 2.47 \text{ cm}$$

$\lambda = 5.200 \text{ \AA}$

## Freeboard:

$$d_{critical} = 2.47 \text{ ft}$$

$$V_{critical} = 7.18 \text{ fps}$$

Freeboard Required = 2.0 ft (DPM Vol #2 Section 22.3)

Freeboard Provided =  $4.5 - 2.47 = 2.03 \text{ ft} > 2.0 \text{ ft} \checkmark$

DMJM

PROJECT

PROJECT NO.

6376.00

PAGE

ALBUQUERQUE

Vista Nueva

SUBJECT

Amole Del Norte Desiltation Facility

The Amole Del Norte Desiltation Facility will be designed to remove particles  $\geq$  sieve size 200 (0.00024 ft diam.)

From USDA SCS Technical Release # 25 (October 1977) chapter 6 the allowable velocity for an unprotected earth channel ( $V_a$ ) is 2.0 fps.

Particle Settling Velocity ( $V_s$ )

$$V_s = \left( \frac{4}{3} \frac{g}{C_D} \left( \frac{\rho_s - \rho}{\rho} \right) d \right)^{1/2}$$

$C_D = 0.4$

drag coefficient

$\rho_s = 4.255$

density of particle (clay)

$\rho = 1.938$

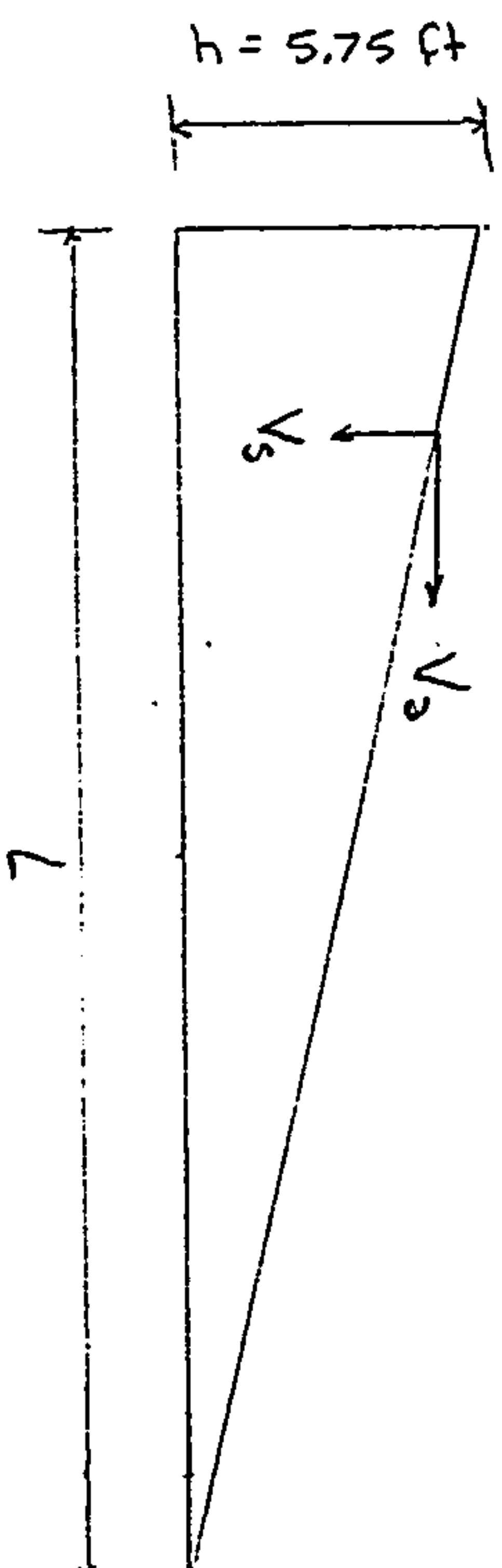
density of water

$d = 0.00024 \text{ ft}$

diameter of smallest particle to be desilted.

$$V_s = 0.1755 \text{ fps}$$

Length of Settling Area ( $L$ )



$h$  = maximum water depth (forced by weir)

$$L = h \frac{V_a}{V_s} = 5.75 \frac{2}{0.1755}$$

$$L = 65.53 \text{ ft minimum required length.}$$

DMJM

PROJECT

PROJECT NO.

6376.00

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ALBUQUERQUE

Meta Neve

BY:

MC

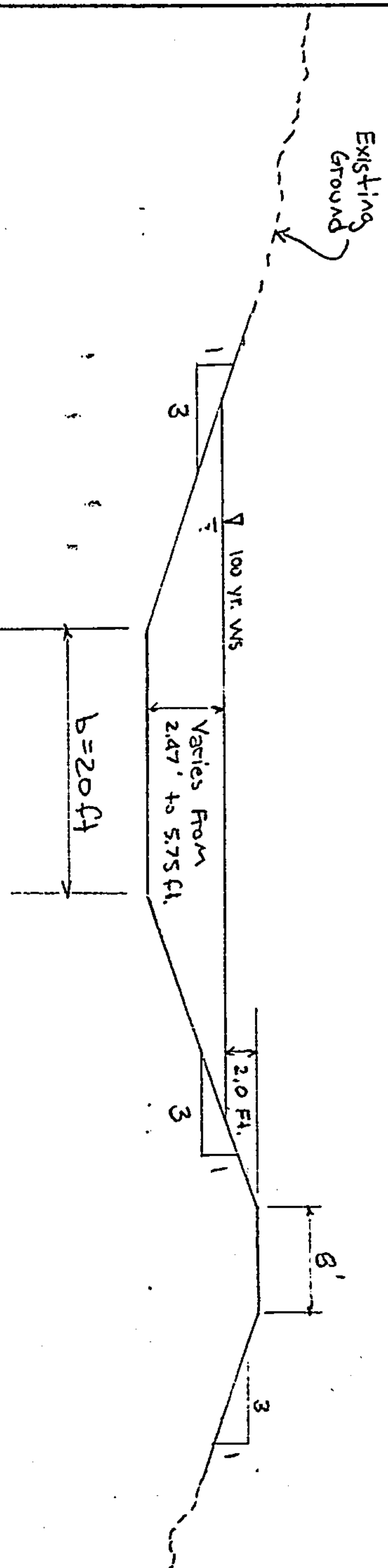
DATE:

3-21-89

SUBJECT

Anole Del Norte Desiltation Facility

Channel Cross Section within Anole ROW



Minimum Freeboard = 2.0 ft. (DPM Vol #2 Sec. 22.3)

# TRAPEZOIDAL CHANNEL ANALYSIS NORMAL DEPTH COMPUTATION

March 21, 1988  
AMOLE DEL NORTE DESILTATION FACILITY  
PROJECT: VISTA NUEVA  
JOB # 6376.00

## PROGRAM INPUT DATA:

| DESCRIPTION                                               | VALUE  |
|-----------------------------------------------------------|--------|
| Flow Rate (cubic feet per second).....                    | 365.0  |
| Channel Bottom Slope (feet per foot).....                 | 0.0050 |
| Manning's Roughness Coefficient (n-value).....            | 0.0300 |
| Channel Side Slope - Left Side (horizontal/vertical)....  | 3.00   |
| Channel Side Slope - Right Side (horizontal/vertical).... | 3.00   |
| Channel Bottom Width (feet).....                          | 20.0   |

## PROGRAM RESULTS:

| DESCRIPTION                                     | VALUE |
|-------------------------------------------------|-------|
| Normal Depth (feet).....                        | 2.47  |
| Flow Velocity (feet per second).....            | 5.38  |
| Froude Number (Flow is Sub-Critical).....       | 0.679 |
| Velocity Head (feet).....                       | 0.45  |
| Energy Head (feet).....                         | 2.92  |
| Cross-Sectional Area of Flow (square feet)..... | 67.86 |
| Top Width of Flow (feet).....                   | 34.85 |

=====

TRAPEZOIDAL CHANNEL ANALYSIS COMPUTER PROGRAM, Version 1.3 (c) 1986  
Dodson & Associates, Inc., 7015 W. Tidwell, #107, Houston, TX 77092  
(713) 895-8322. A manual with equations & flow chart is available.

# TRAPEZOIDAL CHANNEL ANALYSIS CRITICAL DEPTH COMPUTATION

March 21, 1988  
AMOLE DEL NORTE DESILTATION FACILITY  
PROJECT: VISTA NUEVA  
JOB # 6376.00

## PROGRAM INPUT DATA:

| DESCRIPTION                                           | VALUE  |
|-------------------------------------------------------|--------|
| Flow Rate (cubic feet per second)                     | 365.0  |
| Manning's Roughness Coefficient (n-value)             | 0.0300 |
| Channel Side Slope - Left Side (horizontal/vertical)  | 3.00   |
| Channel Side Slope - Right Side (horizontal/vertical) | 3.00   |
| Channel Bottom Width (feet)                           | 20.0   |

## PROGRAM RESULTS:

| DESCRIPTION                                | VALUE  |
|--------------------------------------------|--------|
| Critical Depth (feet)                      | 1.96   |
| Critical Slope (feet per foot)             | 0.0115 |
| Flow Velocity (feet per second)            | 7.18   |
| Froude Number                              | 1.000  |
| Velocity Head (feet)                       | 0.80   |
| Energy Head (feet)                         | 2.76   |
| Cross-Sectional Area of Flow (square feet) | 50.85  |
| Top Width of Flow (feet)                   | 31.78  |

TRAPEZOIDAL CHANNEL ANALYSIS COMPUTER PROGRAM, Version 1.3 (c) 1986  
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(713) 895-8322. A manual with equations & flow chart is available.

TRAPEZOIDAL CHANNEL ANALYSIS  
STANDARD STEP WATER SURFACE PROFILE

March 21, 1988  
AMOLE DEL NORTE DESILTATION FACILITY  
PROJECT: VISTA NUEVA  
JOB # 6376.00

PROGRAM INPUT DATA:  
DESCRIPTION

VALUE

Flow Rate (cubic feet per second)..... 365.0  
Channel Bottom Slope (feet per foot)..... 0.0050  
Manning's Roughness Coefficient (n-value)..... 0.0300  
Channel Side Slope - Left Side (horizontal/vertical).... 3.00  
Channel Side Slope - Right Side (horizontal/vertical).... 3.00  
Channel Bottom Width (feet)..... 20.0  
Channel Flow-Line Elevation at Starting Station (feet).. 0.00  
Water Surface Elevation at Starting Station (feet)..... 5.75  
Starting Channel Station (feet)..... 0.00

PROGRAM RESULTS:  
DESCRIPTION

VALUE

Normal Depth (feet)..... 2.47  
Critical Depth (feet)..... 1.96

| Station | Flowline WS Elev. (ft) | Depth (ft) | Flow Area (sq ft) | Vel (fps) | Velocity Head (ft) | EGL Slope (ft/ft) |
|---------|------------------------|------------|-------------------|-----------|--------------------|-------------------|
|---------|------------------------|------------|-------------------|-----------|--------------------|-------------------|

|       |      |      |      |        |      |       |          |
|-------|------|------|------|--------|------|-------|----------|
| 0.0   | 0.00 | 5.75 | 5.75 | 214.19 | 1.70 | 0.045 | 0.000200 |
| 10.0  | 0.05 | 5.75 | 5.70 | 211.52 | 1.73 | 0.046 | 0.000207 |
| 20.0  | 0.10 | 5.75 | 5.65 | 208.87 | 1.75 | 0.047 | 0.000214 |
| 30.0  | 0.15 | 5.75 | 5.60 | 206.24 | 1.77 | 0.049 | 0.000221 |
| 40.0  | 0.20 | 5.75 | 5.55 | 203.62 | 1.79 | 0.050 | 0.000229 |
| 50.0  | 0.25 | 5.76 | 5.51 | 201.02 | 1.82 | 0.051 | 0.000238 |
| 60.0  | 0.30 | 5.76 | 5.46 | 198.43 | 1.84 | 0.053 | 0.000246 |
| 70.0  | 0.35 | 5.76 | 5.41 | 195.87 | 1.86 | 0.054 | 0.000255 |
| 80.0  | 0.40 | 5.76 | 5.36 | 193.32 | 1.89 | 0.055 | 0.000265 |
| 90.0  | 0.45 | 5.76 | 5.31 | 190.78 | 1.91 | 0.057 | 0.000274 |
| 100.0 | 0.50 | 5.76 | 5.26 | 188.27 | 1.94 | 0.058 | 0.000285 |
| 110.0 | 0.55 | 5.76 | 5.21 | 185.77 | 1.96 | 0.060 | 0.000295 |
| 120.0 | 0.60 | 5.76 | 5.16 | 183.28 | 1.99 | 0.062 | 0.000306 |
| 130.0 | 0.65 | 5.77 | 5.12 | 180.82 | 2.02 | 0.063 | 0.000318 |
| 140.0 | 0.70 | 5.77 | 5.07 | 178.37 | 2.05 | 0.065 | 0.000330 |
| 150.0 | 0.75 | 5.77 | 5.02 | 175.94 | 2.07 | 0.067 | 0.000343 |
| 160.0 | 0.80 | 5.77 | 4.97 | 173.52 | 2.10 | 0.069 | 0.000356 |
| 170.0 | 0.85 | 5.77 | 4.92 | 171.13 | 2.13 | 0.071 | 0.000370 |
| 180.0 | 0.90 | 5.77 | 4.87 | 168.75 | 2.16 | 0.073 | 0.000385 |
| 190.0 | 0.95 | 5.78 | 4.83 | 166.39 | 2.19 | 0.075 | 0.000400 |
| 200.0 | 1.00 | 5.78 | 4.78 | 164.04 | 2.23 | 0.077 | 0.000416 |
| 225.0 | 1.12 | 5.78 | 4.66 | 158.26 | 2.31 | 0.083 | 0.000460 |
| 250.0 | 1.25 | 5.79 | 4.54 | 152.60 | 2.39 | 0.089 | 0.000509 |
| 275.0 | 1.37 | 5.80 | 4.42 | 147.05 | 2.48 | 0.096 | 0.000564 |

65.5  
100 ft  
of sediment from

|        |      |      |      |        |      |       |          |
|--------|------|------|------|--------|------|-------|----------|
| 300.0  | 1.50 | 5.60 | 4.30 | 141.62 | 2.38 | 0.103 | 0.000626 |
| 325.0  | 1.62 | 5.61 | 4.19 | 136.32 | 2.68 | 0.111 | 0.000696 |
| 350.0  | 1.75 | 5.62 | 4.07 | 131.15 | 2.78 | 0.120 | 0.000775 |
| 375.0  | 1.87 | 5.63 | 3.96 | 126.11 | 2.89 | 0.130 | 0.000865 |
| 400.0  | 2.00 | 5.64 | 3.84 | 121.22 | 3.01 | 0.141 | 0.000966 |
| 425.0  | 2.12 | 5.66 | 3.73 | 116.47 | 3.13 | 0.152 | 0.001080 |
| 450.0  | 2.25 | 5.67 | 3.62 | 111.88 | 3.26 | 0.165 | 0.001209 |
| 475.0  | 2.37 | 5.69 | 3.52 | 107.46 | 3.40 | 0.179 | 0.001354 |
| 500.0  | 2.50 | 5.91 | 3.41 | 103.22 | 3.54 | 0.194 | 0.001517 |
| 525.0  | 2.62 | 5.94 | 3.31 | 99.16  | 3.68 | 0.210 | 0.001698 |
| 550.0  | 2.75 | 5.96 | 3.21 | 95.31  | 3.83 | 0.228 | 0.001899 |
| 575.0  | 2.87 | 6.00 | 3.12 | 91.68  | 3.98 | 0.246 | 0.002120 |
| 600.0  | 3.00 | 6.03 | 3.03 | 88.28  | 4.13 | 0.265 | 0.002359 |
| 625.0  | 3.12 | 6.08 | 2.95 | 85.15  | 4.29 | 0.285 | 0.002614 |
| 650.0  | 3.25 | 6.12 | 2.87 | 82.28  | 4.44 | 0.306 | 0.002881 |
| 675.0  | 3.37 | 6.18 | 2.80 | 79.70  | 4.58 | 0.326 | 0.003154 |
| 700.0  | 3.50 | 6.24 | 2.74 | 77.43  | 4.71 | 0.345 | 0.003426 |
| 725.0  | 3.62 | 6.31 | 2.69 | 75.46  | 4.84 | 0.363 | 0.003687 |
| 750.0  | 3.75 | 6.39 | 2.64 | 73.79  | 4.95 | 0.380 | 0.003930 |
| 775.0  | 3.87 | 6.48 | 2.60 | 72.42  | 5.04 | 0.394 | 0.004148 |
| 800.0  | 4.00 | 6.57 | 2.57 | 71.31  | 5.12 | 0.407 | 0.004336 |
| 825.0  | 4.12 | 6.67 | 2.55 | 70.43  | 5.18 | 0.417 | 0.004492 |
| 850.0  | 4.25 | 6.78 | 2.53 | 69.76  | 5.23 | 0.425 | 0.004618 |
| 875.0  | 4.37 | 6.89 | 2.51 | 69.25  | 5.27 | 0.431 | 0.004716 |
| 900.0  | 4.50 | 7.00 | 2.50 | 68.87  | 5.30 | 0.436 | 0.004791 |
| 925.0  | 4.62 | 7.12 | 2.50 | 68.59  | 5.32 | 0.440 | 0.004848 |
| 950.0  | 4.75 | 7.24 | 2.49 | 68.38  | 5.34 | 0.442 | 0.004889 |
| 975.0  | 4.87 | 7.36 | 2.49 | 68.23  | 5.35 | 0.444 | 0.004920 |
| 1000.0 | 5.00 | 7.48 | 2.48 | 68.13  | 5.36 | 0.446 | 0.004941 |
| 1025.0 | 5.12 | 7.61 | 2.48 | 68.05  | 5.36 | 0.447 | 0.004957 |
| 1050.0 | 5.25 | 7.73 | 2.48 | 68.00  | 5.37 | 0.447 | 0.004969 |
| 1075.0 | 5.37 | 7.85 | 2.48 | 67.96  | 5.37 | 0.448 | 0.004977 |
| 1100.0 | 5.50 | 7.98 | 2.48 | 67.93  | 5.37 | 0.448 | 0.004983 |
| 1125.0 | 5.62 | 8.10 | 2.48 | 67.91  | 5.37 | 0.449 | 0.004987 |
| 1150.0 | 5.75 | 8.23 | 2.48 | 67.90  | 5.38 | 0.449 | 0.004989 |
| 1175.0 | 5.87 | 8.35 | 2.48 | 67.89  | 5.38 | 0.449 | 0.004992 |
| 1200.0 | 6.00 | 8.48 | 2.48 | 67.88  | 5.38 | 0.449 | 0.004993 |
| 1225.0 | 6.12 | 8.60 | 2.48 | 67.88  | 5.38 | 0.449 | 0.004994 |
| 1250.0 | 6.25 | 8.72 | 2.47 | 67.87  | 5.38 | 0.449 | 0.004995 |
| 1275.0 | 6.37 | 8.85 | 2.47 | 67.87  | 5.38 | 0.449 | 0.004995 |
| 1300.0 | 6.50 | 8.97 | 2.47 | 67.87  | 5.38 | 0.449 | 0.004996 |

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TRAPEZOIDAL CHANNEL ANALYSIS COMPUTER PROGRAM, Version 1.3 (c) 1986

Dodson & Associates, Inc., 7015 W. Tidwell, #107, Houston, TX 77092

(713) 895-8322. A manual with equations & flow chart is available.

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DMJM

PROJECT

PROJECT NO.

6376.00

PAGE

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Vista Nueva

BY:

MK

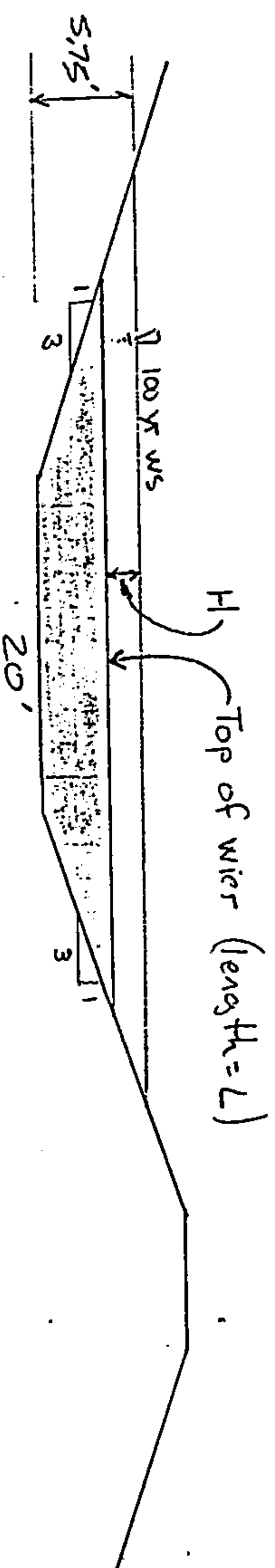
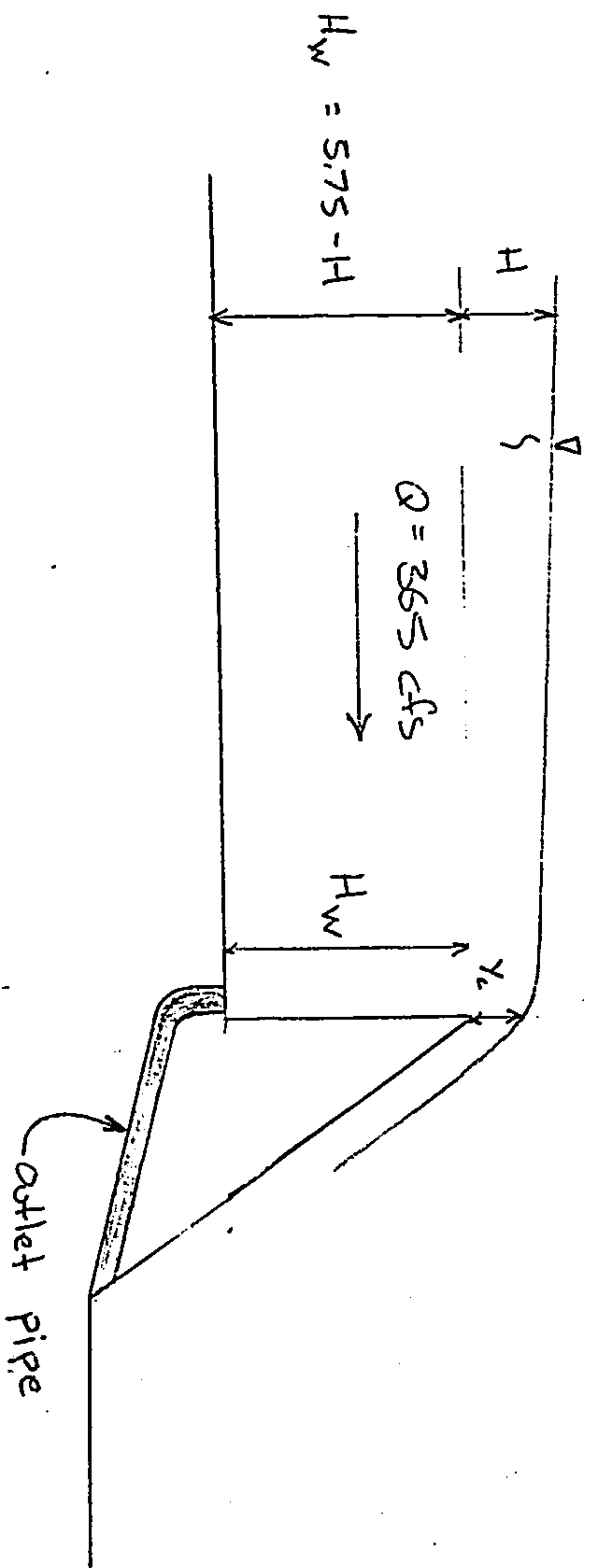
DATE:

3-21-83

SUBJECT

Amole Del Norte Desiltation Facility

Wier Required to produce a flow depth of 5.75 ft. in channel.



T = Top Width = 54.5 ft Maximum

L = Top of Wier = 54.5 - 6 H

$Q = CLH^{1.5}$  Trapezoidal Wier ( $C = 3.5$ )

$Q = C (54.5 - 6H) H^{1.5}$

$H = 1.783013$  ft

$L = 43.802$  ft.

$H_w = 3.97$  ft.

USE  $H_w = 4.00$  ft. height of Wier

5.75  
- 1.75  
4.00

DMJM  
ALBUQUERQUE

PROJECT

Vista Nueva

PROJECT NO.

6376.00

PAGE

SUBJECT

Arbole Del Norte Desiltation Facility

BY:

WK

DATE:

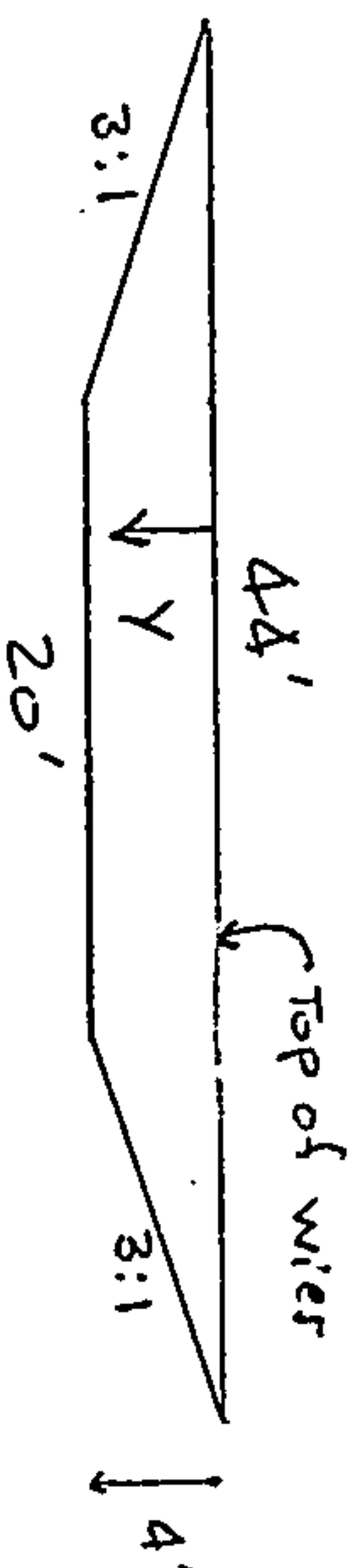
3-21-88

Outlet pipe required to drain desiltation facility

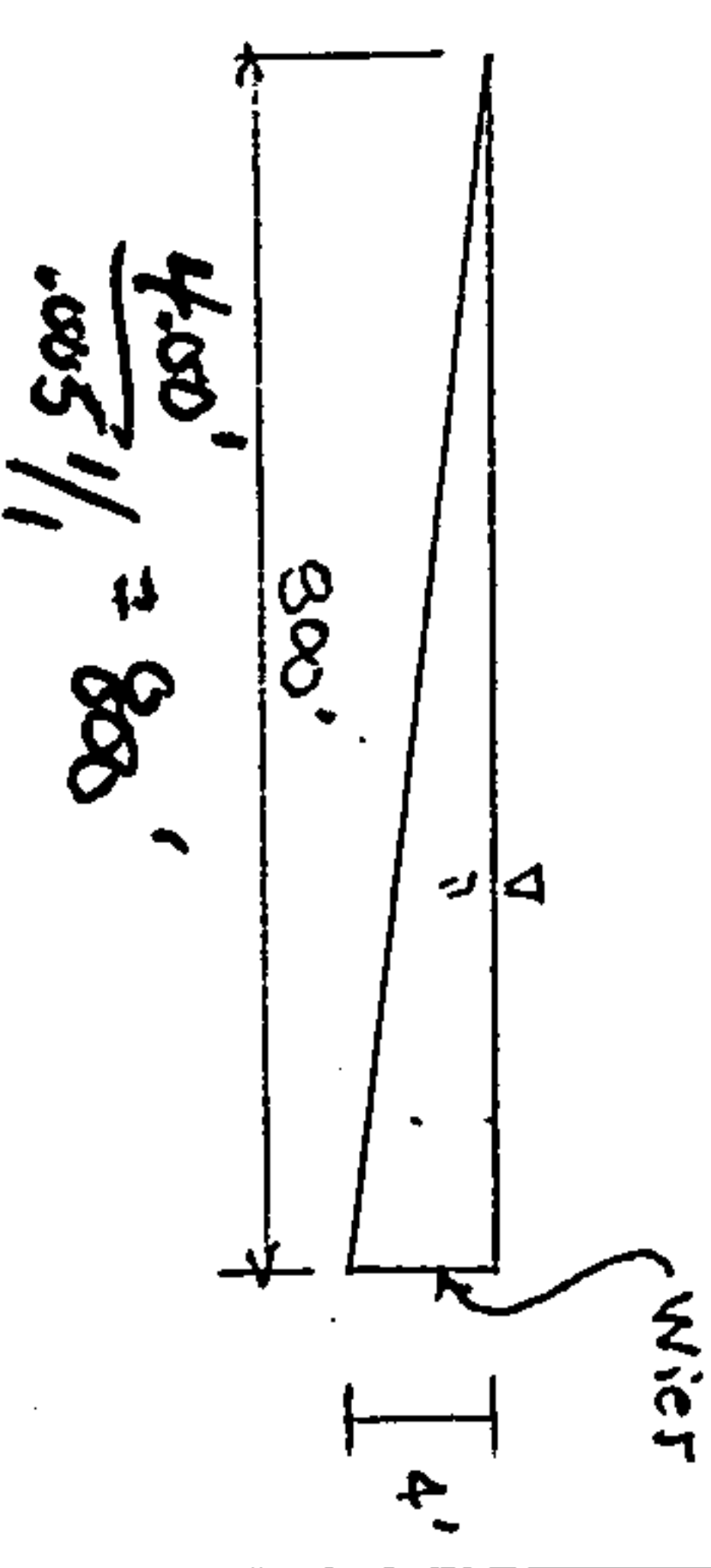
The outlet pipe will be installed to produce a vertical orifice flow to drain the facility when the water surface falls below the top of the wiler

Diameter of outlet pipe & time required to empty facility  
(by method of discharge under a falling head)

Channel End View  
at wiler



Channel Profile View  
behind wiler



Surface area ( $A'$ ) of water behind wiler in terms of depth  $y$  ( $y$  measured from top of wiler down)

$$A = 35200 - 13600 y + 1200 y^2$$

Time required to empty facility using an 8" pipe

$$dt = \frac{A dy}{C a (2gy)^{1/2}}$$

$C$  = orifice coefficient = 0.6

$a$  = area of 8" pipe = 0.349  $\text{ft}^2$

$t$  = time to empty facility (sec)

$$t = \int_0^4 \frac{A dy}{C a (2gy)^{1/2}}$$

$$t = \frac{1}{(0.6)(0.349)(2g)^{1/2}} (14000 - 72533.33 + 15360)$$

$$t = 49280 \text{ sec} = 13.69 \text{ hours} < 24 \text{ hours ok}$$

Use 1-8" diameter vertical orifice outlet pipe

Must use standard design  
perforated pipe

Drainage Ordinance  
Section 7-9-6-F

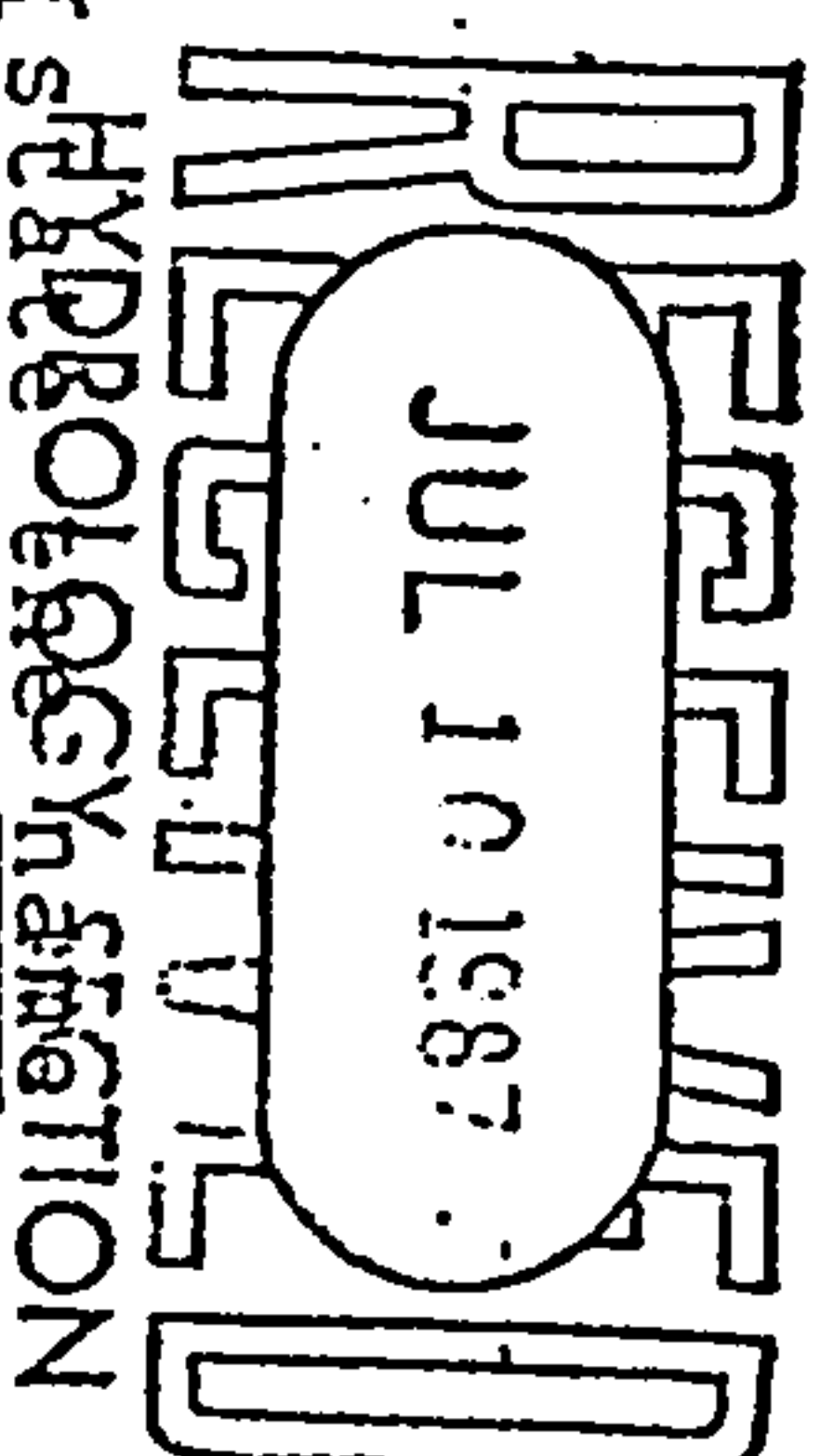
|                    |  |                |  |                    |              |             |
|--------------------|--|----------------|--|--------------------|--------------|-------------|
| <b>DMJM / AHA</b>  |  | <b>PROJECT</b> |  | <b>PROJECT NO.</b> |              | <b>PAGE</b> |
| <b>ALBUQUERQUE</b> |  |                |  | <b>BY:</b>         | <b>DATE:</b> |             |
| <b>SUBJECT</b>     |  |                |  |                    |              |             |

Exhibit No 1

Temporary Drainage Easements

08772571

TEMPORARY EASEMENT



241

This grant of Temporary Easement, between [State of New Mexico] of the present real property owner exactly as shown on the real estate document conveying title to the present owner and state the legal status of the owner, for example, "single person," "husband and wife," "corporation of the State of X," "partner-ship":] Great Western Land Company, a general partnership ("Grantor"), whose address is 7301

Indian School NE, Albuquerque, N.M. 87110

and the City of Albuquerque, a New Mexico municipal corporation ("City"), whose address is P. O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Grantor signs this Temporary Easement.

1. Recital. Grantor is the owner of certain real property located at [give general description, for instance, subdivision, lot and block or street address:] the intersection of Unser Blvd. & Arenal Road SW in Bernalillo County, New Mexico (the "Property").

2. Grant of Easement. The Grantor grants to the City a temporary easement ("Temporary Easement") in, over, upon and across the Property for [state the kind of easement, for example, "public street and highway purposes (including all utilities), "water line," "sewer line," etc.:] Drainage of Public Stormwaters

The Temporary Easement is more particularly described in the attached Exhibit A. [State on the exhibit either the metes and bounds description of the Temporary Easement or state the exact dimensions and location in a manner which would enable a surveyor to locate the Temporary Easement on the ground.]

The grant of the Temporary Easement includes the right of the City to enter upon the Temporary Easement at any time for inspection, installation, maintenance, repair or modification and the right to remove trees, bushes, undergrowth and any other obstacles if the City determines they interfere with the appropriate use of the Temporary Easement. This grant includes the right of access to the easement across the Grantor's adjoining property.

Grantor agrees for itself and its successors in interest that it has been paid in valuable consideration and that the grant of this Temporary Easement is not a gift or donation.

This Temporary Easement is worded pursuant to the provisions of §§47-1-27 to 47-1-44, NMSA 1978 or successor statutes.

3. Ownership Offer. Grantor states that it is the owner in fee simple of the Property and that it has a good lawful right to convey the Property or any part thereof.

4. Binding on Grantor's Property. The grant and other provisions of this Temporary Easement constitute covenants running with the land for the benefit of the City and its successors and assigns until terminated.

5. Termination of Temporary Easement. This Temporary Easement shall remain in effect until [state date of termination or event which will cause Temporary Easement to end:] substitution by an approved permanent easement ("Termination"). Upon Termination and demand by the Grantor the City will execute and deliver to Grantor a release of this Temporary Easement.

6. Indemnification. As a part of the consideration for this grant, subject to the provisions of the New Mexico Tort Claims Act and all other applicable New Mexico laws, the City agrees to save Grantor harmless from any and all liability arising from the City's negligent use of the Temporary Easement for the purposes set forth herein. The City does not agree to save Grantor harmless from any liability which may arise from Grantor's use of the Temporary Easement and the Property.

7. Form Not Changed. Grantor agrees that changes to this form are not binding upon the City unless initialed by the Grantor and approved and signed by the City Legal Department in writing on this form.

CITY OF ALBUQUERQUE

GRANTOR: Great Western Land Co.

Approved:

By: Robert H. Schmidt  
Its: General Partner

By: Robert H. Schmidt  
Title: CITY ENGINEER  
Dated: 7/9/87

CAM

Dated: July 8, 1987

STATE OF \_\_\_\_\_ )  
 ) ss  
COUNTY OF \_\_\_\_\_ )

The foregoing instrument was acknowledged before me this 8 day of July, 1987, by [name of person signing:] R.J. Schaefer, [title or capacity, for instance, of [name of "President" or "Owner":] General Partner the entity which owns the Property if other than the individual signing, for instance, the name of the corporation, partnership, or joint venture:] Great Western Land Company

Katherine M. Schmidt  
Notary Public

OFFICIAL SEAL

KATHERINE M. SCHMIDT

NOTARY PUBLIC - NEW MEXICO

My Commission Expires 3/30/88

(Approved by Legal Dept.  
as to form only-6/15/86)

## LEGAL DESCRIPTION

Two certain parcels of land situate within projected Section 34, T.10N., R.2E., N.M.P.M., Town of Atrisco Grant, within the City of Albuquerque, Bernalillo County, New Mexico and being contained within the U.S. Home Tract as the same is shown and designated on the plat entitled Valley West, filed in the office of the County Clerk of Bernalillo County, New Mexico, on April 17, 1980 in Book C 16, Page 144 and being more particularly described as follows.

Parcel A: A 50 foot wide easement within the southerly 50 feet of the said Valley West tract between the tract's southwest property corner and the westerly right-of-way of the A.M.A.F.C.A. Parcel A-1-4, said easement having a course of S 81°01'42" E, 1155.53 feet along said common southerly line and containing 57,776 square feet of land (1.3264 acre) more or less.

Parcel B: A 50 foot easement, the centerline of which begins on the westerly property line of the said Valley West tract from whence the northwest corner of said tract bears N 08°49'13" E, 75.00 feet distant; thence S 23°25'35" E, 627.91 feet; thence S 57°30'00" E, 350.00 feet; thence S 51°15'00" E, 430.00 feet to a point on the northwesterly line of A.M.A.F.C.A. Parcel A-1-15 and end of this parcel of land and containing 70,395 square feet of land (1.6161 acres) more or less. The side lines of said easement to be extended or shortened to meet at angle points and terminate at property lines.

Said temporary easements contain a total of 128,171 square feet of land (2.9424 acres) more or less and shall remain in place until said tract is replatted or easement is terminated by a recorded termination agreement.

Bearing Base: The same as shown on the recorded plat of the said Valley West tract.

Thomas O. Isaacson, P.E. & L.S. # 3895  
128 Monroe St. NE  
Albuquerque, N.M. 87108

Date

7/8/87

FILED OF NEW MEXICO  
COUNTY OF BERNALILLO  
FOR RECORD

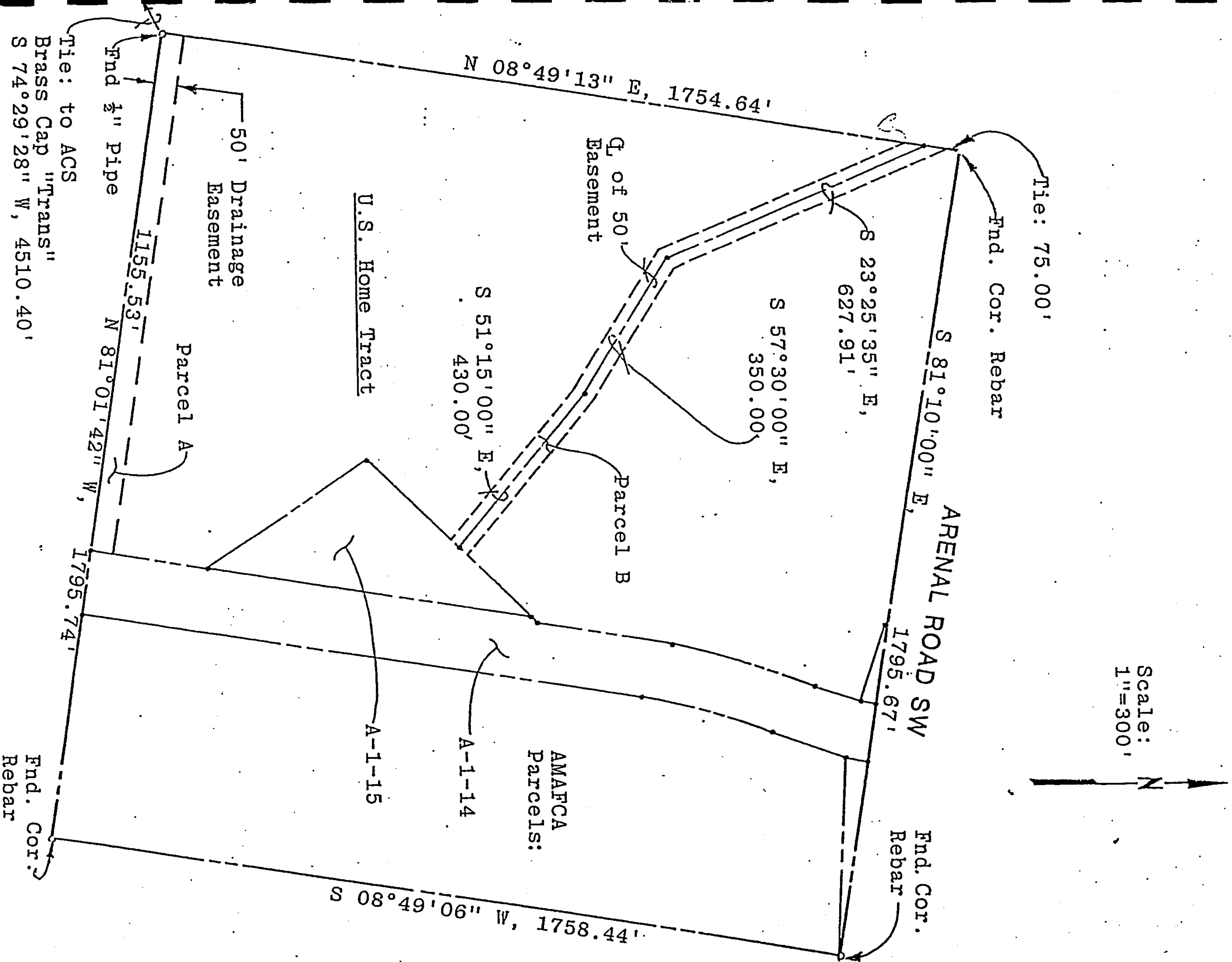
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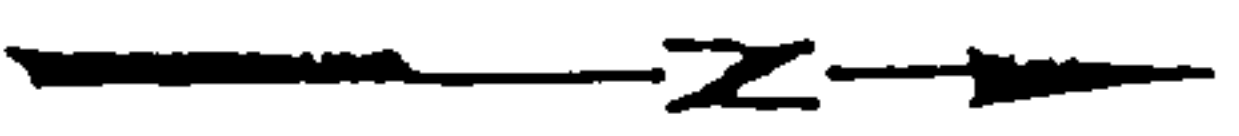
BY MISS M. DAVIS  
CLERK OF BERNALILLO COUNTY

EXHIBIT 'A'

TEMPORARY DRAINAGE EASEMENT



Scale:  
1"=300'



DRAINAGE REPORT

FOR

VISTA NUEVA SUBDIVISION

February, 1990

Revised March 5, 1990

DRAINAGE REPORT

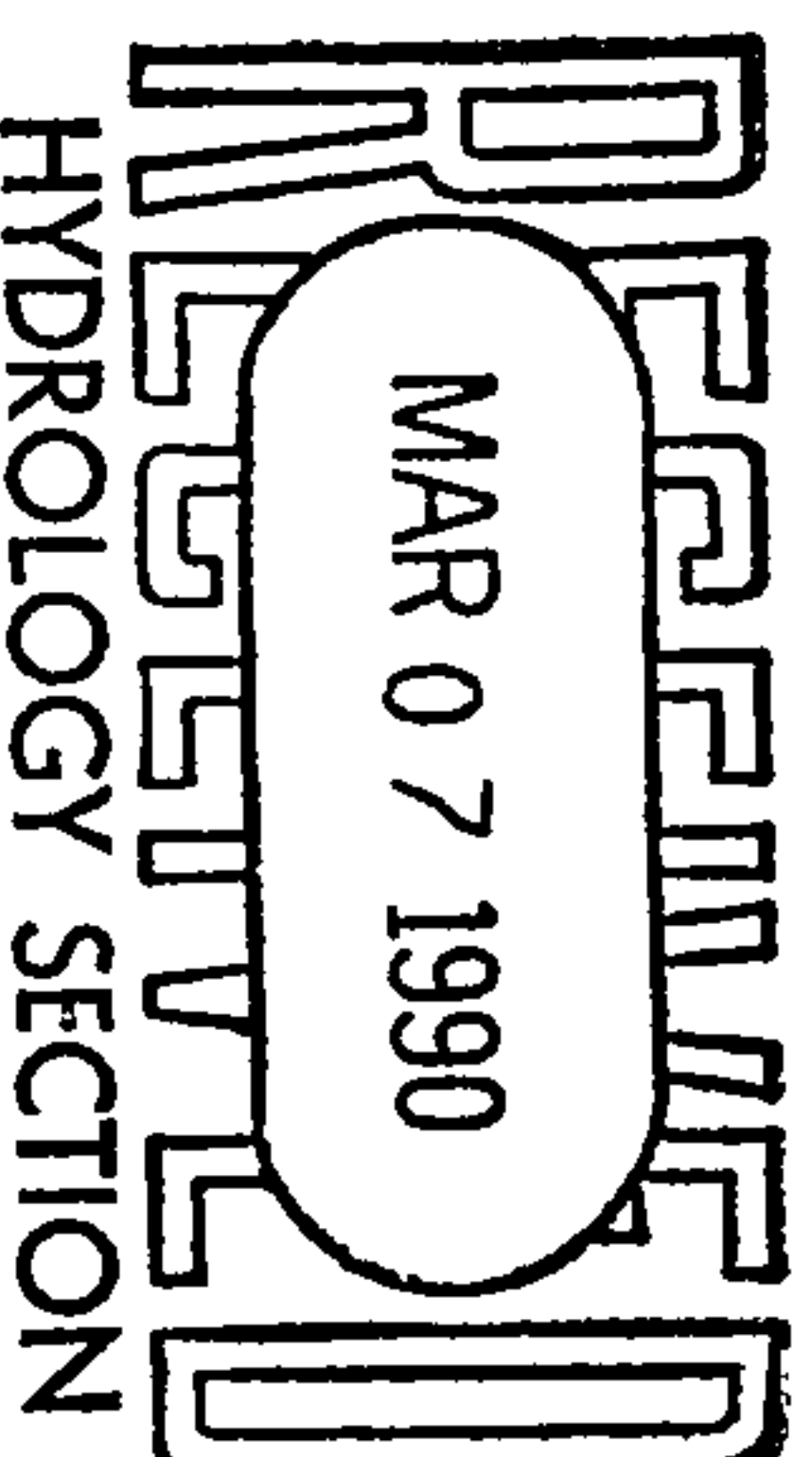
FOR

VISTA NUEVA SUBDIVISION

February, 1990

Revised March 5, 1990

*data was  
with  
DWLJM*



Prepared For: Presley Company of New Mexico  
1909 Carlisle Blvd., NE  
Albuquerque, New Mexico 87110  
(505) 265-5811

Prepared By: Bordenave Designs  
7100 Louisiana, NE A106  
Albuquerque, New Mexico 87109  
(505) 823-1344

I, Jean J. Bordenave, hereby  
certify that this report was  
prepared by me and that I am  
registered as a Professional  
Engineer in the State of New  
Mexico.



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| Offsite Drainage Map           | Pocket 2 |
| Onsite Drainage Map            | Pocket 2 |
| Amole del Norte P&P            | Pocket 2 |

PURPOSE:

The purpose of this report is to present the method for controlling surface runoff from the proposed development in a manner which is acceptable to the City of Albuquerque and the Albuquerque Metropolitan Flood Control Authority (AMAFCA). This report determines the runoff resulting from a 100-year/6-hour and 10-year/6-hour frequency storms falling within the project site and contributing drainage basins under existing and developed conditions.

In addition, the purpose of this report is to ensure the developer the project site will be protected from storm runoff and that the project will not increase the flooding potential to adjacent properties and downstream areas.

LOCATION and DESCRIPTION:

The proposed development is located southwest of the intersection of Unser Boulevard S.W. and Arenal Road S.W. The site is more particularly described as Tracts 'A1' of Vista Nueva and Tract 'C' of Albuquerque South, Unit 1. The location of the site is graphically depicted on Vicinity Map M-10 (Figure 1).

The project site contains approximately 68 acres and is presently undeveloped. The natural topography slopes from west to east at a grade of approximately two percent (2%) with a



small area having a slope of approximately six percent (6%) in the northwest portion of the tract. The major soil group present within the project site is Bluepoint with a small area of Madurez-Wink association. The USDA Soil Conservation Service has classified these two soil series as hydrologic types 'A' and 'B' respectively. Plate 40 of the Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, 1977 graphically depicts the project site (Figure 2).

EXISTING DRAINAGE CONDITIONS:

The project site is currently undeveloped. A small area in the northeast corner of the site is inundated by the 100-year storm as indicated in FEMA Flood Map panel 33 (figure 3). An extensive offsite area discharges its runoff across the site. The offsite drainage basins affecting the site are graphically depicted in figure 4 (Map pocket). Runoff from the offsite drainage basins is intercepted by the site at two points; at the terminus of Sapphire Road on the site's west property line, and at the terminus of Kimela Drive on the site's west property line. The offsite flows then continue downstream through the site and the property immediately to the east within existing drainage easements (Exhibit #1 appendix) following natural drainage courses to the Amole Del Norte Diversion Channel right-of-way. Runoff produced by the site

(Joins sheet 30)



2 Miles

T. 9 N. | T. 10 N.

Scale 1:24000

(Joins sheet 39)

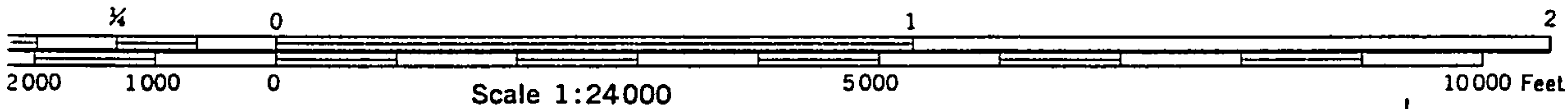
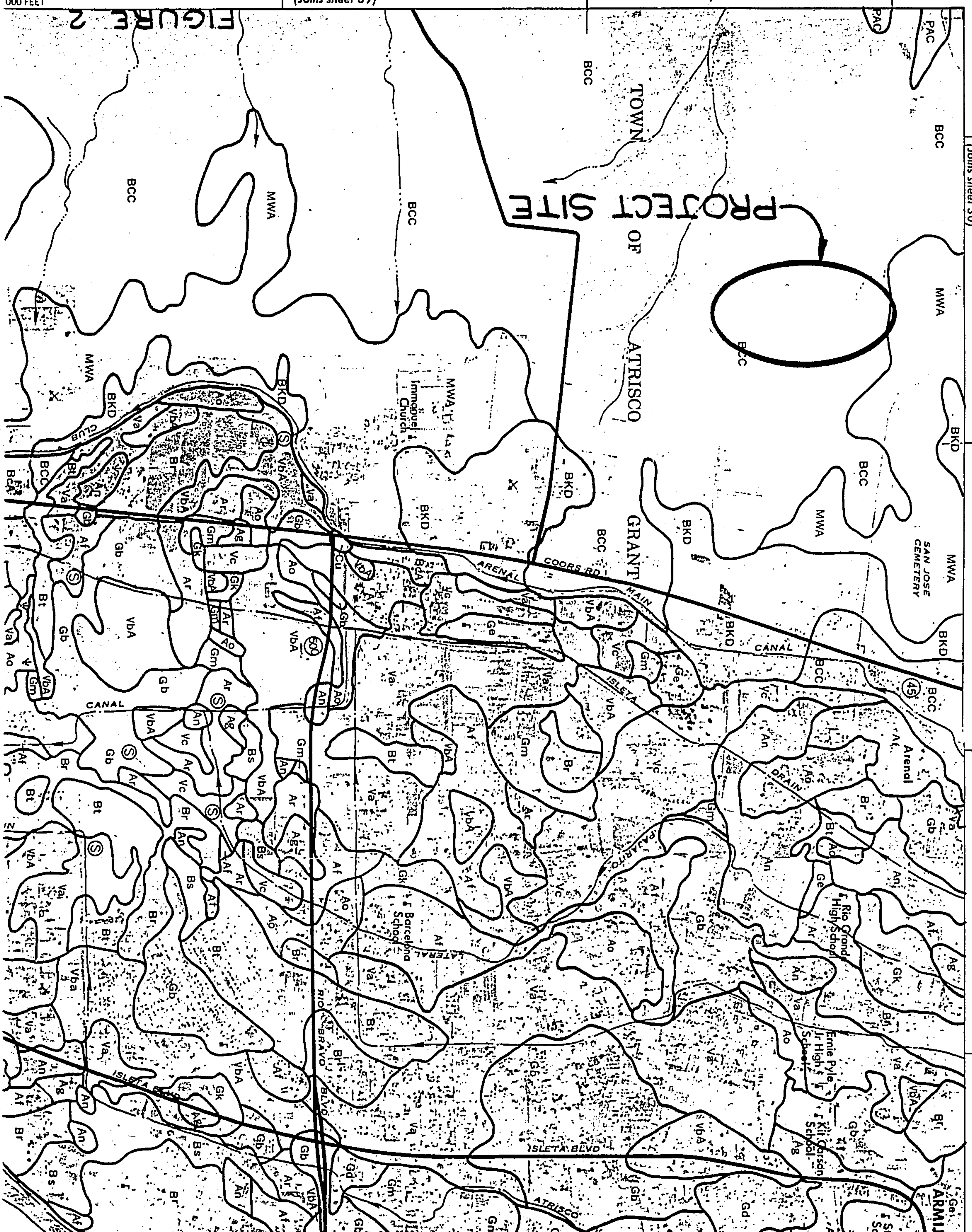


FIGURE 2

PROJECT SITE





SCALE: 1"=500'



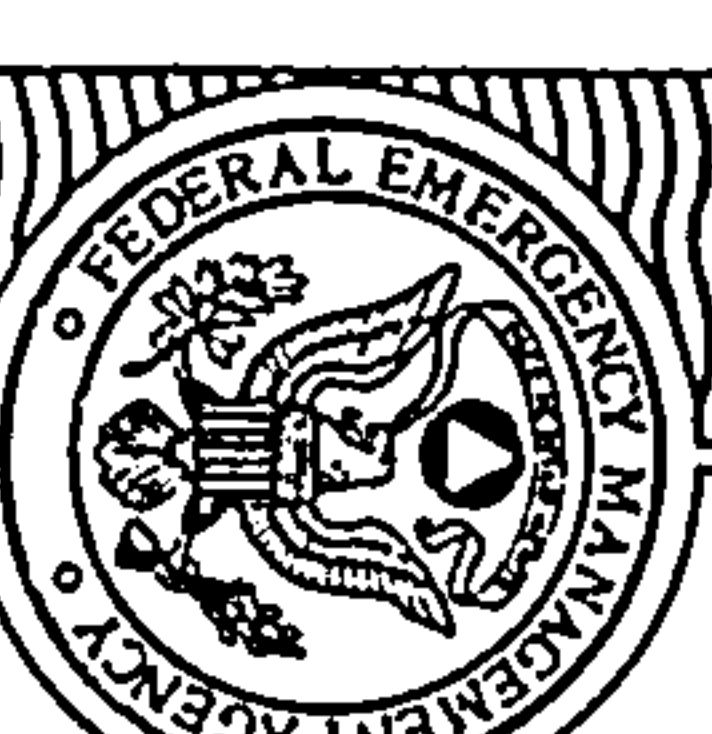
NATIONAL FLOOD INSURANCE PROGRAM

# FLOODWAY

FLOOD BOUNDARY AND  
FLOODWAY MAP

CITY OF  
ALBUQUERQUE,  
NEW MEXICO  
BERNALILLO COUNTY

PANEL 33 OF 50

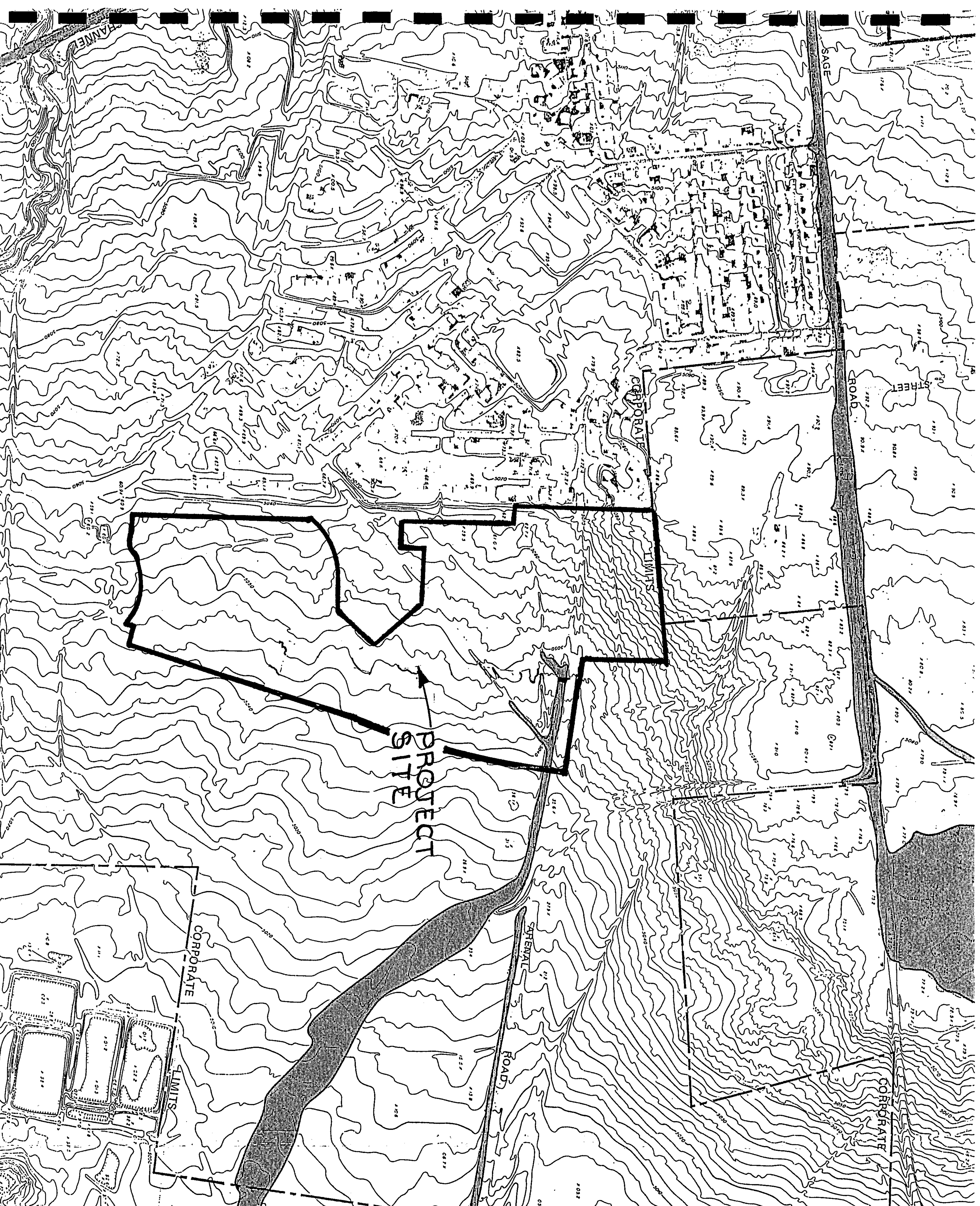


EFFECTIVE DATE:  
OCTOBER 14, 1983

COMMUNITY-PANEL NUMBER  
350002 0033

Federal Emergency Management Agency

FIGURE 3



itself exists as overland sheet flow until it is captured by one of the natural drainage courses and continues downstream to the Amole Del Norte Diversion Channel right-of-way.

PROPOSED DRAINAGE CONDITIONS:

The project site will be developed into a single family residential subdivision with lots ranging in size from 55x85' to 65x120'. The portion of the site north of Kimela Drive (Phase I) could be constructed prior to the portion south of the street (Phase II) with no effect on drainage. All curb and gutter within the site will be mountable roll type unless the curb depth exceed 0.53 feet in which case standard curb and gutter will be used. Storm runoff from both phases exits the site and passes beneath the Unser Blvd. right-of-way via underground storm drain systems located at Sapphire Road at Unser Blvd. and Kimela Drive at Unser Blvd. The storm runoff is then discharged into temporary earth lined open channels that daylight into existing drainage courses. The downstream area will have a blanket drainage easement to the Amole Del Norte Division Channel right-of-way. There the flow is detained in a desiltation facility before being released into the proposed concrete lined channel that has been recently let to bid.

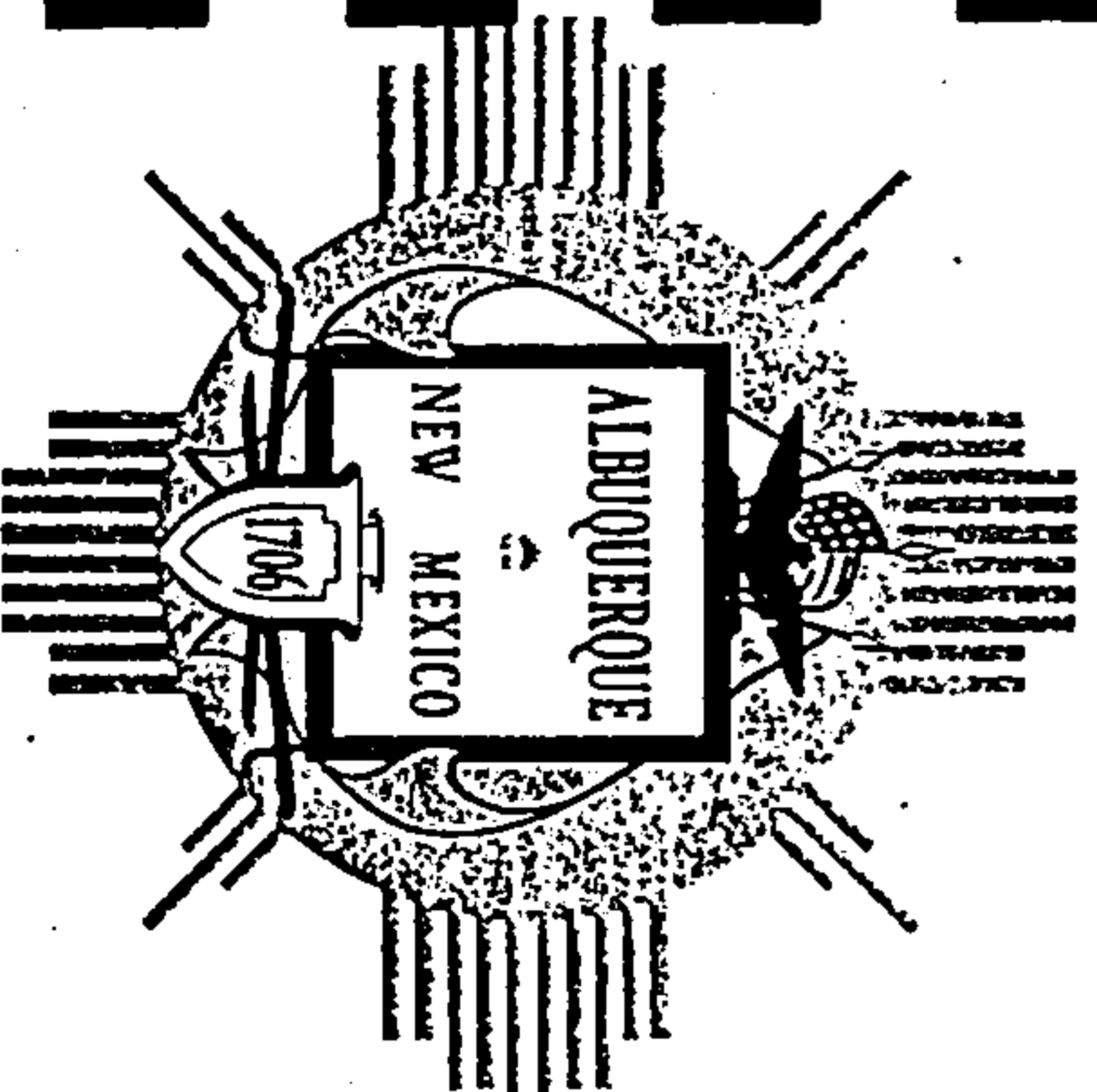
CONCLUSION:

1. All criteria established by the Drainage Ordinance and the Memoradum of Understanding dated \_\_\_\_\_ have been met.
2. The Flood Hazard designation of a small portion of the site will be eliminated upon development of this project. a request for a Letter of Map Revision (LOMR) will be prepared and submitted to the Federal Emergency Management Agency (FEMA) so the designation revision to the FEMA Flood Maps can be made.
3. No onsite detention is required.
4. An underground storm drain system will be required to pass storm runoff beneath the Unser Blvd. ROW.
5. Temporary open channels are required to direct flows to natural channels across the property to the east of the project site to the Amole Del Norte Diversion Channel.
6. A temporary desiltation facility is required at the Amole Del Norte Diversion Channel before discharging storm runoff into the concrete lined channel. This facility will be constructed at the time of development of the Project Site.
7. All offsite drainage basins affecting the project site as well as onsite basins are analyzed using SCS methods for Volumes and Rational method for peak flows. All offsite areas are assumed to be in a totally developed condition.

8. The Developer will be responsible for design of the onsite and offsite facilities including the offsite channels and desiltation facility. The Developer will be responsible for construction of onsite facilities up to and including the inlet and headwalls of the pipes crossing Unser Blvd. and for the purchase of the crossing pipe material. In addition, the developer will be responsible for obtaining easements for offsite drainage facilities.

10. The City of Albuquerque will be responsible for construction of the pipes crossing Unser Blvd. and all facilities downstream therefrom. This responsibility shall be limited to a \$60,000 construction cost. The Developer shall be responsible for any additional construction cost.

11. The City of Albuquerque shall be responsible for maintaining the onsite and downstream facilities.



# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR

CHIEF  
ADMINISTRATIVE OFFICER

DEPUTY CAO  
PUBLIC SERVICES

DEPUTY CAO  
PLANNING/DEVELOPMENT

KEN SCHULTZ

GENE ROMO

FRANK MARTINEZ

BILL MUELLER

April 11, 1988

Mike Kibbee

DMJM

6501 Americas Parkway, NE Suite 690  
Albuquerque, New Mexico 87112

RE: REVISED DRAINAGE REPORT SUBMITTAL OF VISTA NUEVA SUBDIVISION  
RECEIVED MARCH 31, 1988 FOR PRELIMINARY PLAT APPROVAL (M-10/D5A)

Dear Mr. Kibbee:

The above referenced submittal dated March 31, 1988 is approved for Preliminary Plat approval and infrastructure list sign-off at the D.R.B.

The final detailed Grading Plans of both phases will need to be submitted reviewed, and approved prior to Work Order Construction drawings and Final Plat approval.

Final Plat sign-off by the City Engineer will also require the following items:

1. An executed Drainage Covenant for the Developers maintenance responsibilities of the earth channels within the temporary downstream drainage easements and the desiltation pond.
2. An executed Subdivision Improvements Agreement.
3. The required infrastructures either built or financially guaranteed.
4. A private drainage easement must be provided on the plat between the school site and street "A". This easement shall be a minimum of 10 feet wide.

If you should have any questions, call me at 768-2650.

Cordially,

*Roger A. Green PE*

Roger A. Green, P.E.  
C.E./Hydrology Section

RAG/bsj

xc: Rick Semones, Presley Company

AN EQUAL OPPORTUNITY EMPLOYER

CITY OF ALBUQUERQUE  
MUNICIPAL DEVELOPMENT DEPARTMENT  
ENGINEERING DIVISION/DESIGN HYDROLOGY SECTION

CONFERENCE RECAP

DRAINAGE FILE/ZONE ATLAS PAGE NO.:

11-10/105A

DATE:

11-4-87

PLANNING DIVISION NOS: EPC:

DRB:

5-87-36, V-87-75

SUBJECT:

Residential - Albuquerque South

STREET ADDRESS (IF KNOWN):

Sapphire & Kinola

SUBDIVISION NAME:

Tract A & C of Albuquerque South Unit 1

APPROVAL REQUESTED:

☒ PRELIMINARY PLAT

SITE DEVELOPMENT PLAN

OTHER

☒ FINAL PLAT

BUILDING PERMIT

ROUGH GRADING

WHO

REPRESENTING

ATTENDANCE:

Rick Simmons

Presley Thomas

Mike Kibbee

DMJM

Sale Barberene

DMJM

Roger Green

City Hydrology

FINDINGS:

1. An approved Grading & Drainage Plan is required with enough detail to identify all required infrastructure. A Final Detail Grading and Drainage Plan is required prior to sign off on Final Plat or Water for Construction Plans.
2. Since Plat was a Build Land Variance, there may be downstream infrastructure requirements which must be built or financially guaranteed with this proposed subsequent subdivision. Temporary improvements with maintenance covenants may be used in accordance with the approved Conceptual Grading and Drainage Plans File No. M-10/DS. Before to previous pre-design dated 5-4-87 for Build Land Plat. (M-10)
3. Burial must be taken across under to the Amado Del Norte Diversion Channel L.O.U., with permanent improvements to the Channel and temporary to the Amado Del Norte
4. Final Drawings Plans, Report must be of sufficient detail for a Final Map Amendment. Submittal will be forwarded to FEMA by City Hydrology.

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED:

Roger Green

SIGNED:

Don Barberene

TITLE:

City Engineer

TITLE:

Div. Mgr.

DATE:

11-4-87

DATE:

11/4/87

VISTA NUEVA

8/05

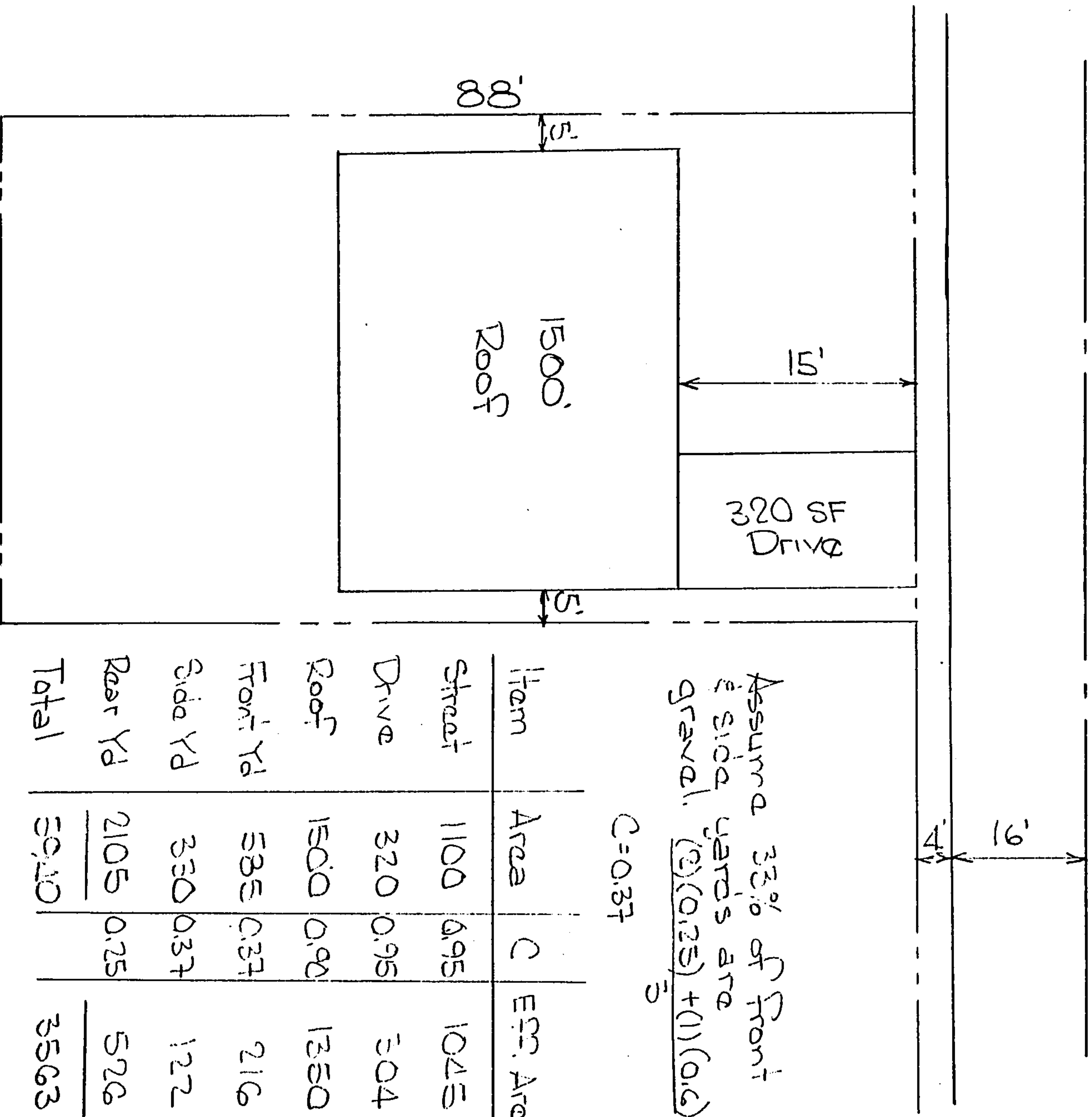
9/89

JB

11

# INTERNAL DRAINAGE

## Design Lot South of KIMELA



55'

$C = 0.60$

1



INTERNAL DRAINAGE

BASIN FLOW RATES

$t_c = t_{c(\text{previous segment})} + \text{segment length} / \text{segment velocity}$

= 10 minutes minimum

$I = (2.2)(6.84)t_c^{-0.51}$

$Q_{100} = CIA$

$Q_{10} = 0.657 Q_{100}$

d & v from DPM Vol #2 Platas 22.3 D1 & D2

| ANAL. POINT | CONTRIBUTING BASINS | SEGMENT SLOPE (VELOCITY) |       | SEGMENT LENGTH | t <sub>c</sub> | I    | C    | A     | Q <sub>100</sub> | Q <sub>10</sub> | d <sub>100</sub> |     | V <sub>100</sub>  | REMARKS |
|-------------|---------------------|--------------------------|-------|----------------|----------------|------|------|-------|------------------|-----------------|------------------|-----|-------------------|---------|
|             |                     | ft/s                     | in/hr |                |                |      |      |       |                  |                 | ft               | fps |                   |         |
| 1           | A1                  | .008                     | 4.65  | 600            | 10             | 4.65 | 0.6  | 2.41  | 6.7              | 4.4             | 0.33             | 2.1 | 32' Street        |         |
| 2           | A1, A2              | .018                     | 4.65  | 500            | 10             | 4.65 | 0.6  | 4.98  | 13.9             | 9.1             | 0.37             | 3.2 | "                 |         |
| 2           | A1-A3               | .005                     | 4.65  | -              | 10             | 4.65 | 0.6  | 9.04  | 25.2             | 16.6            | 0.53             | 2.6 | "                 |         |
| 3           | A4                  | .018                     | 4.65  | 600            | 10             | 4.65 | 0.6  | 3.01  | 8.4              | 5.5             | 0.31             | 2.8 | "                 |         |
| 3           | A1-A5               | .005                     | 4.65  | 200            | 10             | 4.65 | 0.6  | 12.76 | 35.6             | 23.4            | 0.61             | 3.0 | "                 |         |
| 4           | AC                  | .020                     | 4.65  | 700            | 10             | 4.65 | 0.6  | 3.42  | 9.5              | 6.3             | 0.33             | 2.8 | "                 |         |
| 4           | A1-A7               | .005                     | 4.43  | 250            | 11             | 4.43 | 0.6  | 14.66 | 39.0             | 25.6            | 0.62             | 3.1 | "                 |         |
| 5           | A8                  | .021                     | 4.65  | 800            | 10             | 4.65 | 0.6  | 5.36  | 15.0             | 9.8             | 0.36             | 3.4 | "                 |         |
| 5           | A1-A9               | .005                     | 4.23  | 200            | 12             | 4.23 | 0.6  | 20.73 | 52.6             | 34.6            | 0.70             | 3.4 | "                 |         |
| 6           | A10                 | .020                     | 4.65  | 400            | 10             | 4.65 | 0.6  | 2.80  | 7.8              | 5.1             | 0.31             | 3.0 | "                 |         |
| 6           | A1-A11              | .007                     | 4.06  | 300            | 13             | 4.06 | 0.6  | 24.65 | 60.0             | 39.5            | 0.70             | 4.1 | 32' Street        |         |
| 6           | OFF 2               | .019                     | 4.65  | 800            | 10             | 4.65 | 0.6  | 7.24  | 20.2             | 13.3            | -                | -   | SCHOOL            |         |
| 6           | A12+OFF 2           | .008                     | 4.65  | 900            | 10             | 4.65 | 0.6  | 11.49 | 32.1             | 21.1            | 0.53             | 3.3 | 32' Street        |         |
| A           | OFF 1               | .028<br>(.75)            | 3.66  | 3300           | 16             | 3.66 | 0.4  | 56    | 82               | 54              | 0.62             | 6.0 | 40' Street        |         |
| B           | A1-A15+OFF          | .013                     | 3.27  | 1100           | 20             | 3.27 | 0.49 | 105   | 168              | 111             | -                | -   | 40' Street (sump) |         |
| 7           | B1                  | .018                     | 4.65  | 1200           | 10             | 4.65 | 0.55 | 9.54  | 24.4             | 16.0            | 0.42             | 3.7 | 32' Street        |         |
| 7           | B1-B2               | .005                     | 4.65  | -              | 10             | 4.65 | 0.55 | 12.31 | 31.5             | 20.7            | 0.58             | 2.9 | "                 |         |
| 7A          | B1-B3               | .005                     | 4.65  | 250            | 10             | 4.65 | 0.55 | 13.96 | 35.7             | 23.5            | 0.61             | 3.0 | 32' Street        |         |

Vista Nueva

8705 3/90  
JJB 14

# INTERNAL FLOW RATES

## Basin Flow Rates (cont.)

| ANAL. POINT | CONTRIBUTING BASINS     | SEGMENT SLOPE (SEG. VELOCITY) |      | SEGMENT LENGTH | Lc           | I    | C    | A    | Q <sub>100</sub> | Q <sub>10</sub> | d <sub>100</sub> | V <sub>100</sub> | REMARKS              |
|-------------|-------------------------|-------------------------------|------|----------------|--------------|------|------|------|------------------|-----------------|------------------|------------------|----------------------|
|             |                         | ft/ft                         | ft   |                |              |      |      |      |                  |                 |                  |                  |                      |
| C           | Off 3                   | 0.034<br>(5)                  | 5000 | 17             | 4.77<br>3.55 | 0.69 | 0.40 | 116  | 165              | 108             | 0.71             | 9.0              | 40' street           |
| C           | C1                      | .050                          | 250  | 10             | 4.65         | 0.55 | 0.55 | 2.5  | 6.4              | 4.2             | 0.26             | 4.0              | 32' street           |
| C           | C1+Off3                 | .034                          | -    | 17             | 3.55         | 0.40 | 0.40 | 119  | 169              | 111             | 0.72             | 9.0              | 40' street           |
| E           | Off 4                   | (45)                          | 950  | 10             | 4.65         | 0.55 | 0.55 | 7.3  | 187              | 12.3            | 0.34             | 5.1              | -                    |
| 8           | C3+Off4                 | .050                          | -    | 10             | 4.65         | 0.55 | 0.55 | 10.4 | 26.6             | 17.5            | 0.37             | 5.4              | 32' street           |
| 8           | C1-C3+Off               | .033                          | 400  | 18             | 3.45         | 0.42 | 0.42 | 129  | 187              | 123             | 0.80             | 8.5              | 40' street           |
| 9           | C4                      | .035                          | 400  | 10             | 4.65         | 0.55 | 0.55 | 2.9  | 7.4              | 4.9             | 0.28             | 3.5              | 32' street           |
| 9           | C1-C5+Off               | .020                          | 300  | 19             | 3.35         | 0.42 | 0.42 | 132  | 186              | 122             | 0.90             | 7.3              | 40' street           |
| 10          | C1-C6+Off               | .020                          | 300  | 19             | 3.35         | 0.42 | 0.42 | 134  | 189              | 124             | 0.90             | 7.3              | 40' street           |
| D           | C1-C9+<br>B1-B3+<br>Off | .020                          | 350  | 20             | 3.27         | 0.45 | 0.45 | 204  | 300              | 197             | N.A.             | N.A.             | 40' street<br>(Sump) |

NOTES: 1. OFFSITE AREAS 1 & 3 HAVE BEEN ASSIGNED RUNOFF COEFFICIENTS OF 0.40 IN CONFORMANCE WITH THE REPORTS PREPARED BY THE DESIGNERS OF THESE SUBDIVISIONS. (REAR YARD PONDING)

2. OFFSITE AREA 5 HAS BEEN ASSIGNED A RUNOFF COEFFICIENT OF 0.4. THE AREA IS PRESENTLY UNDEVELOPED. UPON DEVELOPMENT EITHER A REALIGNED OUTFALL TO THE ADJACENT DEL NORTE OR CONTROLLED DISCHARGE WILL BE REQUIRED FROM THIS AREA. 43 ACRES

3. OFFSITE AREA C9, HAS BEEN ASSIGNED A RUNOFF COEFFICIENT OF 0.85. IT IS ANTICIPATED THAT THIS PARCEL WILL BE DEVELOPED AS A COMMERCIAL TRACT. 9.4 ACRES

VISTA NUEVA

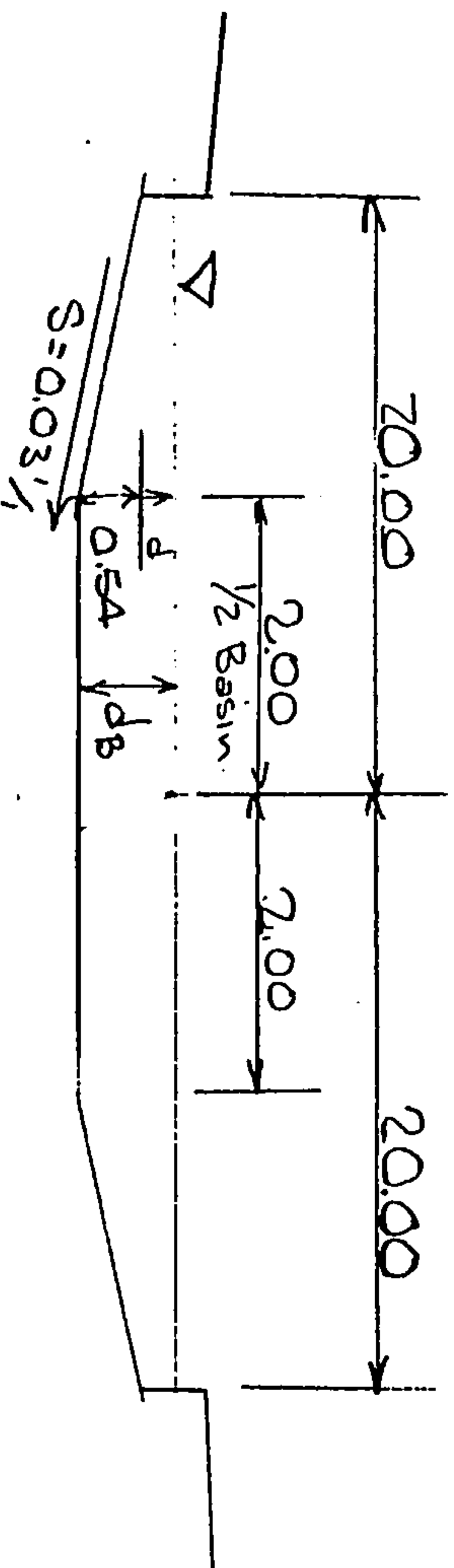
8705 9/89  
JJB 15

# INTERNAL DRAINAGE

## UNSER / LIMELA INTERSECTION

$Q = 168 \text{ cfs}$   
Street Slope =  $0.018 \text{ ft/ft}$   
Cross Slope =  $0.03 \text{ ft/ft}$   
Manning's  $n = 0.017$   
Basin Width =  $4'$

~~$n = 0.017$~~   
Verify



Normal Depth & Velocity

$$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$$

$$A R^{2/3} = 14.33 = (11.88 + 40d) \left( \frac{11.88 + 40d}{40} \right)^{2/3}$$

$$= (11.88 + 40d)(0.44515 + d)^{2/3}$$

by trial & error

$$d = 0.19'$$

$$d_B = 0.73$$

~~Capacity~~  
~~1.2' depth~~  
 ~~$Q = 428 \text{ cfs}$~~

## MEDIAN BASIN

Assume

1.  $4'0''$  wide Grated Channel

2. Grate Opening Area =  $A = 40\%$  of Total Area

3. 10% of opening area is plugged

4. Grate operates as an orifice w/  $h = 0.55 \text{ avg}$  and  $C = 0.5$

$$5. Q = C a \sqrt{2gh}$$

VISTA Nueva

8705  
JJB

9/89  
16

INTERNAL DRAINAGE

UNSER/KIMELA INTERSECTION (cont)

GRATE

$$Q = 168 = 0.5 a \sqrt{2g(0.55)}$$

$$a = 56.5 \text{ ft}^2$$

$$A = a / 0.9 = 63 \text{ ft}^2$$

$$\text{BASIN SIZE} = 63 / 0.40 = 157 \text{ ft}^2$$

$$\text{USE} = 4' \times 40'$$

THIS  
Sump  
A  
Condition  
 $h_1$   
 $h_2$

OUTLET PIPE

$$Q = 168 \text{ cfs}$$

inlet control, headwall, HW = 6' ±

$$\text{USE } 54" \times 110' \text{ w/ HW/D} = 1.5 \text{ \& } s = 0.50\%$$

CATCH BASIN

4' wide x 40' long inside

2' deep @ west end

6' 9" deep @ east (outlet end)

INSTALL Single Type C Catch Basin at outside  
curbs in bottom of sump to intercept  
nuisance flows.

VISTA NUEVA

8705

9/89

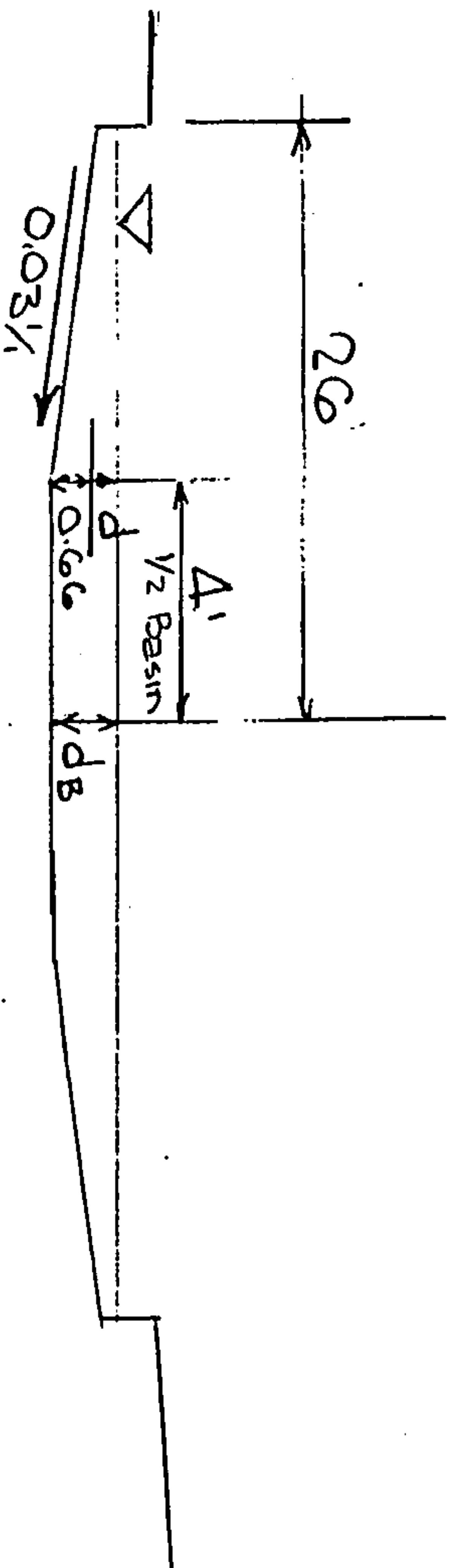
JJB

17

# INTERNAL DRAINAGE

## UNSER / SAPPHIRE INTERSECTION

Q = 300 cfs  
 Street Slope = 0.014 1/1  
 Cross Slope = 0.03 1/1  
 Mannings n = 0.017  
 Basin Width = 4'



Normal Depth & Velocity

$$Q = \frac{1.486}{n} A D^{2/3} S^{1/2}$$

$$\Delta D^{2/3} = 29.01 = ((19.80 + 52d) ((19.80 + 52d) / 52)^{2/3})^{2/3}$$

$$= (19.80 + 52d) (0.38077 + d)^{2/3}$$

by trial & error

$$d = 0.32 \text{ ft.}$$

$$d_B = 0.98 \text{ ft.}$$

MEDIAN BASIN

USE ASSUMPTIONS PER KIMELY/UNSER EXCEPT

$$\#4, h = 0.82 \text{ ft}$$

# INTERNAL DRAINAGE

## UNSEEP SAPPHIRE INTERSECTION

GATE

$$Q = 300 = 0.58 \sqrt{2g(0.82)}$$

$$a = 82.57 \text{ ft}^2$$

$$A = a/0.9 = 91.7 \text{ ft}^2$$

$$\text{BASIN SIZE} = 92/0.40 = 229 \text{ ft}^2$$

Use 8' x 30'

Is this  
Sump Condition

$$Q = C L H^{3/2}$$

$$Q = 300 (19) (0.82)^{3/2}$$

$$Q = 120 \text{ cfs}$$

OUTLET PIPE

$$Q = 300 \text{ cfs}$$

inlet control, headwall, HWL = 6' ±

$$\text{Use } 2.54' \times 110' \text{ w/HW/D} = 1.35 \text{ \& } S = 0.5\%$$

CATCH BASIN

118'

2 - 4' wide x 30' long inside

2' deep @ west end

6' - 0" deep @ east (outlet) end

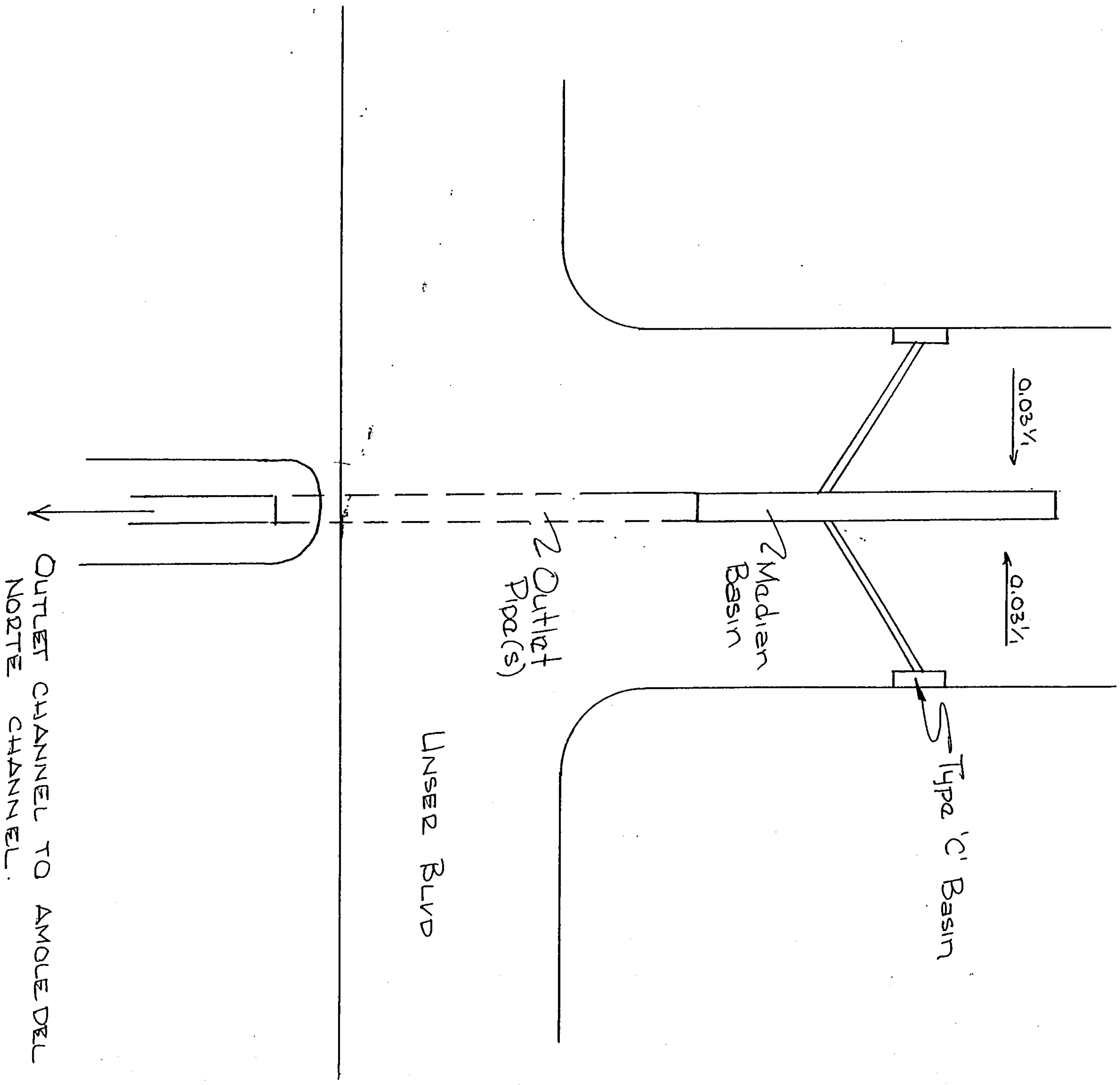
INSTALL Single Type C Catch Basins at  
outside curbs in bottom of sump to  
intercept nuisance flows.

15TA Nueva

8705 9/89  
JJB 19

# INTERNAL DRAINAGE

UNSEB w/ KIMELA OR SAPPHIRE



✓ STA Nueva

8705

02/90

JJB

20

# INTERNAL DRAINAGE

## CHANNEL FROM SCHOOL

$$Q = 20.2 \text{ cfs}$$

inlet, use weir

$$Q = CLH^{3/2}$$

$$w/C = 2.6$$

$$H = 1'$$

$$20.2 = 2.6 L (1)^{3/2}$$

$$L = 7.8 \text{ ft}$$

use 10 ft w/ 10 ft wide channel to cul de sac.  
use 1 ft deep to side walk.

## CHANNEL FROM GRAND TETON CUL DE SAC TO SAPPHIRE

$$Q = 35.7 \text{ cfs}$$

inlet, use weir

$$Q = CLH^{3/2}$$

$$w/C = 2.6$$

$$H = 0.66'$$

$$35.7 = 2.6 L (0.66)^{3/2}$$

$$L = 25' \quad , \quad \text{velocity} = 35.7 / (25)(0.67) = 2.1 \text{ fps}$$

channel, use Manning

$$Q = \frac{1.486}{n} A R^{2/3} S^{1/2}$$

$$w/n = 0.013$$

$$S = 0.01$$

$$\Delta R^{2/3} = 3.12$$

assuming 10' width

$$\therefore \text{depth} = 0.52 \text{ ft}$$

$$\text{velocity} = 35.7 / (10)(0.52) = 6.9 \text{ fps}$$

transition

$$V_1 = 2.1 \text{ fps}$$

$$V_2 = 6.9 \text{ fps}$$

$$\text{acc} = g \cos \theta = 0.32 \text{ ft/sec}^2$$

distance to accelerate from 2.1 fps to 6.9 fps  
 $s = 1/2 g \cos \theta t^2 = 36.0$

build transition from back of walk from 25' wide  
10' wide in 36 feet. Hold 1 foot deep.

# EXTERNAL DRAINAGE

## OUTLET CHANNELS

### KIMELA @ UNSEER

Dig outlet ditch w/ 10'-20' bottom & 3:1 side slopes  
to daylight @ 0.5% grade. w/ 6" Riprap 9" thick  
& cutoff wall & and filter cloth w/ LOS < 0.6mm  
OUTLET (use HEC 15)

$$n = 0.054 \quad (\text{App. B}) \quad \therefore Q_n = 8.10$$

$$d/B = 0.13 \quad (\text{Chart 3}) \quad \therefore d = 2.6 \text{ ft}$$

$$T_p = 2 \quad (\text{Table 2})$$

$$T_d = (62.4)(2.6)(.005) = 0.81 < 2 \quad \text{ok}$$

$$\text{velocity} = (167)/A = 2.3 \text{ fps}$$

### SAPPHIRE @ UNSEER

Dig outlet ditch w/ 10'-35' bottom w/ 3:1 side slopes  
to daylight @ 0.5% grade w/ 6" Riprap 9" thick  
& cutoff wall & and filter cloth w/ LOS < 0.297

### OUTLET (Use HEC 15)

$$n = 0.055 \quad (\text{App. B}) \quad \therefore Q_n = 14.7$$

$$d/B = 0.07 \quad (\text{Chart 3}) \quad \therefore d = 2.5 \text{ ft}$$

$$T_p = 2 \quad (\text{Table 2})$$

$$T_d = (62.4)(2.5)(0.005) = 0.78 < 2 \quad \text{ok}$$

$$\text{velocity} = 300/A = 2.8 \text{ fps}$$

## SEDIMENTATION BASIN

Per AMAFCA - use 30% of runoff volume for natural areas  
& 5% of runoff volume for developed  
areas for sediment volume

trap all material medium sand and larger  
0.2 mm diameter

Per ECE & Soils report  $\approx$  75% of soil soil volume is  
smaller than 0.2mm diameter in the drainage  
area.

$\therefore$  provide storage for 25% of 0.2 of area area runoff  
& 25% of 0.05 of developed area  
runoff.

Vista Nueva

8705 02/90  
JJB 22

# EXTERNAL DRAINAGE

## SEDIMENTATION BASIN

Assume Vista Nueva phased @ kimala 25 ac. south  
28 ac. north  
use 28 ac w/ developed runoff & natural sediment  
25 ac w/ natural runoff & natural sediment

### SEDIMENT SOURCE

| BASIN  | DEVELOPED, AC. | NATURAL, AC. |
|--------|----------------|--------------|
| OFF. 1 | Soil Gr A      | Soil Gr A    |
| 2      | Soil Gr B      | Soil Gr B    |
| 3      | 7              |              |
| 4      | 56             |              |
| 5      | 116            |              |
| 6      |                |              |
| A      |                | 104          |
| B      | 16             | 25           |
| C      | 14*            |              |
|        | 14*            | 2*           |

223 2 129 55

Runoff, in. 0.6 0.95 0.25 0.65

\* developed runoff, natural sedimentation

### SEDIMENT VOLUME

$$V = \frac{1}{2} [(0.05)(0.25) [(0.6)(195) + (0.95)(0)] + (0.30)(0.25) [(0.25)(129) + (0.6)(28) + (0.95)(2) + (0.65)(55)]]$$

$$V = 0.66 \text{ Acre-ft. of sediment / 100 yr storm}$$

### SEDIMENT TERMINAL VELOCITY

from SCS Handbook Sec 3, Fig 2.3

For  $d = 0.2 \text{ mm}$ ,  $v = 2.5 \text{ cm/sec} = 0.082 \text{ ft/sec}$ .

### PEAK FLOW RATE

approx. 2500 ft from subdivision to sedimentation  
ponds 1% ; flow time =  $(2500/5)/60 = 8 \text{ min}$

$$Q = C_1 A \quad t_c = 20 + 8 = 28 \text{ min}$$

$$K = 2.75$$

$$= [(0.49)(105) + (0.45)(104) + (0.4)(104)] 2.75$$

$$= 508 \text{ cfs}$$

# EXTERNAL DRAINAGE

## SEDIMENTATION BASIN GEOMETRICS

MAX. HORIZ. VELOCITY

2 fps. is non-erosive per SCS TR# 25 3-50.6.

BASIN GEOMETRY

Cross Section =  $508/2 = 254 \text{ ft}^2 \text{ min}$

Side Slope 3:1

Use 40' Bottom

DEPTH

$$254 = \frac{40 + 40 + 6d}{2} d$$

$$6d^2 + 80d = 508$$

$$d = 4.70$$

Force depth w/ weir

$$Q = CLH^{3/2}$$

$$\text{Use } C = 3.0$$

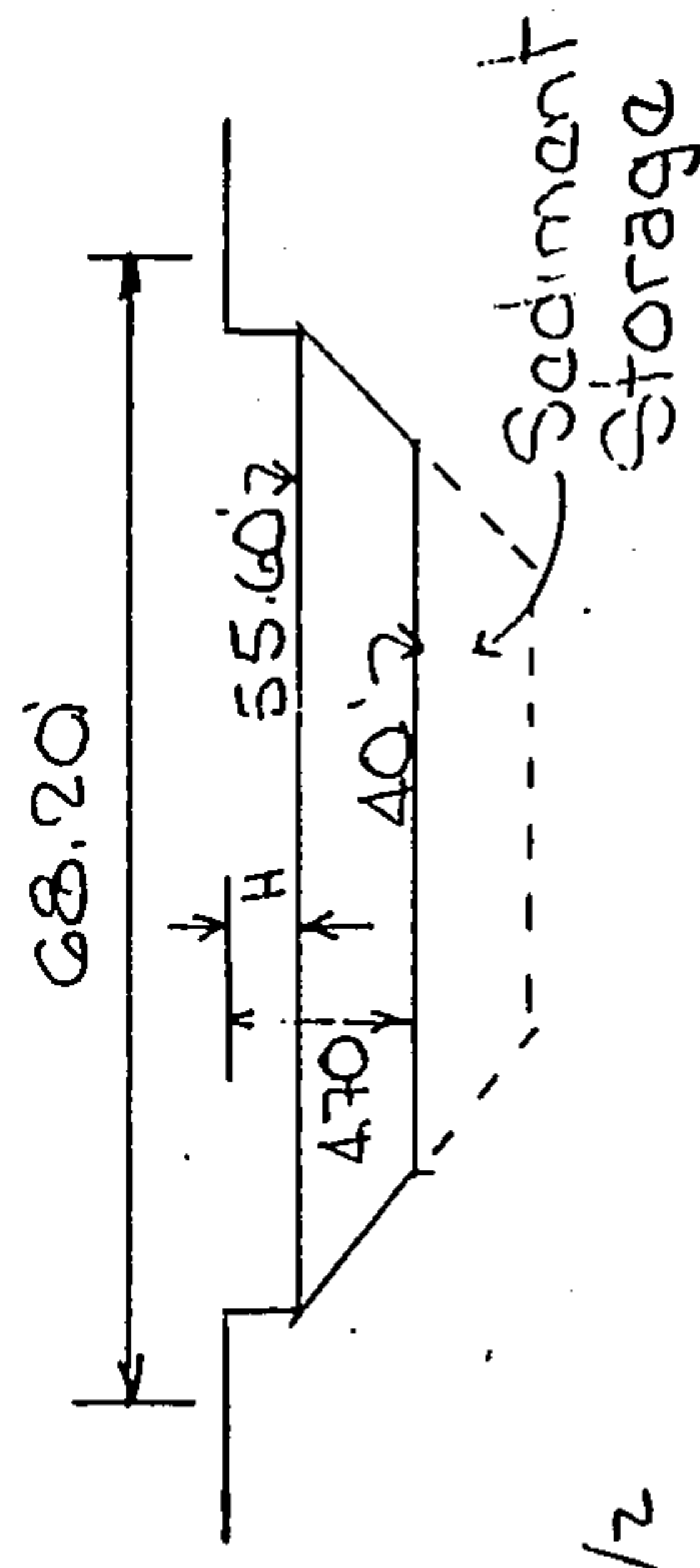
$$L = 68.20 - 6H$$

$$508 = (3)(68.20 - 6H)(H)^{3/2}$$

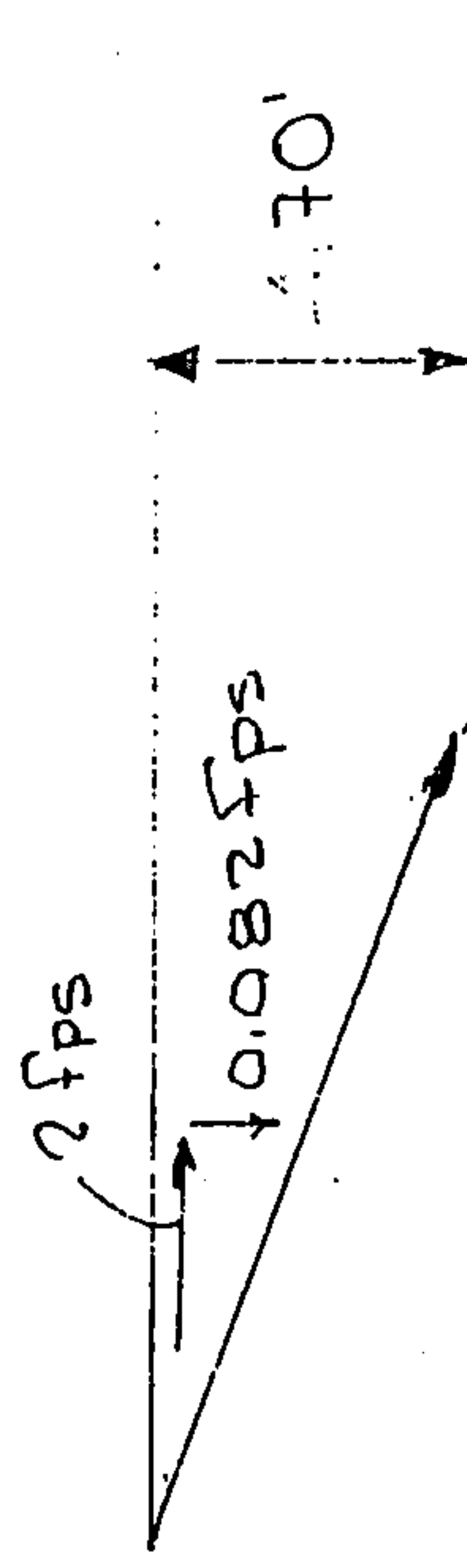
$$= 204.60H^{3/2} - 18H^{5/2}$$

$$H = 2.10'$$

$$L = 55.60'$$



LENGTH



$$L = (4.70/0.082)(2) = 115 \text{ ft.}$$

SEDIMENT STORAGE

0.66 acre/ft (previous page)

$$(0.66)(43560)/(115)(40) = 2.23220$$

Use 350' length

$$\frac{(0.66)(43560)}{350} = \frac{(40 + 40 + 6d)}{2} d$$

$$6d^2 - 80d + 164.28 = 0$$

$$d = 2.58'$$

EXTERNAL DRAINAGE

SEDIMENTATION BASIN CHARACTERISTICS (cont.)

OUTLET PIPE

Orifice under falling head.

$$dt = \frac{A dy}{Ca \sqrt{2gy}} \quad \text{where}$$

A = area of free surface  
C = orifice coefficient = 0.6  
a = orifice cross sectional area

$$A = 350 (55.60 - 6y)$$

$$t = \frac{72.68}{a} \int_0^{4.39-2.02} \frac{(55.60-6y) dy}{y^{1/2}}$$

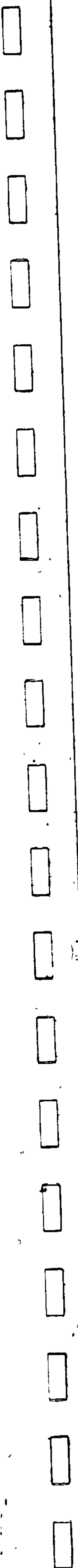
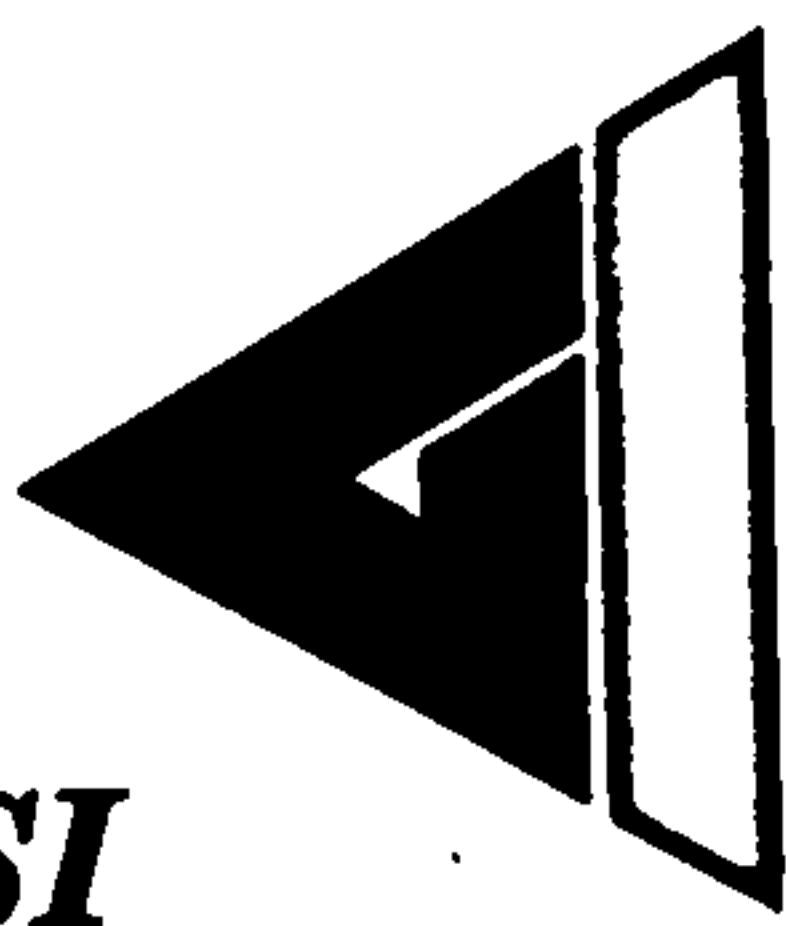
$$= \frac{72.68}{a} \left[ 2.37 (111.20y^{1/2} - 4y^{3/2}) \right]$$

$$= 11381.4/a$$

for 4" pipe, time = 15.7 hrs < 24

1. Provide sediment storage below existing ground with cutoff wall and riprap slope into basin.
2. Bottom of pond at elevation 5105.0 @ outlet w/ grade = 0.002%
3. Weir elevation = 5107.60
4. Orifice elevation = 5105.00
5. Pond berm elev. = 5111.2
6. Connect to Arroyo del Norte
7. Expand proposed inlet @ 48+95, Project 3091 to 56 feet wide and move E of inlet ahead to 49+20
8. Orifice to outlet @ elev. 5102.00

**ISAACSON & ARMAN, P.A.**  
*Consulting Engineering Associates*  
*Albuquerque, NM*



**MASTER DRAINAGE REPORT**

**FOR**

**A 417 AC PORTION OF LAND  
BETWEEN THE  
SNOW VISTA CHANNEL &  
THE AMOLE DEL NORTE CHANNEL**

**ALBUQUERQUE NEW MEXICO  
MAY 1994**

# MASTER DRAINAGE REPORT

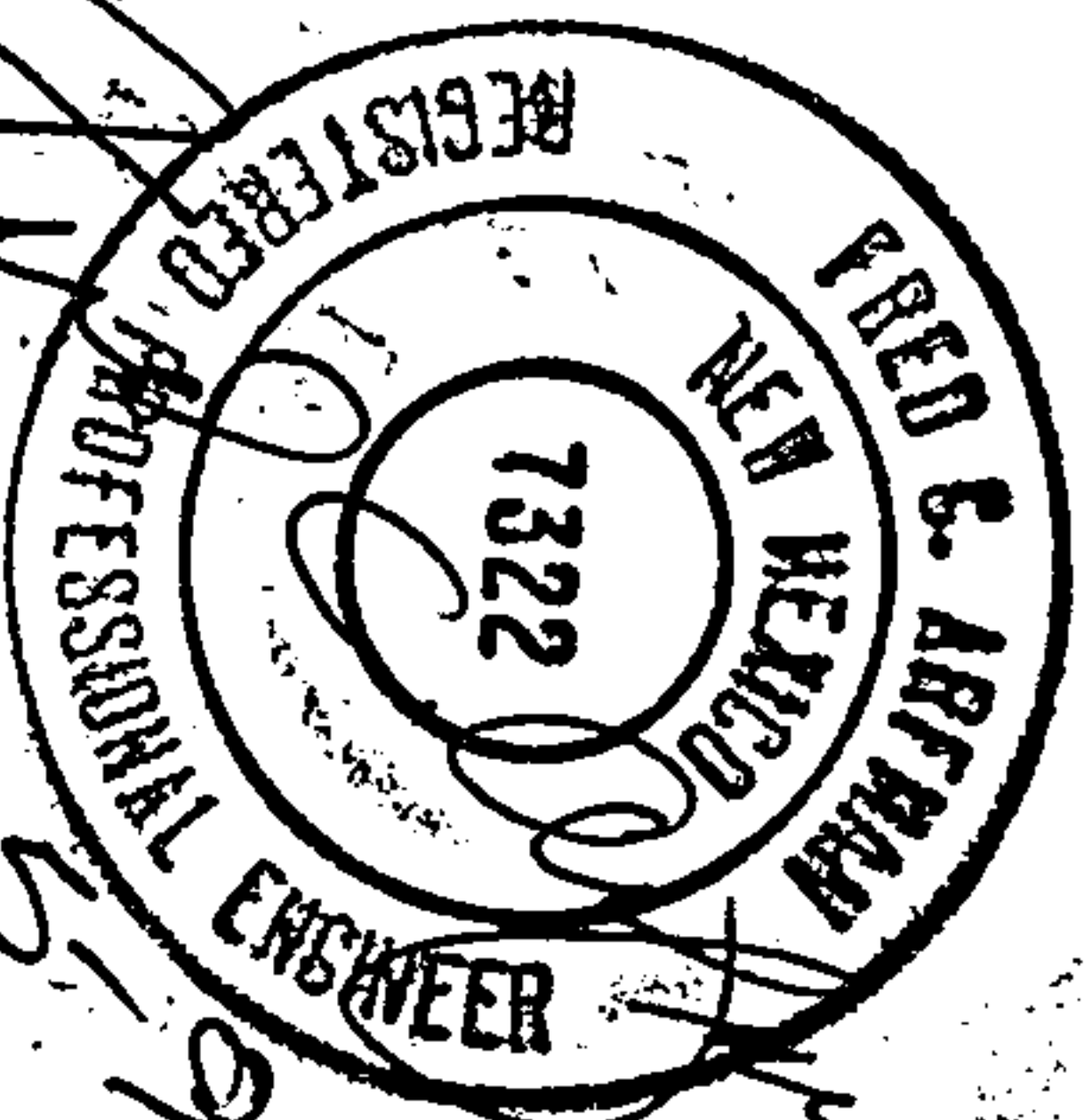
FOR

## A 417 AC PORTION OF LAND BETWEEN THE SNOW VISTA CHANNEL & THE AMOLE DEL NORTE CHANNEL

ALBUQUERQUE NEW MEXICO  
MAY 1994

Prepared by:

ISACSON & ARFMAN, P.A.  
128 Monroe Street, NE  
Albuquerque, NM 87108



Paul Lee 5-5-94  
JULIE Date

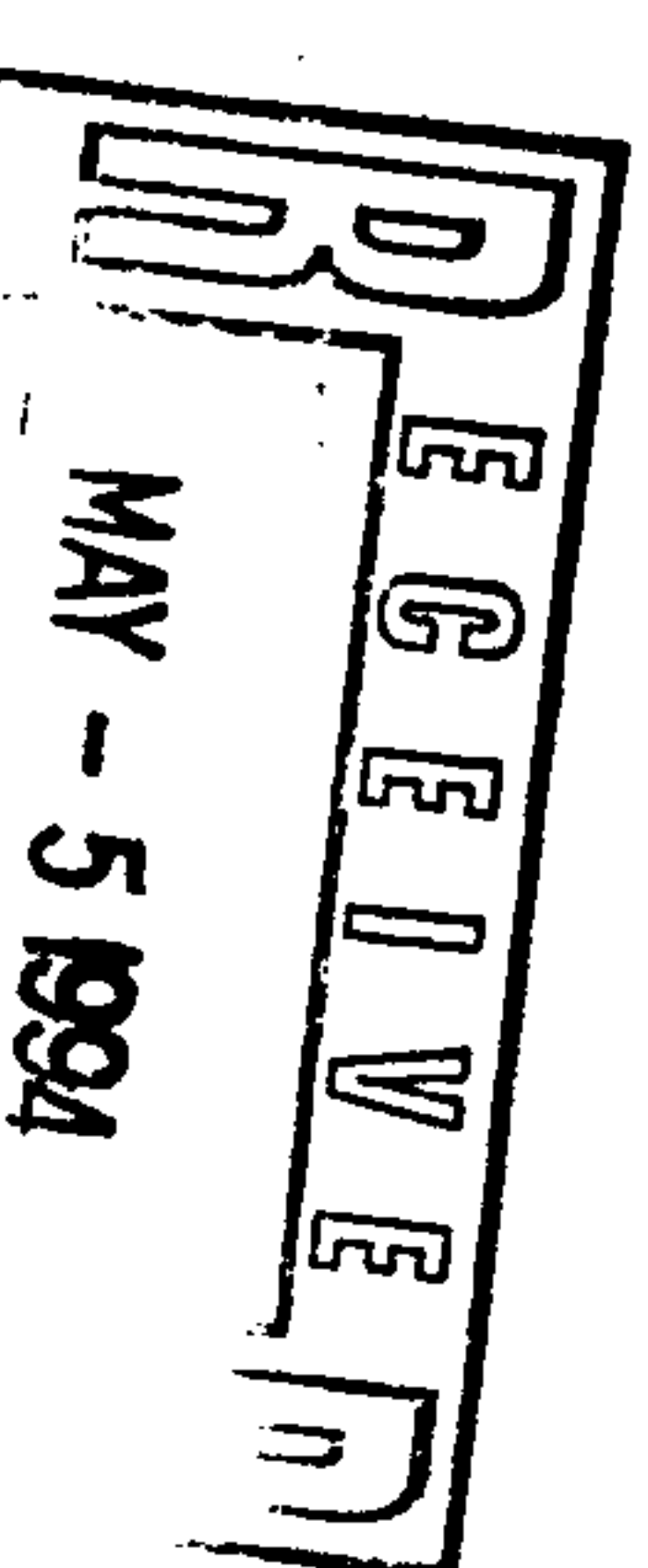


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Figure 2 - Basin Identification Map & Subbasin  
Characteristics (in pocket)

Figure 3 - Study History

Figure 4 - Proposed Sapphire Street Cross-Section

Figure 5 - Open Channel Cross-Section

Figure 6 - Ultimate Improvements & Blanket Drainage  
Easements

AHYMO Model - Summary

AHYMO Model - Detailed Output

## **PURPOSE & SCOPE**

The purpose of this master drainage study is to define and analyze the drainage situation for a large portion of land south of Sage Road SW between the Snow Vista Channel and the Arrole del Norte Channel on the City's west side. This report will identify the existing drainage basins and quantify the runoff that is generated during a 100- year frequency/6-hour duration storm occurring within the area. This report can then be used as a planning tool for the future development of the study area.

The scope of this analysis consists of an AHYMO model of the contributing drainage area, figures illustrating the basin characteristics, and recommendations for handling the storm runoff. The 100-year/6-hour storm was used to generate the runoff discharges and volumes. This method is currently accepted by both the City of Albuquerque and AMAFCA for drainage studies such as this one. The resulting flows can then be used to size proposed streets and drainage facilities to contain and convey the storm waters and direct them downstream to the Arrole del Norte Diversion Channel.

## LOCATION & DESCRIPTION

The study area is bounded on the west by the Snow Vista Channel, on the south by the Rio Bravo Sector Plan Boundary, on the north by Sage Road, and the Amole del Norte Diversion Channel on the east (See Figure-1). The west side of the area is largely already developed with single family residential homes. The undeveloped portion on the east side of the area is currently zoned for residential development. Both developed and undeveloped areas of residence are assumed to have a density of 4 du/ac. This corresponds with a 42% land treatment D as defined in Section 22.3 of the City's DPM. The remaining 58% is split between land treatments B and C. The Westgate Heights Park is assigned 7% land treatment D. The remaining 93% is split equally between treatments A, B, and C. The two schools within the area, Truman Middle School and Mary Ann Binford Elementary, would normally be assigned a land treatment D of 50%. But both drainage reports for the schools have provided for on-site temporary detention to reduce the runoff to undeveloped conditions. For this reason both areas are assumed 100% land treatment A. The internal streets within the developed areas are all paved with standard curb and gutter. The existing flow cross-section is modeled from R.O.W. to R.O.W. rather than face of curb to face of curb to allow for exceeding the street capacity.

11/23/04  
PRD PBN  
FDR FAN  
DUT FAN

## **ANALYSIS**

Figure No. 2 illustrates the basin layout, the 19 subbasins, and the identification scheme. The flow directions are shown and discharge points are identified. The following table summarizes the hydrological model. Figure 3 illustrates the previous drainage studies that have been done on specific areas within the total basin. Also included with this figure is a verbal description of the existing characteristics of the subbasins.

BASIN SUMMARY

| Basin ID | Area (Sq. Mi.) | Contributing Basins               | Cumulative Area (Sq. Mi.) | % A | % B | % C | % D | Basin Q (cfs) | Cumulative Q (cfs) |
|----------|----------------|-----------------------------------|---------------------------|-----|-----|-----|-----|---------------|--------------------|
| 100      | 0.071          | 100                               | 0.071                     | 0   | 29  | 29  | 42  | 150.9         | 150.9              |
| 101      | 0.037          | 100, 101                          | 0.109                     | 0   | 29  | 29  | 42  | 78.1          | 227.4              |
| 102      | 0.040          | 100,101,102                       | 0.149                     | 100 | 0   | 0   | 0   | 34.0          | 256.3              |
| 103      | 0.044          | 100,101,102<br>103                | 0.193                     | 0   | 29  | 29  | 42  | 92.8          | 332.0              |
| 104      | 0.044          | 100,101,102<br>103,104            | 0.237                     | 0   | 29  | 29  | 42  | 92.8          | 421.9              |
| 105      | 0.021          | 100,101,102<br>103,104,105        | 0.258                     | 31  | 31  | 31  | 7   | 29.5          | 407.9              |
| 106      | 0.025          | 100,101,102<br>103,104,105<br>106 | 0.283                     | 0   | 29  | 29  | 42  | 52.8          | * 447.2            |
| 200      | 0.053          | 200                               | 0.053                     | 0   | 29  | 29  | 42  | 111.8         | 111.8              |
| 201      | 0.026          | 200,201                           | 0.079                     | 0   | 29  | 29  | 42  | 54.9          | 164.0              |
| 202      | 0.013          | 200,201,202                       | 0.092                     | 100 | 0   | 0   | 0   | 11.0          | ** 175.1           |
| 300      | 0.029          | 300                               | 0.029                     | 0   | 29  | 29  | 42  | 70.0          | *** 70.0           |
| 400      | 0.011          | 400                               | 0.011                     | 0   | 29  | 29  | 42  | 22.8          | 22.8               |
| 401      | 0.038          | 100-106<br>300,401                | 0.350                     | 0   | 29  | 29  | 42  | 80.2          | 567.9              |
| 402      | 0.052          | 200-202,402                       | 0.144                     | 0   | 29  | 29  | 42  | 109.7         | 281.3              |
| 403      | 0.015          | 100-106<br>401,403                | 0.365                     | 0   | 29  | 29  | 42  | 31.2          | 594.7              |
| 404      | 0.011          | 200-202<br>402,404                | 0.155                     | 0   | 29  | 29  | 42  | 22.8          | 304.1              |
| 405      | 0.014          | 400,405                           | 0.025                     | 0   | 29  | 29  | 42  | 29.8          | 52.6               |
| 406      | 0.057          | 100-106<br>400,401,403<br>405,406 | 0.447                     | 0   | 29  | 29  | 42  | 119.2         | 748.3              |
| 407      | 0.050          | 200-202<br>402,404,407            | 0.205                     | 0   | 29  | 29  | 42  | 106.4         | 410.4              |

\* Flow at Analysis Point A

\*\* Flow at Analysis Point B

\*\*\* Flow at Analysis Point C

## RESULTS & CONCLUSIONS

ABDUT DRAVENI  
WHA1 WANEAR  
WNE1D  
D1N

The lack of existing drainage facilities in this area creates a tremendous amount of storm water at the easterly edge of the developed areas. At analysis point A (east end of Sapphire Street, see Figure 2) the total flow is 447 cfs. The existing street capacity is only about 120 cfs (230 cfs if the full right-of-way is used). This problem will only be compounded upon further development of the vacant property to the east. The flow at analysis point B (Kimela Drive at Mary Ann Binford Elementary) was calculated to be 175 cfs. (This discharge can safely fit in the right-of-way section without overflowing onto private property, but more development to the east will require storm drain in the extended Kimela Drive. Analysis point C, at the existing southern end of 82nd Street, has a flow of 7070 cfs. This flow will proceed down the extended 82nd Street and into the proposed storm drain in Sapphire Street. → ?

Basin 401, Unit 1 of Sunrise Estates, will probably be the next area to be developed. This area, currently platted as Vista Nueva, happens to be where the greatest amount of runoff is present. A few possible options for adequate storm drainage are presented below.

- ① Installation of a battery of inlets at or somewhere near analysis point A. These inlets will intercept about 210 cfs and divert it to a 48" RCP

in Sapphire Street. The remaining 250 cfs can be carried in a *10 yr criteria*  
Sapphire Street cross section as shown in Figure 4. This section *NO!*  
differs from the normal residential street section in that the 5' strip  
between the curb and sidewalk will be at a 8% slope rather than at  
2%. This will add an extra 0.30' to the normal depth (from gutter  
flowline to property line). This modified street cross section would  
require two additional permanent features. First, the strip of right-  
of-way between back of curb and edge of sidewalk would be armored  
and secondly, the proposed subdivisions utilizing the modified  
section should not have residential lots accessing directly off of that  
street. This gives the Sapphire Street right-of-way a capacity of 317  
cfs at 2.5%. The RCP can then increase in diameter as it accepts  
more flows from the Basin 401 development. The total discharge  
from Basin 401, 80.2 cfs, will actually require an increase to a 54"  
pipe at the easterly side of the basin. *10 yr.*  
At this point an open channel  
running along the basin boundary between 403 and 405 could be  
constructed to carry both the storm drain and overland flows from  
Sapphire Street. This channel, as shown in Figure 5, will carry 1,176  
cfs and can be replaced with street and storm drains as the adjacent  
basins are developed. The channel will continue in the Arenal Road  
right-of-way or an easement on either side of Arenal to the Anole del  
Norte Diversion Channel.

While a channel is the optimal solution for an outfall, perhaps more feasible is an alternate scheme. ~~The interim solution for those subdivisions developing on the west side of Unser Blvd. involve allowing the storm waters to spread out and sheet flow across downstream properties. Blanket drainage easements (see Figure 6) that exist through these areas allow this concept. These easements, approved with a Bulk Land Plat in 1987~~ currently carry the excess flow from the existing developments to the Anole Channel. ~~The easements could be vacated as needed when the remaining tracts are developed and the necessary infrastructure is constructed to adequately convey the flows downstream.~~

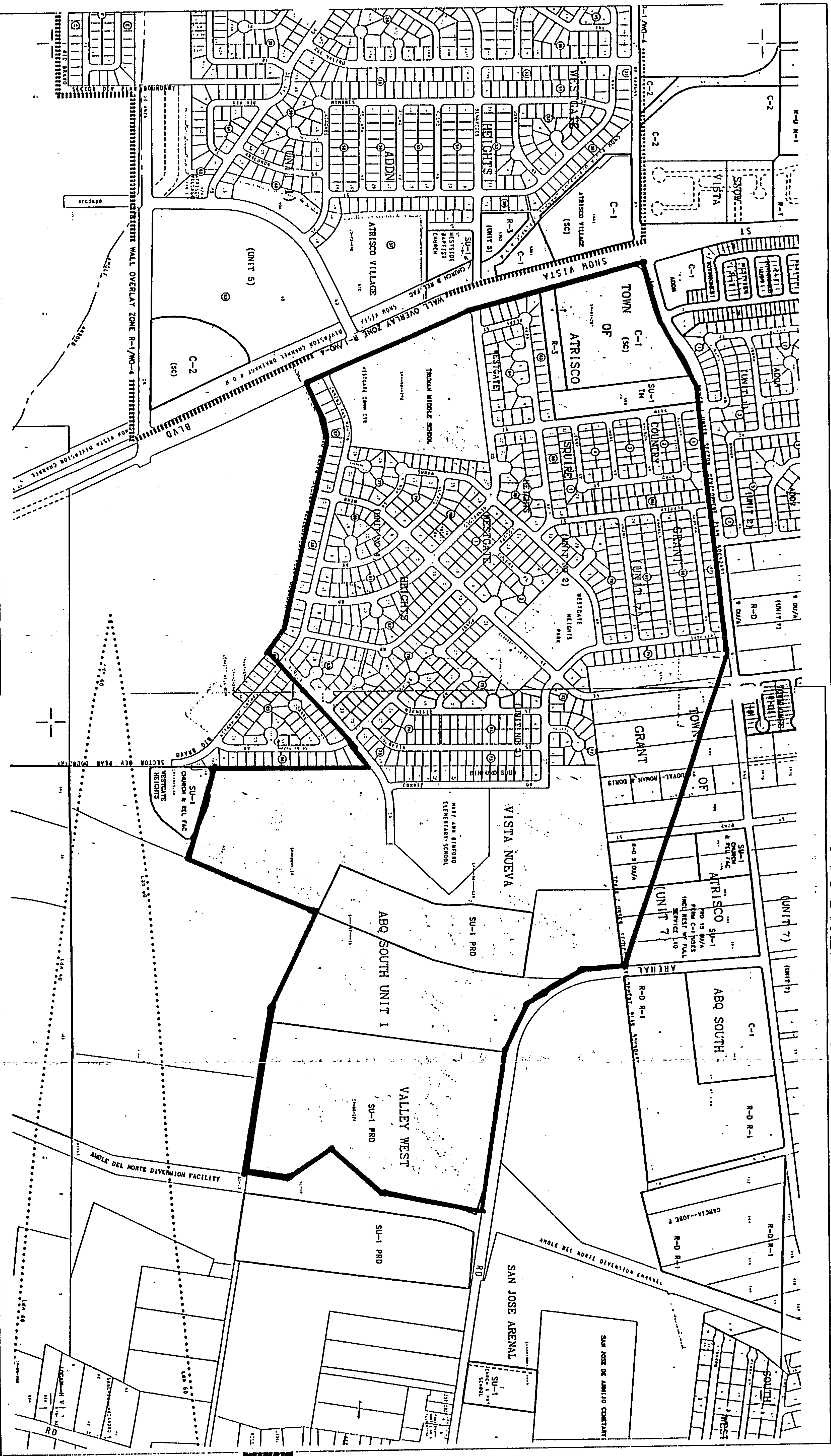
2. At analysis point B the flows are not quite as large. Kimela Drive can be extended as needed with the development of Sunrise Estates Unit 2 with a storm drain in Kimela to take on-site developed flows. Basin 402 generates a runoff of 110 cfs. This flow can be handled by a 36" RCP at 2.5%. The pipe will continue in Kimela to the eastern low point of Sunrise Estates Unit 2.

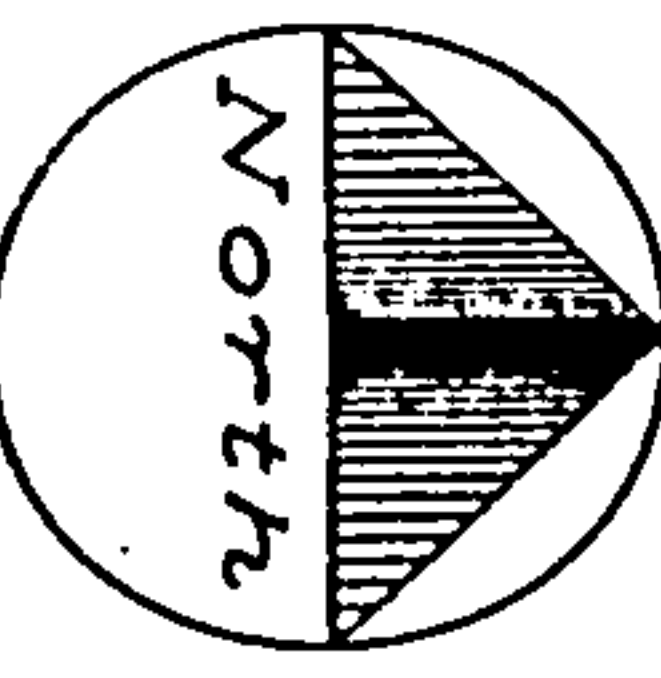
~~At this point, it seems feasible to extend the pipe in an easement to the future Unser Road right-of-way. Ultimately, the pipe will turn north and run in Unser Road to the open channel, but in the interim,~~

~~the storm waters will discharge to the east in one of the blanket easements allowing them to sheetflow easterly to the side inlets of the Anole del Norte Diversion Channel.~~ Again, as vacant properties are developed, the necessary improvements can be made to ensure adequate storm drain facilities.

This plan offers an efficient effective solution to both the existing drainage problems and future runoff that will occur when the remaining developable area is built out.

FIGURE 1 VICINITY MAP





North

Scale: 1" = 750'

750 0 750

**A-C-1-S**

**CITY OF ALBUQUERQUE**

Planning Department July 08, 1993

LEGAL DESCRIPTION

SECTION 33, T1N, R1E, SEC 34

UNIFORM PROPERTY CODE

1-009-055

**M-9-10-Z**

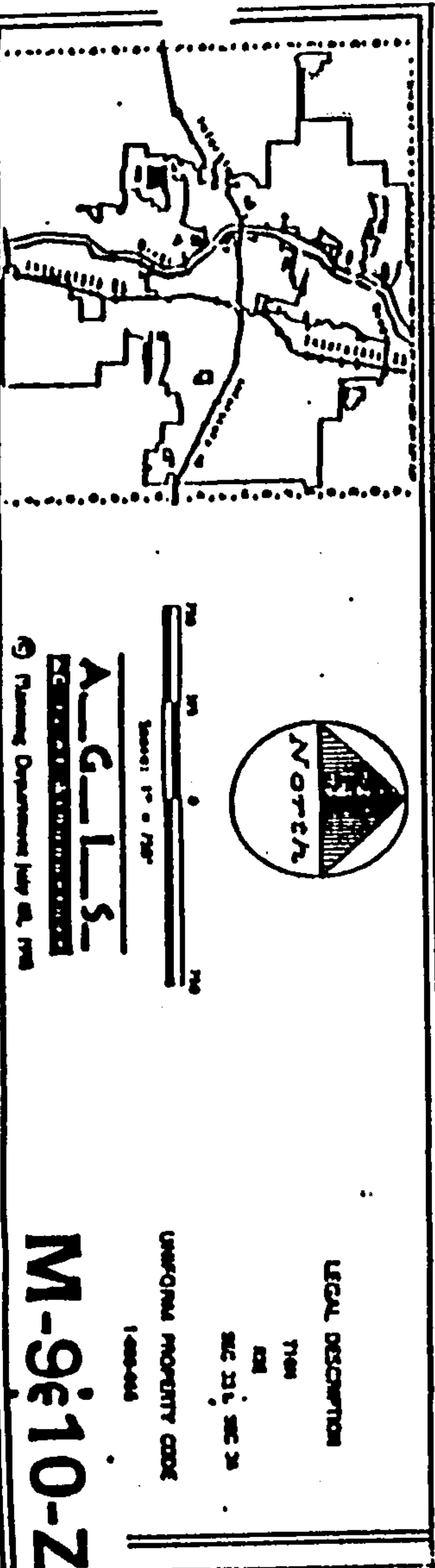
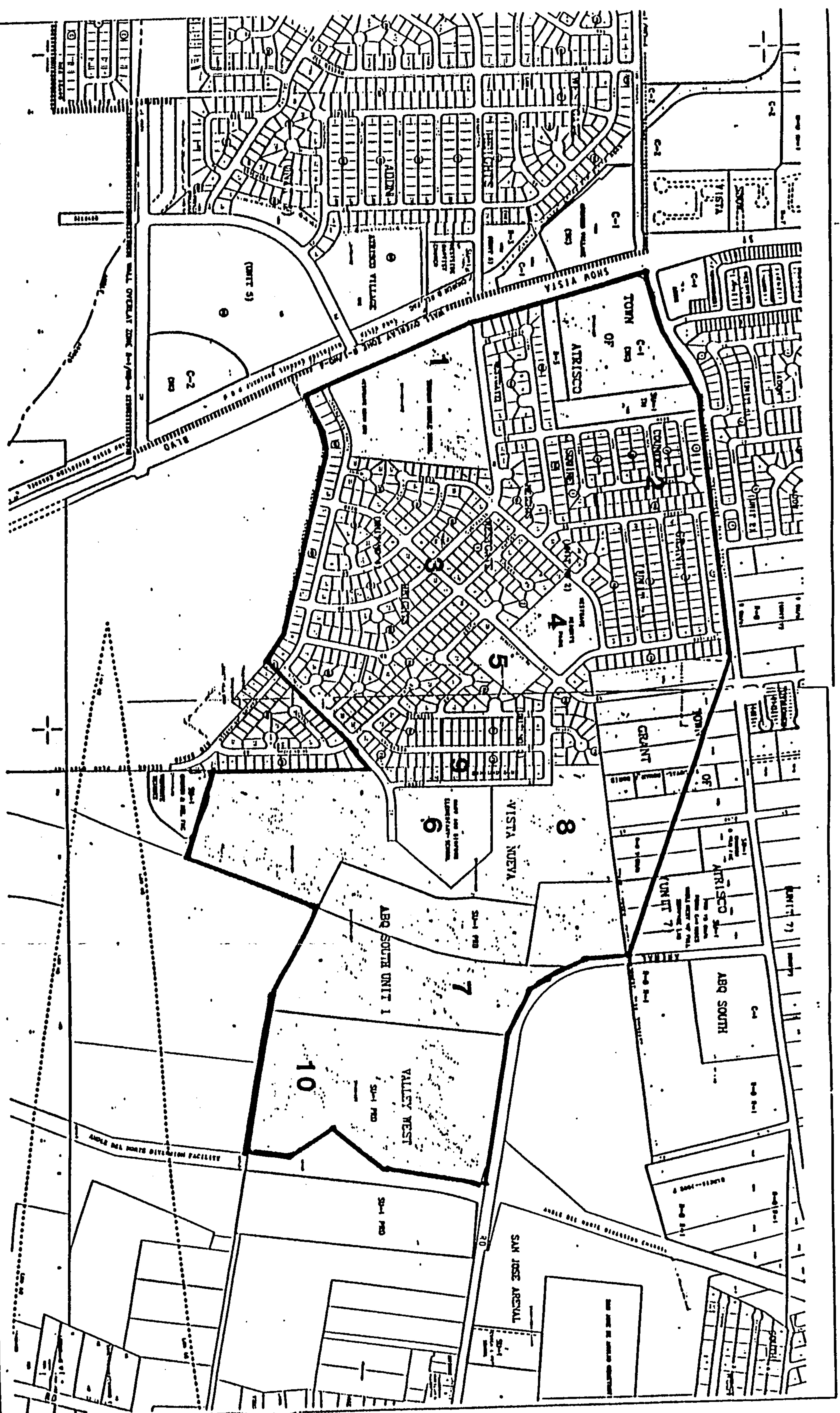
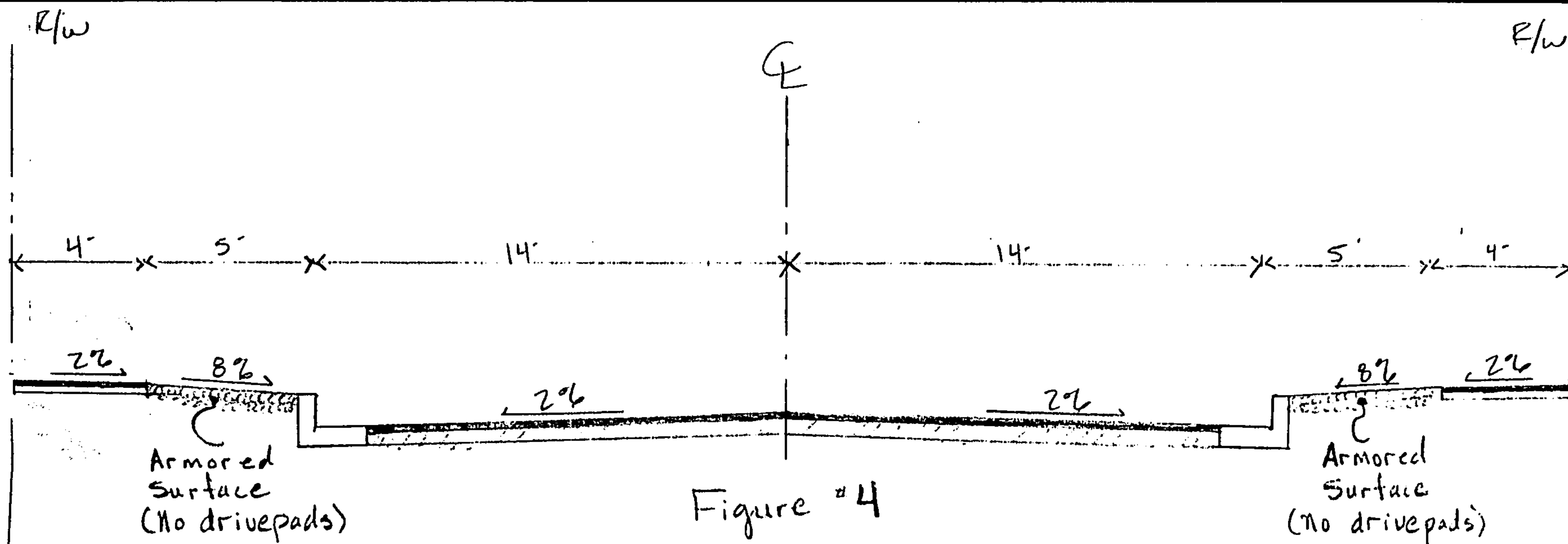


FIGURE 3 STUDY HISTORY

- 1 TRUMAN MIDDLE SCHOOL  
CHAVEZ-GRIEVES  
10-6-89
- 2 COUNTRY SQUIRE SUBDIVISION  
GOLDBERG-MORRIS
- 3 WESTGATE HEIGHTS UNITS 2, 3 & 4  
VARIOUS ENGINEERING REPORTS
- 4 WESTGATE HEIGHTS LITTLE LEAGUE  
HDR ENGINEERING  
5-11-93
- 5 LEAVITT RESERVOIR  
10-16-91
- 6 WESTGATE HEIGHTS ELEMENTARY SCHOOL  
TOM MANN & ASSOC.  
5-20-83
- 7 ALBUQUERQUE SOUTH UNIT 1  
ISAACSON & ARFMAN, P.A.  
5-27-87
- 8 VISTA NUEVA SUBDIVISION  
DMJM  
2-9-88
- 9 BINFORD SUBDIVISION  
ISAACSON & ARFMAN, P.A.  
6-21-91
- 10 TOWN OF ATRISCO GRANT  
US HOMES BRAND DIVISION



$$Q_{cap} = \frac{1.49}{n} A R^{2/3} S^{1/2} \quad \text{slope} = 0.025$$

$$A = 2 \left[ \frac{1}{2} (14) (0.28) + 14 (0.39) + \frac{1}{2} (5) (0.40) + 14 (0.40) + \frac{1}{2} (4) (0.08) + 14 (0.08) \right]$$

$$= 30.60 \text{ ft}^2 \quad \text{WP} = 2 [9 + 14 + 0.67] = 47.34'$$

$$R = 30.60 / 47.34 = 0.65'$$

$$Q_{cap} = \frac{1.49}{0.017} (30.60) (0.65)^{2/3} (0.025)^{1/2} = \underline{\underline{317 \text{ cfs}}}$$

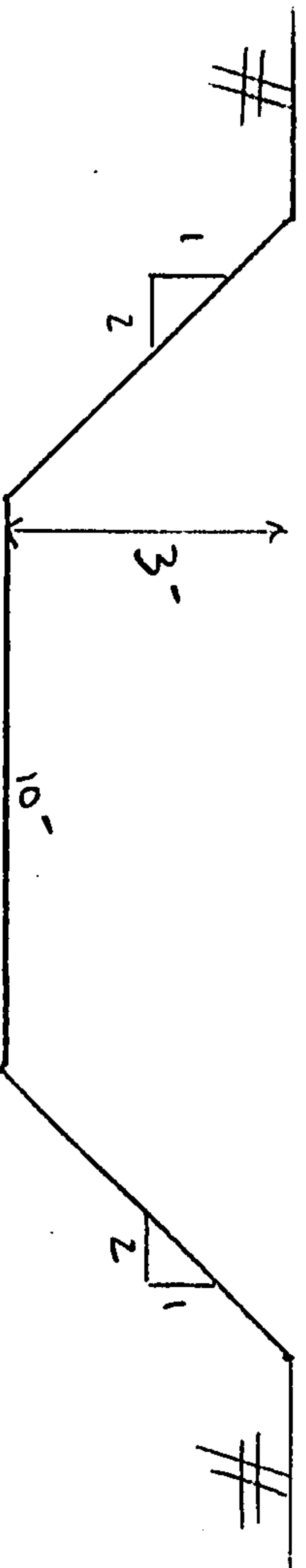


Figure 5

Proposed Open Channel X-Section

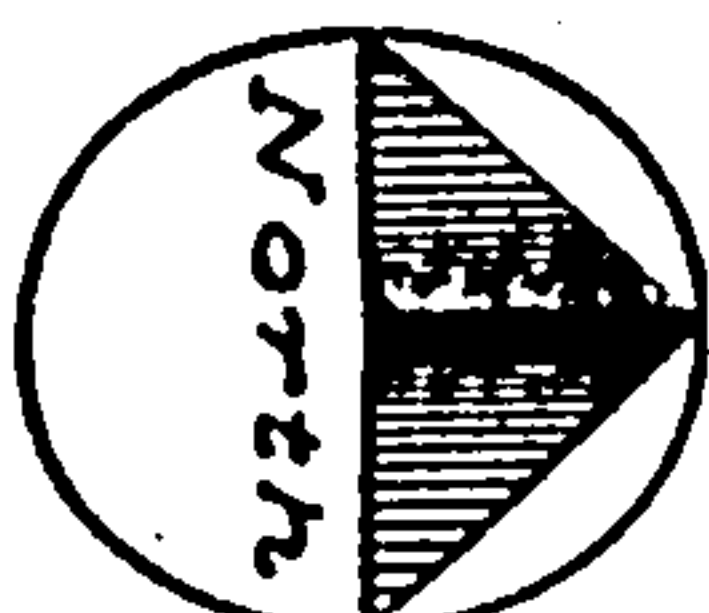
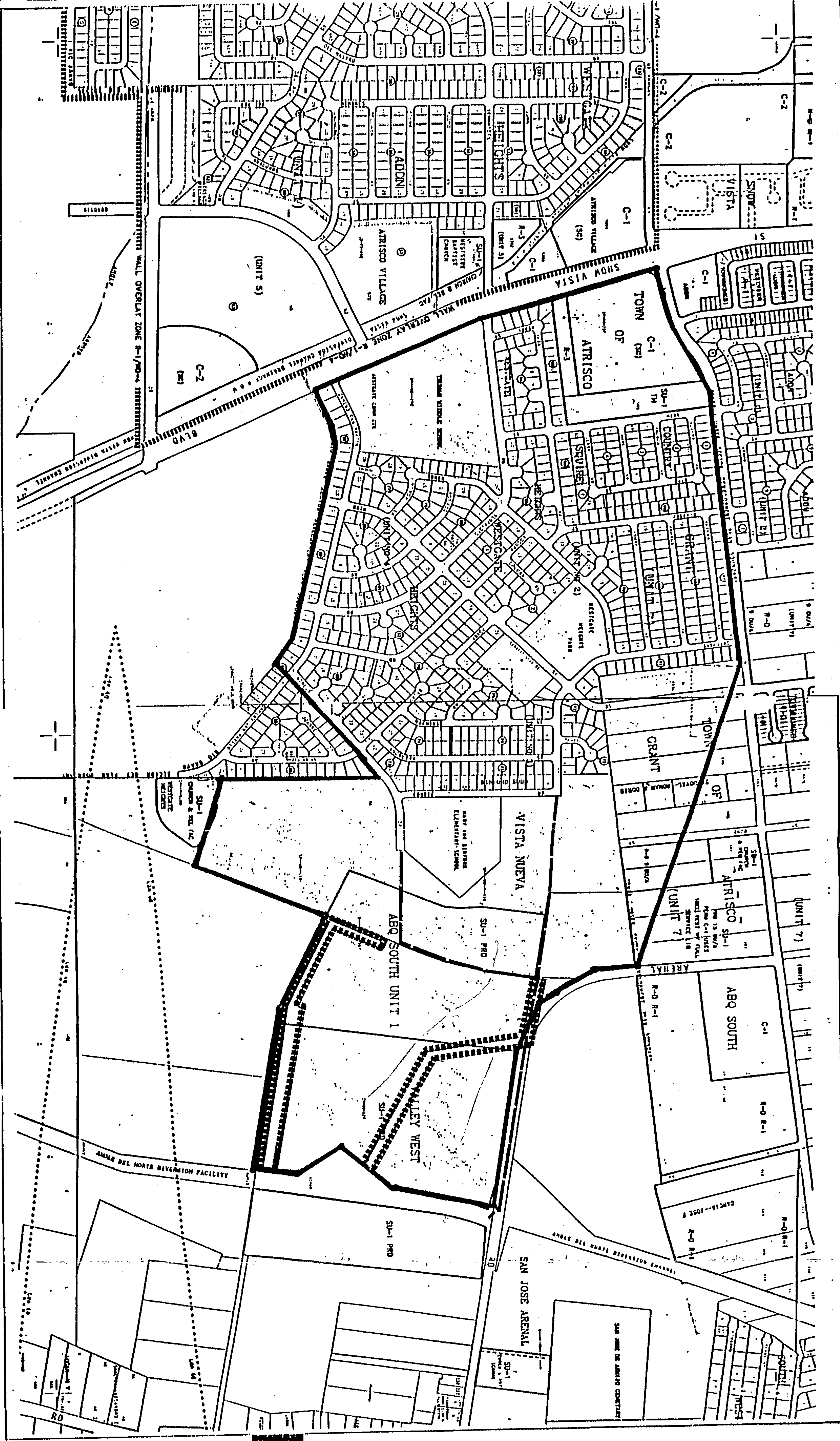
$$Q_{up} = \frac{1.49}{n} A R^{2/3} S^{1/2}$$

$$A = 10(3) + 2(1/2(10)(3)) = 60 \text{ ft}^2 \quad WP = 2(6.708) + 10 = 23.42'$$

$$R = 60 / 23.42 = 2.56'$$

$$Q_{up} = \frac{1.49}{0.0225} (60)(2.56)^{2/3} (0.0225)^{1/2} = \underline{\underline{1176 \text{ cfs}}}$$

FIGURE 6 ULTIMATE IMPROVEMENTS & BLANKET DRAINAGE EASEMENTS



Scale: 1" = 750'

ACLS  
City of Albuquerque  
Planning Department July 18, 1993

LEGAL DESCRIPTION

TOWN

R-2

SEC 33 & SEC 34

UNIFORM PROPERTY CODE

1-003-035

M-9&10-Z

EXISTING DRAINAGE EASEMENTS

ULTIMATE OUTFALL

# AHYMO MODEL - SUMMARY

AHYMO SUMMARY TABLE (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992 RUN DATE (MON/DAY/YR) =04/19/1994  
INPUT FILE = VN.DAT USER NO.= S\_MCGEE\_.S92

| COMMAND                                                                     | IDENTIFICATION | FROM<br>HYDROGRAPH<br>ID NO. | TO<br>ID NO. | AREA<br>(SQ MI) | PEAK<br>DISCHARGE<br>(CFS) | RUNOFF<br>VOLUME<br>(AC-FT) | RUNOFF<br>(INCHES) | TIME TO<br>PEAK<br>(HOURS) | CFS<br>PER<br>ACRE | PAGE =<br>NOTATION | 1 |
|-----------------------------------------------------------------------------|----------------|------------------------------|--------------|-----------------|----------------------------|-----------------------------|--------------------|----------------------------|--------------------|--------------------|---|
| START                                                                       | RAINFALL       | TYPE= 1                      |              |                 |                            |                             |                    |                            |                    |                    |   |
| TIME= .00<br>RAIN6= 2.200                                                   |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S **BASIN 100 IS CURRENTLY UNDEVELOPED, ASSUME FUTURE DEVELOPMENT          |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S WILL BE AT A DENSITY OF 4 DU/AC, SMALL ONSITE DETENTION EXISTS           |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 100.00                       | -            | .07150          | 150.90                     | 4.989                       | 1.30834            | 1.500                      | 3.298 PER IMP=     | 42.00              |   |
| *S ASSUME DETENTION AREA IS 50'x30'x4' DEEP W/ WEIR DISCHARGE               |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ROUTE RESERVOIR                                                             |                | 100.01                       | 1            | .07150          | 149.34                     | 4.958                       | 1.30009            | 1.500                      | 3.264 AC-FT=       | .216               |   |
| *S **AREA 101 IS FULLY DEVELOPED WITH SINGLE FAMILY RESIDENTIAL             |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S HOMES @ A DENSITY OF 4 DU/AC                                             |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 101.00                       | -            | .03700          | 78.08                      | 2.582                       | 1.30834            | 1.500                      | 3.297 PER IMP=     | 42.00              |   |
| ADD HYD                                                                     |                | 101.20                       | 206 2        | .10850          | 227.42                     | 7.539                       | 1.30290            | 1.500                      | 3.275              |                    |   |
| *S **AREA 102 IS A MIDDLE SCHOOL, (ONSITE DETENTION TO REDUCE RUNOFF)       |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 102.00                       | -            | .04000          | 33.96                      | .958                        | .44915             | 1.533                      | 1.327 PER IMP=     | .00                |   |
| *S **ROUTE THE SCHOOL'S RUNOFF IN A 28'-F RESIDENTIAL STREET, S=2%          |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S **ASSUME SECTION EXTENDS TO THE ROW LINE ON BOTH SIDES SO THERE          |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S WILL BE ADEQUATE CAPACITY                                                |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ROUTE                                                                       |                | 102.10                       | 4            | .04000          | 33.15                      | .958                        | .44918             | 1.567                      | 1.295              |                    |   |
| *S **ADD THE ROUTED FLOW FROM 102 TO THE EARLIER TOTAL                      |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ADD HYD                                                                     |                | 102.30                       | 36 5         | .14850          | 256.33                     | 8.498                       | 1.07294            | 1.533                      | 2.697              |                    |   |
| *S **BASIN 103 IS COMPLETELY DEVELOPED                                      |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 103.00                       | -            | .04400          | 92.85                      | 3.070                       | 1.30834            | 1.500                      | 3.297 PER IMP=     | 42.00              |   |
| *S **ADD 103 TO TOTAL                                                       |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ADD HYD                                                                     |                | 103.10                       | 66 7         | .19250          | 347.37                     | 11.568                      | 1.12675            | 1.500                      | 2.820              |                    |   |
| *S **ASSUME FLOW IS ROUTED IN A 28' RESIDENTIAL STREET @ S=2%               |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S **ASSUME CROSS-SECTION HAS FULL ROW WHEN THE STREET IS EXCEEDED          |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ROUTE                                                                       |                | 103.20                       | 8            | .19250          | 332.01                     | 11.566                      | 1.12658            | 1.533                      | 2.695              |                    |   |
| *S **AREA 104 IS FULLY DEVELOPED                                            |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 104.00                       | -            | .04400          | 92.85                      | 3.070                       | 1.30834            | 1.500                      | 3.297 PER IMP=     | 42.00              |   |
| ADD HYD                                                                     |                | 104.10                       | 9610 11      | .23650          | 421.91                     | 14.636                      | 1.16040            | 1.533                      | 2.787              |                    |   |
| *S **AREA 105 IS A PARK & COA WELL SITE, %D=7%                              |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 105.00                       | -            | .02100          | 29.49                      | .864                        | .77100             | 1.500                      | 2.194 PER IMP=     | 7.00               |   |
| ADD HYD                                                                     |                | 105.10                       | 11612 13     | .25750          | 451.36                     | 15.500                      | 1.12864            | 1.533                      | 2.739              |                    |   |
| *S **ROUTE FLOW TO THE EXISTING END OF SAPPHIRE ST.                         |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ROUTE                                                                       |                | 105.20                       | 13           | .25750          | 407.89                     | 15.498                      | 1.12847            | 1.600                      | 2.475              |                    |   |
| *S **BASIN 106 IS FULLY DEVELOPED                                           |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 106.00                       | -            | .02500          | 52.76                      | 1.744                       | 1.30834            | 1.500                      | 3.298 PER IMP=     | 42.00              |   |
| *S **TOTAL FLOW IN SAPPHIRE ST. AT ANALYSIS POINT A                         |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ADD HYD                                                                     |                | 106.10                       | 14615 16     | .28250          | 447.20                     | 17.242                      | 1.14439            | 1.567                      | 2.473              |                    |   |
| *S **BASINS 200,201, & 202 DRAIN TO KIMELA DR                               |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 200.00                       | -            | .05300          | 111.84                     | 3.698                       | 1.30834            | 1.500                      | 3.297 PER IMP=     | 42.00              |   |
| *S **ROUTE FLOW TO THE END OF KIMELA DR.                                    |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ROUTE                                                                       |                | 200.10                       | 17 18        | .05300          | 110.91                     | 3.698                       | 1.30835            | 1.533                      | 3.270              |                    |   |
| COMPUTE NM HYD                                                              |                | 201.00                       | -            | .02600          | 54.87                      | 1.814                       | 1.30834            | 1.500                      | 3.298 PER IMP=     | 42.00              |   |
| ADD HYD                                                                     |                | 201.10                       | 1618 18      | .07900          | 164.04                     | 5.512                       | 1.30834            | 1.533                      | 3.244              |                    |   |
| *S **BASIN 202 IS AN ELEMENTARY SCHOOL, (ONSITE DETENTION TO REDUCE RUNOFF) |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 202.00                       | -            | .01300          | 11.04                      | .311                        | .44915             | 1.533                      | 1.327 PER IMP=     | .00                |   |
| *S **ADD THE BASINS TOGETHER TO GET FLOW IN KIMELA @ ANALYSIS POINT B       |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ADD HYD                                                                     |                | 202.10                       | 18619 20     | .09200          | 175.08                     | 5.824                       | 1.18693            | 1.533                      | 2.974              |                    |   |
| *S **BASIN 300 DRAINS TO ANALYSIS POINT C, IT IS CURRENTLY UNDEVELOPED      |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 300.00                       | -            | .02890          | 60.99                      | 2.017                       | 1.30834            | 1.500                      | 3.298 PER IMP=     | 42.00              |   |
| *S **BASINS 400 THRU 407 ARE CURRENTLY UNDEVELOPED, FOR PURPOSES            |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S OF THIS REPORT, ASSUME ALL BASINS WILL BE BUILT OUT AT THEIR             |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S CURRENT ZONING                                                           |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S **BASIN 400, DENSITY = 4 DU/AC                                           |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 400.00                       | -            | .01080          | 22.80                      | .754                        | 1.30834            | 1.500                      | 3.299 PER IMP=     | 42.00              |   |
| *S **BASIN 401 IS PHASE 1 OF THE PROPOSED VISTA NUEVA SUBD.                 |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S ASSUME IT WILL ALSO HAVE A DENSITY OF 4 DU/AC                            |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 401.00                       | -            | .03800          | 80.19                      | 2.652                       | 1.30834            | 1.500                      | 3.297 PER IMP=     | 42.00              |   |
| *S ADD FLOW FROM BASIN 300                                                  |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ADD HYD                                                                     |                | 401.10                       | 16 3         | .06690          | 141.18                     | 4.668                       | 1.30833            | 1.500                      | 3.297              |                    |   |
| *S **ADD BASIN 401 TO THE TOTAL FLOW IN SAPPHIRE ST AT ANALYSIS             |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S POINT A                                                                  |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S DESIGN SAPPHIRE ST BASED ON THIS TOTAL FLOW                              |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ADD HYD                                                                     |                | 401.20                       | 3616 4       | .34940          | 567.94                     | 21.910                      | 1.17578            | 1.567                      | 2.540              |                    |   |
| *S **BASIN 402 IS UNIT 2 OF THE PROPOSED VISTA NUEVA SUBD.                  |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S ASSUME A FUTURE DENSITY OF 4 DU/AC                                       |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 402.00                       | -            | .05200          | 109.73                     | 3.628                       | 1.30834            | 1.500                      | 3.297 PER IMP=     | 42.00              |   |
| *S **ADD BASIN 402 TO THE TOTAL FLOW IN KIMELA DR AT ANALYSIS               |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S POINT B                                                                  |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S DESIGN KIMELA RD BASED ON THIS TOTAL FLOW                                |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ADD HYD                                                                     |                | 402.10                       | 5620 6       | .14400          | 281.32                     | 9.452                       | 1.23077            | 1.533                      | 3.052              |                    |   |
| *S **ASSUME BASINS 403 THRU 407, ABC SOUTH UNIT 1 & VALLEY WEST,            |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| *S ZONED SU-1 PRD, WILL BUILD OUT AT 4 DU/AC                                |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| COMPUTE NM HYD                                                              |                | 403.00                       | -            | .01480          | 31.24                      | 1.033                       | 1.30834            | 1.500                      | 3.298 PER IMP=     | 42.00              |   |
| *S ADD FLOW TO THAT IN SAPPHIRE ST.                                         |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ADD HYD                                                                     |                | 403.10                       | 46 7         | .36420          | 594.66                     | 22.943                      | 1.18117            | 1.567                      | 2.551              |                    |   |
| COMPUTE NM HYD                                                              |                | 404.00                       | -            | .01080          | 22.80                      | .754                        | 1.30834            | 1.500                      | 3.299 PER IMP=     | 42.00              |   |
| *S ADD FLOW TO THAT IN KIMELA DR.                                           |                |                              |              |                 |                            |                             |                    |                            |                    |                    |   |
| ADD HYD                                                                     |                | 404.10                       | 66 9         | .15480          | 304.07                     | 10.206                      | 1.23618            | 1.500                      | 3.069              |                    |   |



# AHYMO MODEL - DETAILED OUTPUT

START

0.0 HRS

FILE: VN.DAT - VISTA NUEVA  
/ / / / / / / / / / / / / /

BASINS 100 THRU 106--(DRAIN TO SAPPHIRE ST)

RAINFALL

TYPE=1 RAIN QUARTER=0.0  
RAIN ONE=1.90 IN RAIN SIX=2.20 IN  
RAIN DAY=2.68 IN DT=0.033333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.  
DT = .033333 HOURS END TIME = 5.999940 HOURS

|        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|
| .0000  | .0013  | .0027  | .0041  | .0055  | .0069  | .0084  |
| .0099  | .0115  | .0131  | .0147  | .0164  | .0181  | .0199  |
| .0217  | .0236  | .0256  | .0276  | .0296  | .0318  | .0340  |
| .0363  | .0387  | .0412  | .0438  | .0465  | .0493  | .0523  |
| .0554  | .0587  | .0622  | .0675  | .0731  | .0791  | .0920  |
| .1209  | .1653  | .2291  | .3162  | .4306  | .5765  | .7582  |
| .9799  | 1.1849 | 1.2707 | 1.3432 | 1.4077 | 1.4663 | 1.5203 |
| 1.5704 | 1.6173 | 1.6612 | 1.7025 | 1.7415 | 1.7783 | 1.8132 |
| 1.8462 | 1.8775 | 1.9072 | 1.9354 | 1.9622 | 1.9681 | 1.9737 |
| 1.9789 | 1.9839 | 1.9887 | 1.9933 | 1.9976 | 2.0019 | 2.0059 |
| 2.0098 | 2.0136 | 2.0172 | 2.0208 | 2.0242 | 2.0276 | 2.0308 |
| 2.0340 | 2.0371 | 2.0401 | 2.0430 | 2.0458 | 2.0486 | 2.0514 |
| 2.0541 | 2.0567 | 2.0592 | 2.0618 | 2.0642 | 2.0667 | 2.0690 |
| 2.0714 | 2.0737 | 2.0759 | 2.0781 | 2.0803 | 2.0825 | 2.0846 |
| 2.0867 | 2.0887 | 2.0908 | 2.0927 | 2.0947 | 2.0966 | 2.0986 |
| 2.1004 | 2.1023 | 2.1041 | 2.1060 | 2.1077 | 2.1095 | 2.1113 |
| 2.1130 | 2.1147 | 2.1164 | 2.1180 | 2.1197 | 2.1213 | 2.1229 |
| 2.1245 | 2.1261 | 2.1277 | 2.1292 | 2.1308 | 2.1323 | 2.1338 |
| 2.1353 | 2.1367 | 2.1382 | 2.1396 | 2.1411 | 2.1425 | 2.1439 |
| 2.1453 | 2.1466 | 2.1480 | 2.1494 | 2.1507 | 2.1520 | 2.1534 |
| 2.1547 | 2.1560 | 2.1573 | 2.1585 | 2.1598 | 2.1611 | 2.1623 |
| 2.1636 | 2.1648 | 2.1660 | 2.1672 | 2.1684 | 2.1696 | 2.1708 |
| 2.1720 | 2.1731 | 2.1743 | 2.1755 | 2.1766 | 2.1777 | 2.1789 |
| 2.1800 | 2.1811 | 2.1822 | 2.1833 | 2.1844 | 2.1855 | 2.1866 |
| 2.1876 | 2.1887 | 2.1898 | 2.1908 | 2.1919 | 2.1929 | 2.1939 |
| 2.1950 | 2.1960 | 2.1970 | 2.1980 | 2.1990 | 2.2000 |        |

\*S \*\*BASIN 100 IS CURRENTLY UNDEVELOPED, ASSUME FUTURE DEVELOPMENT

\*S WILL BE AT A DENSITY OF 4 DU/AC, SMALL ONSITE DETENTION EXISTS

COMPUTE NM HYD

ID=1 HYD NO=100 AREA=0.0715 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072790HR TP = .133300HR K/TP RATIO = .546065 SHAPE CONSTANT, N = 7.088684

UNIT PEAK = 118.37 CFS UNIT VOLUME = .9992 B = 525.44 P60 = 1.9000

AREA = .030030 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118218HR TP = .133300HR K/TP RATIO = .886854 SHAPE CONSTANT, N = 4.000134

UNIT PEAK = 110.50 CFS UNIT VOLUME = 1.000 B = 355.18 P60 = 1.9000

AREA = .041470 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 1.30834 INCHES = 4.9891 ACRE-Feet  
PEAK DISCHARGE RATE = 150.90 CFS AT 1.500 HOURS BASIN AREA = .0715 SQ. MI.

\*S ASSUME DETENTION AREA IS 50'x30'x4' DEEP W/ WEIR DISCHARGE  
ROUTE RESERVOIR ID=20 HYD NO=100.01 INFLOW ID=1 CODE=5

OUTFLOW(CFS) STORAGE(AF) ELEV(FT)  
0 0 0  
0.1 0.0383 1  
0.11 0.0847 2  
0.111 0.1513 3  
150 0.2160 4

| TIME<br>(HRS) | INFLOW<br>(CFS) | ELEV<br>(FEET) | VOLUME<br>(AC-FT) | OUTFLOW<br>(CFS) |
|---------------|-----------------|----------------|-------------------|------------------|
| .00           | .00             | .00            | .000              | .00              |
| .17           | .00             | .00            | .000              | .00              |
| .33           | .00             | .00            | .000              | .00              |
| .50           | .00             | .00            | .000              | .00              |
| .67           | .00             | .00            | .000              | .00              |
| .83           | .00             | .00            | .000              | .00              |
| 1.00          | .00             | .00            | .000              | .00              |
| 1.17          | .05             | .00            | .000              | .00              |
| 1.33          | 27.70           | 2.53           | .120              | .11              |
| 1.50          | 150.90          | 4.00           | .216              | 149.34           |
| 1.67          | 79.22           | 3.54           | .186              | 81.16            |
| 1.83          | 43.10           | 3.29           | .170              | 43.79            |
| 2.00          | 27.66           | 3.19           | .163              | 28.00            |
| 2.17          | 13.12           | 3.09           | .157              | 13.56            |
| 2.33          | 6.58            | 3.04           | .154              | 6.68             |
| 2.50          | 4.04            | 3.03           | .153              | 4.10             |
| 2.67          | 2.61            | 3.02           | .152              | 2.65             |
| 2.83          | 1.76            | 3.01           | .152              | 1.78             |
| 3.00          | 1.24            | 3.01           | .152              | 1.25             |
| 3.17          | .91             | 3.01           | .152              | .92              |
| 3.33          | .71             | 3.00           | .152              | .72              |
| 3.50          | .59             | 3.00           | .152              | .59              |
| 3.67          | .52             | 3.00           | .151              | .52              |
| 3.83          | .47             | 3.00           | .151              | .47              |
| 4.00          | .43             | 3.00           | .151              | .43              |
| 4.17          | .42             | 3.00           | .151              | .42              |
| 4.33          | .40             | 3.00           | .151              | .40              |
| 4.50          | .40             | 3.00           | .151              | .40              |
| 4.67          | .41             | 3.00           | .151              | .41              |
| 4.83          | .41             | 3.00           | .151              | .42              |
| 5.00          | .43             | 3.00           | .151              | .43              |
| 5.17          | .45             | 3.00           | .151              | .45              |
| 5.33          | .47             | 3.00           | .151              | .47              |
| 5.50          | .48             | 3.00           | .151              | .48              |
| 5.67          | .50             | 3.00           | .151              | .50              |
| 5.83          | .53             | 3.00           | .151              | .53              |
| 6.00          | .55             | 3.00           | .151              | .55              |
| 6.17          | .22             | 3.00           | .151              | .23              |
| 6.33          | .06             | 3.00           | .151              | .11              |
| 6.50          | .03             | 2.98           | .150              | .11              |
| 6.67          | .01             | 2.96           | .149              | .11              |
| 6.83          | .01             | 2.94           | .147              | .11              |
| 7.00          | .00             | 2.92           | .146              | .11              |
| 7.17          | .00             | 2.90           | .145              | .11              |
| 7.33          | .00             | 2.88           | .143              | .11              |
| 7.50          | .00             | 2.85           | .141              | .11              |
| 7.67          | .00             | 2.83           | .140              | .11              |
| 7.83          | .00             | 2.81           | .138              | .11              |
| 8.00          | .00             | 2.78           | .137              | .11              |
| 8.17          | .00             | 2.76           | .135              | .11              |
| 8.33          | .00             | 2.74           | .134              | .11              |
| 8.50          | .00             | 2.71           | .132              | .11              |
| 8.67          | .00             | 2.69           | .131              | .11              |
| 8.83          | .00             | 2.67           | .129              | .11              |
| 9.00          | .00             | 2.65           | .128              | .11              |
| 9.17          | .00             | 2.62           | .126              | .11              |
| 9.33          | .00             | 2.60           | .125              | .11              |
| 9.50          | .00             | 2.58           | .123              | .11              |
| 9.67          | .00             | 2.55           | .122              | .11              |
| 9.83          | .00             | 2.53           | .120              | .11              |
| 10.00         | .00             | 2.51           | .119              | .11              |
| 10.17         | .00             | 2.49           | .117              | .11              |
| 10.33         | .00             | 2.46           | .116              | .11              |
| 10.50         | .00             | 2.44           | .114              | .11              |
| 10.67         | .00             | 2.42           | .113              | .11              |
| 10.83         | .00             | 2.39           | .111              | .11              |
| 11.00         | .00             | 2.37           | .109              | .11              |
| 11.17         | .00             | 2.35           | .108              | .11              |
| 11.33         | .00             | 2.33           | .106              | .11              |
| 11.50         | .00             | 2.30           | .105              | .11              |
| 11.67         | .00             | 2.28           | .103              | .11              |
| 11.83         | .00             | 2.26           | .102              | .11              |
| 12.00         | .00             | 2.23           | .100              | .11              |
| 12.17         | .00             | 2.21           | .099              | .11              |
| 12.33         | .00             | 2.19           | .097              | .11              |
| 12.50         | .00             | 2.17           | .096              | .11              |
| 12.67         | .00             | 2.14           | .094              | .11              |
| 12.83         | .00             | 2.12           | .093              | .11              |

|       |     |      |      |     |
|-------|-----|------|------|-----|
| 13.00 | .00 | 2.10 | .091 | .11 |
| 13.17 | .00 | 2.08 | .090 | .11 |
| 13.33 | .00 | 2.05 | .088 | .11 |
| 13.50 | .00 | 2.03 | .087 | .11 |
| 13.67 | .00 | 2.01 | .085 | .11 |
| 13.83 | .00 | 1.98 | .084 | .11 |
| 14.00 | .00 | 1.95 | .082 | .11 |
| 14.17 | .00 | 1.91 | .081 | .11 |
| 14.33 | .00 | 1.88 | .079 | .11 |
| 14.50 | .00 | 1.85 | .078 | .11 |
| 14.67 | .00 | 1.82 | .076 | .11 |
| 14.83 | .00 | 1.78 | .075 | .11 |
| 15.00 | .00 | 1.75 | .073 | .11 |
| 15.17 | .00 | 1.72 | .072 | .11 |
| 15.33 | .00 | 1.69 | .070 | .11 |
| 15.50 | .00 | 1.66 | .069 | .11 |
| 15.67 | .00 | 1.62 | .067 | .11 |
| 15.83 | .00 | 1.59 | .066 | .11 |
| 16.00 | .00 | 1.56 | .064 | .11 |
| 16.17 | .00 | 1.53 | .063 | .11 |
| 16.33 | .00 | 1.50 | .061 | .10 |
| 16.50 | .00 | 1.47 | .060 | .10 |
| 16.67 | .00 | 1.44 | .059 | .10 |
| 16.83 | .00 | 1.41 | .057 | .10 |
| 17.00 | .00 | 1.38 | .056 | .10 |
| 17.17 | .00 | 1.34 | .054 | .10 |
| 17.33 | .00 | 1.31 | .053 | .10 |
| 17.50 | .00 | 1.28 | .051 | .10 |
| 17.67 | .00 | 1.25 | .050 | .10 |
| 17.83 | .00 | 1.22 | .049 | .10 |
| 18.00 | .00 | 1.19 | .047 | .10 |
| 18.17 | .00 | 1.16 | .046 | .10 |
| 18.33 | .00 | 1.13 | .044 | .10 |
| 18.50 | .00 | 1.10 | .043 | .10 |
| 18.67 | .00 | 1.07 | .042 | .10 |
| 18.83 | .00 | 1.04 | .040 | .10 |
| 19.00 | .00 | 1.01 | .039 | .10 |
| 19.17 | .00 | .98  | .038 | .10 |
| 19.33 | .00 | .94  | .036 | .09 |
| 19.50 | .00 | .91  | .035 | .09 |
| 19.67 | .00 | .88  | .034 | .09 |
| 19.83 | .00 | .85  | .032 | .08 |

PEAK DISCHARGE = 149.339 CFS - PEAK OCCURS AT HOUR 1.50  
MAXIMUM WATER SURFACE ELEVATION = 3.996  
MAXIMUM STORAGE = .2157 AC-FT INCREMENTAL TIME= .033333HRS

PRINT HYD ID=20 CODE=1  
PARTIAL HYDROGRAPH 100.01

RUNOFF VOLUME = 1.30009 INCHES = 4.9577 ACRE-FEET  
PEAK DISCHARGE RATE = 149.34 CFS AT 1.500 HOURS BASIN AREA = .0715 SQ. MI.

\*S \*\*AREA 101 IS FULLY DEVELOPED WITH SINGLE FAMILY RESIDENTIAL  
\*S HOMES @ A DENSITY OF 4 DU/AC  
COMPUTE NM HYD ID=2 HYD NO=101 AREA=0.0370 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 61.353 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.9000  
AREA = .015540 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
UNIT PEAK = 57.077 CFS UNIT VOLUME = 1.000 B = 354.54 P60 = 1.9000  
AREA = .021460 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=2 CODE=1  
PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 1.30834 INCHES = 2.5818 ACRE-FEET  
PEAK DISCHARGE RATE = 78.08 CFS AT 1.500 HOURS BASIN AREA = .0370 SQ. MI.

ADD HYD ID=3 HYD NO=101.2 ID=20 ID=2  
PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 101.20

RUNOFF VOLUME = 1.30290 INCHES = 7.5394 ACRE-FEET  
PEAK DISCHARGE RATE = 227.42 CFS AT 1.500 HOURS BASIN AREA = .1085 SQ. MI.

\*S \*\*AREA 102 IS A MIDDLE SCHOOL, (ONSITE DETENTION TO REDUCE RUNOFF)  
COMPUTE NM HYD ID=4 HYD NO=102 AREA=0.0400 SQ MI

PER A=100 PER B=0 PER C=0 PER D=0  
TP=-0.1333 HR MASS RAIN=-1

K = .162928HR TP = .133300HR K/TP RATIO = 1.222262 SHAPE CONSTANT, N = 2.911962  
UNIT PEAK = 82.390 CFS UNIT VOLUME = .9995 B = 274.56 P60 = 1.9000  
AREA = .040000 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = .44915 INCHES = .9582 ACRE-FEET  
PEAK DISCHARGE RATE = 33.96 CFS AT 1.533 HOURS BASIN AREA = .0400 SQ. MI.

\*S \*\*ROUTE THE SCHOOL'S RUNOFF IN A 28'-F-F RESIDENTIAL STREET, S=2%  
\*S \*\*ASSUME SECTION EXTENDS TO THE ROW LINE ON BOTH SIDES SO THERE  
\*S WILL BE ADEQUATE CAPACITY  
COMPUTE RATING CURVE CID=-1 VS NO=1 NO SEG=1 MIN EL=100.0 MAX EL=101.0  
CH SLOPE=0.02 FP SLOPE=0.02 N=0.017 DIST=48

DIST ELEV DIST ELEV DIST ELEV DIST ELEV  
0 101.00 10.0 100.67 10.1 100.00 24.0 100.28  
38.0 100.00 38.1 100.67 48.0 101.00

COMPUTE TRAVEL TIME ID=5 REACH NO=1 NO VS=1 LENGTH=650 FT SLOPE=0.02

TRAVEL TIME TABLE REACH= 1.0

| WATER<br>DEPTH<br>FEET | AVERAGE<br>AREA<br>SQ.FT. | FLOW<br>RATE<br>CFS | TRAVEL<br>TIME<br>HRS |
|------------------------|---------------------------|---------------------|-----------------------|
| .053                   | .138                      | .15                 | .1670                 |
| .105                   | .554                      | .95                 | .1052                 |
| .158                   | 1.246                     | 2.80                | .0803                 |
| .211                   | 2.215                     | 6.03                | .0663                 |
| .263                   | 3.461                     | 10.94               | .0571                 |
| .316                   | 4.920                     | 18.84               | .0472                 |
| .368                   | 6.394                     | 29.08               | .0397                 |
| .421                   | 7.869                     | 41.00               | .0347                 |
| .474                   | 9.344                     | 54.46               | .0310                 |
| .526                   | 10.821                    | 69.37               | .0282                 |
| .579                   | 12.298                    | 85.66               | .0259                 |
| .632                   | 13.776                    | 103.24              | .0241                 |
| .684                   | 15.261                    | 119.89              | .0230                 |
| .737                   | 16.869                    | 132.52              | .0230                 |
| .790                   | 18.644                    | 147.34              | .0228                 |
| .842                   | 20.586                    | 164.39              | .0226                 |
| .895                   | 22.695                    | 183.72              | .0223                 |
| .947                   | 24.971                    | 205.41              | .0219                 |
| 1.000                  | 27.414                    | 229.56              | .0216                 |

ROUTE ID=5 HYD NO=102.1 INFLOW ID=4 DT=0.0  
PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 102.10

RUNOFF VOLUME = .44918 INCHES = .9582 ACRE-FEET  
PEAK DISCHARGE RATE = 33.15 CFS AT 1.567 HOURS BASIN AREA = .0400 SQ. MI.

\*S \*\*ADD THE ROUTED FLOW FROM 102 TO THE EARLIER TOTAL  
ADD HYD ID=6 HYD NO=102.3 ID=3 ID=5  
PRINT HYD ID=6 CODE=1

# PARTIAL HYDROGRAPH 102.30

RUNOFF VOLUME = 1.07294 INCHES = 8.4976 ACRE-FEET  
 PEAK DISCHARGE RATE = 256.33 CFS AT 1.533 HOURS BASIN AREA = .1485 SQ. MI.

\*S \*\*BASIN 103 IS COMPLETELY DEVELOPED  
 COMPUTE NM HYD

ID=7 HYD NO=103 AREA=0.0440 SQ MI  
 PER A=0 PER B=29 PER C=29 PER D=42  
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
 UNIT PEAK = 72.960 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.9000  
 AREA = .018480 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
 UNIT PEAK = 67.876 CFS UNIT VOLUME = 1.000 B = 354.54 P60 = 1.9000  
 AREA = .025520 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=7 CODE=1

# PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 1.30834 INCHES = 3.0702 ACRE-FEET  
 PEAK DISCHARGE RATE = 92.85 CFS AT 1.500 HOURS BASIN AREA = .0440 SQ. MI.

\*S \*\*ADD 103 TO TOTAL  
 ADD HYD ID=8 HYD NO=103.1 ID=6 ID=7  
 PRINT HYD ID=8 CODE=1

# PARTIAL HYDROGRAPH 103.10

RUNOFF VOLUME = 1.12675 INCHES = 11.5679 ACRE-FEET  
 PEAK DISCHARGE RATE = 347.37 CFS AT 1.500 HOURS BASIN AREA = .1925 SQ. MI.

\*S \*\*ASSUME FLOW IS ROUTED IN A 28' RESIDENTIAL STREET @ S=2%  
 \*S \*\*ASSUME CROSS-SECTION HAS FULL ROW WHEN THE STREET IS EXCEEDED  
 COMPUTE RATING CURVE CID=-1 VS NO=1 NO SEG=1 MIN EL=100.0 MAX EL=101.0

CH SLOPE=0.02 FP SLOPE=0.02 N=0.017 DIST=48  
 DIST ELEV DIST ELEV DIST ELEV DIST ELEV  
 0 101.00 10.0 100.67 10.1 100.00 24.0 100.28  
 38.0 100.00 38.1 100.67 48.0 101.00

COMPUTE TRAVEL TIME ID=9 REACH NO=1 NO VS=1 LENGTH=900 FT SLOPE=0.02

# TRAVEL TIME TABLE

REACH= 1.0

| WATER<br>DEPTH<br>FEET | AVERAGE<br>AREA<br>SQ.FT. | FLOW<br>RATE<br>CFS | TRAVEL<br>TIME<br>HRS |
|------------------------|---------------------------|---------------------|-----------------------|
| .053                   | .138                      | .15                 | .2312                 |
| .105                   | .554                      | .95                 | .1457                 |
| .158                   | 1.246                     | 2.80                | .1112                 |
| .211                   | 2.215                     | 6.03                | .0918                 |
| .263                   | 3.461                     | 10.94               | .0791                 |
| .316                   | 4.920                     | 18.84               | .0653                 |
| .368                   | 6.394                     | 29.08               | .0550                 |
| .421                   | 7.869                     | 41.00               | .0480                 |
| .474                   | 9.344                     | 54.46               | .0429                 |
| .526                   | 10.821                    | 69.37               | .0390                 |
| .579                   | 12.298                    | 85.66               | .0359                 |
| .632                   | 13.776                    | 103.24              | .0334                 |
| .684                   | 15.261                    | 119.89              | .0318                 |
| .737                   | 16.869                    | 132.52              | .0318                 |
| .790                   | 18.644                    | 147.34              | .0316                 |
| .842                   | 20.586                    | 164.39              | .0313                 |
| .895                   | 22.695                    | 183.72              | .0309                 |
| .947                   | 24.971                    | 205.41              | .0304                 |
| 1.000                  | 27.414                    | 229.56              | .0299                 |

ROUTE ID=9 HYD NO=103.2 INFLOW ID=8 DT=0.0  
 TRAVEL TIME TABLE EXCEEDED  
 PRINT HYD ID=9 CODE=1

# PARTIAL HYDROGRAPH 103.20

RUNOFF VOLUME = 1.12658 INCHES = 11.5662 ACRE-FEET  
 PEAK DISCHARGE RATE = 332.01 CFS AT 1.533 HOURS BASIN AREA = .1925 SQ. MI.

\*S \*\*AREA 104 IS FULLY DEVELOPED

COMPUTE NM HYD ID=10 HYD NO=104 AREA=0.044 SQ MI  
 PER A=0 PER B=29 PER C=29 PER D=42  
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
 UNIT PEAK = 72.960 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.9000  
 AREA = .018480 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
 UNIT PEAK = 67.876 CFS UNIT VOLUME = 1.000 B = 354.54 P60 = 1.9000  
 AREA = .025520 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=10 CODE=1

# PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 1.30834 INCHES = 3.0702 ACRE-FEET  
 PEAK DISCHARGE RATE = 92.85 CFS AT 1.500 HOURS BASIN AREA = .0440 SQ. MI.

ADD HYD ID=11 HYD NO=104.1 ID=9 ID=10  
 PRINT HYD ID=11 CODE=1

# PARTIAL HYDROGRAPH 104.10

RUNOFF VOLUME = 1.16040 INCHES = 14.6364 ACRE-FEET  
 PEAK DISCHARGE RATE = 421.91 CFS AT 1.533 HOURS BASIN AREA = .2365 SQ. MI.

\*S \*\*AREA 105 IS A PARK & COA WELL SITE, %D=7%  
 COMPUTE NM HYD ID=12 HYD NO=105 AREA=0.021 SQ MI  
 PER A=31 PER B=31 PER C=31 PER D=7  
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
 UNIT PEAK = 5.8036 CFS UNIT VOLUME = .9973 B = 526.28 P60 = 1.9000  
 AREA = .001470 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .133298HR TP = .133300HR K/TP RATIO = .999983 SHAPE CONSTANT, N = 3.530358  
 UNIT PEAK = 47.256 CFS UNIT VOLUME = 1.000 B = 322.54 P60 = 1.9000  
 AREA = .019530 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR  
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=12 CODE=1

# PARTIAL HYDROGRAPH 105.00

RUNOFF VOLUME = .77100 INCHES = .8635 ACRE-FEET  
 PEAK DISCHARGE RATE = 29.49 CFS AT 1.500 HOURS BASIN AREA = .0210 SQ. MI.

ADD HYD ID=13 HYD NO=105.1 ID=11 ID=12  
 PRINT HYD ID=13 CODE=1

# PARTIAL HYDROGRAPH 105.10

RUNOFF VOLUME = 1.12864 INCHES = 15.4999 ACRE-FEET  
 PEAK DISCHARGE RATE = 451.36 CFS AT 1.533 HOURS BASIN AREA = .2575 SQ. MI.

\*S \*\*ROUTE FLOW TO THE EXISTING END OF SAPPHIRE ST.  
COMPUTE RATING CURVE CID=-1 VS NO=1 NO SEG=1 MIN EL=100.0 MAX EL=101.0

CH SLOPE=0.02 FP SLOPE=0.02 N=0.017 DIST=48  
DIST ELEV DIST ELEV DIST ELEV DIST ELEV  
0 101.00 10.0 100.67 10.1 100.00 24.0 100.28  
38.0 100.00 38.1 100.67 48.0 101.00

COMPUTE TRAVEL TIME ID=14 REACH NO=1 NO VS=1 LENGTH=1200 FT SLOPE=0.02

TRAVEL TIME TABLE  
REACH= 1.0

| WATER<br>DEPTH<br>FEET | AVERAGE<br>AREA<br>SQ.FT. | FLOW<br>RATE<br>CFS | TRAVEL<br>TIME<br>HRS |
|------------------------|---------------------------|---------------------|-----------------------|
| .053                   | .138                      | .15                 | .3083                 |
| .105                   | .554                      | .95                 | .1942                 |
| .158                   | 1.246                     | 2.80                | .1482                 |
| .211                   | 2.215                     | 6.03                | .1223                 |
| .263                   | 3.461                     | 10.94               | .1054                 |
| .316                   | 4.920                     | 18.84               | .0871                 |
| .368                   | 6.394                     | 29.08               | .0733                 |
| .421                   | 7.869                     | 41.00               | .0640                 |
| .474                   | 9.344                     | 54.46               | .0572                 |
| .526                   | 10.821                    | 69.37               | .0520                 |
| .579                   | 12.298                    | 85.66               | .0479                 |
| .632                   | 13.776                    | 103.24              | .0445                 |
| .684                   | 15.261                    | 119.89              | .0424                 |
| .737                   | 16.869                    | 132.52              | .0424                 |
| .790                   | 18.644                    | 147.34              | .0422                 |
| .842                   | 20.586                    | 164.39              | .0417                 |
| .895                   | 22.695                    | 183.72              | .0412                 |
| .947                   | 24.971                    | 205.41              | .0405                 |
| 1.000                  | 27.414                    | 229.56              | .0398                 |

ROUTE ID=14 HYD NO=105.2 INFLOW ID=13 DT=0.0  
TRAVEL TIME TABLE EXCEEDED  
PRINT HYD ID=14 CODE=1

PARTIAL HYDROGRAPH 105.20

RUNOFF VOLUME = 1.12847 INCHES = 15.4976 ACRE-FEET  
PEAK DISCHARGE RATE = 407.89 CFS AT 1.600 HOURS BASIN AREA = .2575 SQ. MI.

\*S \*\*BASIN 106 IS FULLY DEVELOPED  
COMPUTE NM HYD

ID=15 HYD NO=106 AREA=0.025 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 41.455 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 1.9000  
AREA = .010500 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
UNIT PEAK = 38.566 CFS UNIT VOLUME = 1.000 B = 354.54 P60 = 1.9000  
AREA = .014500 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=15 CODE=1

PARTIAL HYDROGRAPH 106.00

RUNOFF VOLUME = 1.30834 INCHES = 1.7444 ACRE-FEET  
PEAK DISCHARGE RATE = 52.76 CFS AT 1.500 HOURS BASIN AREA = .0250 SQ. MI.

\*S \*\*TOTAL FLOW IN SAPPHIRE ST. AT ANALYSIS POINT A  
ADD HYD ID=16 HYD NO=106.1 ID=14 ID=15  
PRINT HYD ID=16 CODE=1

PARTIAL HYDROGRAPH 106.10

RUNOFF VOLUME = 1.14439 INCHES = 17.2420 ACRE-FEET  
PEAK DISCHARGE RATE = 447.20 CFS AT 1.567 HOURS BASIN AREA = .2825 SQ. MI.

\*S \*\*BASINS 200,201, & 202 DRAIN TO KIMELA DR  
COMPUTE NM HYD ID=17 HYD NO=200 AREA=0.053 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 87.884 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.9000  
AREA = .022260 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
UNIT PEAK = 81.759 CFS UNIT VOLUME = 1.000 B = 354.54 P60 = 1.9000  
AREA = .030740 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=17 CODE=1

PARTIAL HYDROGRAPH 200.00

RUNOFF VOLUME = 1.30834 INCHES = 3.6982 ACRE-FEET  
PEAK DISCHARGE RATE = 111.84 CFS AT 1.500 HOURS BASIN AREA = .0530 SQ. MI.

\*S \*\*ROUTE FLOW TO THE END OF KIMELA DR.

COMPUTE RATING CURVE CID=-1 VS NO=1 NO SEG=1 MIN EL=100.0 MAX EL=101.0  
CH SLOPE=0.02 FP SLOPE=0.02 N=0.017 DIST=48

| DIST | ELEV   | DIST | ELEV   | DIST | ELEV   | DIST | ELEV   |
|------|--------|------|--------|------|--------|------|--------|
| 0    | 101.00 | 10.0 | 100.67 | 10.1 | 100.00 | 24.0 | 100.28 |
| 38.0 | 100.00 | 38.1 | 100.67 | 48.0 | 101.00 |      |        |

COMPUTE TRAVEL TIME ID=18 REACH NO=1 NO VS=1 LENGTH=800 FT SLOPE=0.02

TRAVEL TIME TABLE REACH= 1.0

| WATER<br>DEPTH<br>FEET | AVERAGE<br>AREA<br>SQ.FT. | FLOW<br>RATE<br>CFS | TRAVEL<br>TIME<br>HRS |
|------------------------|---------------------------|---------------------|-----------------------|
| .053                   | .138                      | .15                 | .2055                 |
| .105                   | .554                      | .95                 | .1295                 |
| .158                   | 1.246                     | 2.80                | .0988                 |
| .211                   | 2.215                     | 6.03                | .0816                 |
| .263                   | 3.461                     | 10.94               | .0703                 |
| .316                   | 4.920                     | 18.84               | .0580                 |
| .368                   | 6.394                     | 29.08               | .0489                 |
| .421                   | 7.869                     | 41.00               | .0427                 |
| .474                   | 9.344                     | 54.46               | .0381                 |
| .526                   | 10.821                    | 69.37               | .0347                 |
| .579                   | 12.298                    | 85.66               | .0319                 |
| .632                   | 13.776                    | 103.24              | .0297                 |
| .684                   | 15.261                    | 119.89              | .0283                 |
| .737                   | 16.869                    | 132.52              | .0283                 |
| .790                   | 18.644                    | 147.34              | .0281                 |
| .842                   | 20.586                    | 164.39              | .0278                 |
| .895                   | 22.695                    | 183.72              | .0275                 |
| .947                   | 24.971                    | 205.41              | .0270                 |
| 1.000                  | 27.414                    | 229.56              | .0265                 |

ROUTE ID=18 HYD NO=200.1 INFLOW ID=17 DT=0.0  
PRINT HYD ID=18 CODE=1

PARTIAL HYDROGRAPH 200.10

RUNOFF VOLUME = 1.30835 INCHES = 3.6982 ACRE-FEET  
PEAK DISCHARGE RATE = 110.91 CFS AT 1.533 HOURS BASIN AREA = .0530 SQ. MI.

COMPUTE NM HYD

ID=1 HYD NO=201 AREA=0.026 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 43.113 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 1.9000  
AREA = .010920 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
UNIT PEAK = 40.108 CFS UNIT VOLUME = 1.000 B = 354.54 P60 = 1.9000  
AREA = .015080 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 201.00

RUNOFF VOLUME = 1.30834 INCHES = 1.8142 ACRE-FEET  
PEAK DISCHARGE RATE = 54.87 CFS AT 1.500 HOURS BASIN AREA = .0260 SQ. MI.

ADD HYD ID=18 HYD NO=201.1 ID=1 ID=18  
PRINT HYD ID=18 CODE=1

PARTIAL HYDROGRAPH 201.10

RUNOFF VOLUME = 1.30834 INCHES = 5.5124 ACRE-FEET  
PEAK DISCHARGE RATE = 164.04 CFS AT 1.533 HOURS BASIN AREA = .0790 SQ. MI.

\*S \*\*BASIN 202 IS AN ELEMENTARY SCHOOL, (ONSITE DETENTION TO REDUCE RUNOFF)  
COMPUTE NM HYD ID=19 HYD NO=202 AREA=0.013 SQ MI  
PER A=100 PER B=0 PER C=0 PER D=0  
TP=-0.1333 HR MASS RAIN=-1

K = .162928HR TP = .133300HR K/TP RATIO = 1.222262 SHAPE CONSTANT, N = 2.911962  
UNIT PEAK = 26.777 CFS UNIT VOLUME = .9992 B = 274.56 P60 = 1.9000  
AREA = .013000 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=19 CODE=1

PARTIAL HYDROGRAPH 202.00

RUNOFF VOLUME = .44915 INCHES = .3114 ACRE-FEET  
PEAK DISCHARGE RATE = 11.04 CFS AT 1.533 HOURS BASIN AREA = .0130 SQ. MI.

\*S \*\*ADD THE BASINS TOGETHER TO GET FLOW IN KIMELA @ ANALYSIS POINT B  
ADD HYD ID=20 HYD NO=202.1 ID=18 ID=19  
PRINT HYD ID=20 CODE=1

PARTIAL HYDROGRAPH 202.10

RUNOFF VOLUME = 1.18693 INCHES = 5.8238 ACRE-FEET  
PEAK DISCHARGE RATE = 175.08 CFS AT 1.533 HOURS BASIN AREA = .0920 SQ. MI.

\*S \*\*BASIN 300 DRAINS TO ANALYSIS POINT C, IT IS CURRENTLY UNDEVELOPED  
\* ASSUME THE FUTURE DEVELOPMENT WILL BE 4 DU/AC  
COMPUTE NM HYD ID=1 HYD NO=300 AREA=0.0289 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 47.921 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 1.9000  
AREA = .012138 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
UNIT PEAK = 44.582 CFS UNIT VOLUME = 1.000 B = 354.54 P60 = 1.9000  
AREA = .016762 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=1

HYDROGRAPH FROM AREA 300.00

RUNOFF VOLUME = 1.30834 INCHES = 2.0166 ACRE-FEET  
PEAK DISCHARGE RATE = 60.99 CFS AT 1.500 HOURS BASIN AREA = .0289 SQ. MI.

\*S \*\*BASINS 400 THRU 407 ARE CURRENTLY UNDEVELOPED, FOR PURPOSES  
\*S OF THIS REPORT, ASSUME ALL BASINS WILL BE BUILT OUT AT THEIR  
\*S CURRENT ZONING

\*S \*\*BASIN 400, DENSITY = 4 DU/AC  
COMPUTE NM HYD

ID=2 HYD NO=400 AREA=0.0108 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 17.908 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.9000  
AREA = .004536 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
UNIT PEAK = 16.660 CFS UNIT VOLUME = .9997 B = 354.54 P60 = 1.9000  
AREA = .006264 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=2 CODE=1

HYDROGRAPH FROM AREA 400.00

RUNOFF VOLUME = 1.30834 INCHES = .7536 ACRE-FEET  
PEAK DISCHARGE RATE = 22.80 CFS AT 1.500 HOURS BASIN AREA = .0108 SQ. MI.

\*S \*\*BASIN 401 IS PHASE 1 OF THE PROPOSED VISTA NUEVA SUBD.

\*S ASSUME IT WILL ALSO HAVE A DENSITY OF 4 DU/AC  
COMPUTE NM HYD

ID=3 HYD NO=401 AREA=0.038 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 63.011 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.9000  
AREA = .015960 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
UNIT PEAK = 58.620 CFS UNIT VOLUME = 1.000 B = 354.54 P60 = 1.9000  
AREA = .022040 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 401.00

RUNOFF VOLUME = 1.30834 INCHES = 2.6516 ACRE-FEET  
PEAK DISCHARGE RATE = 80.19 CFS AT 1.500 HOURS BASIN AREA = .0380 SQ. MI.

\*S ADD FLOW FROM BASIN 300  
ADD HYD ID=3 HYD NO=401.1 ID=1 ID=3  
PRINT HYD ID=3 CODE=1

HYDROGRAPH FROM AREA 401.10

RUNOFF VOLUME = 1.30833 INCHES = 4.6681 ACRE-FEET  
PEAK DISCHARGE RATE = 141.18 CFS AT 1.500 HOURS BASIN AREA = .0669 SQ. MI.

\*S \*\*ADD BASIN 401 TO THE TOTAL FLOW IN SAPPHIRE ST AT ANALYSIS  
\*S POINT A  
\*S DESIGN SAPPHIRE ST BASED ON THIS TOTAL FLOW  
ADD HYD ID=4 HYD NO=401.2 ID=3 ID=16  
PRINT HYD ID=4 CODE=1

HYDROGRAPH FROM AREA 401.20

RUNOFF VOLUME = 1.17578 INCHES = 21.9101 ACRE-FEET  
PEAK DISCHARGE RATE = 567.94 CFS AT 1.567 HOURS BASIN AREA = .3494 SQ. MI.

\*S \*\*BASIN 402 IS UNIT 2 OF THE PROPOSED VISTA NUEVA SUBD.

\*S ASSUME A FUTURE DENSITY OF 4 DU/AC

COMPUTE NM HYD

ID=5 HYD NO=402 AREA=0.0520 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 86.225 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.9000  
AREA = .021840 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
UNIT PEAK = 80.217 CFS UNIT VOLUME = 1.000 B = 354.54 P60 = 1.9000  
AREA = .030160 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333  
PRINT HYD ID=5 CODE=1

HYDROGRAPH FROM AREA 402.00

RUNOFF VOLUME = 1.30834 INCHES = 3.6284 ACRE-FEET  
PEAK DISCHARGE RATE = 109.73 CFS AT 1.500 HOURS BASIN AREA = .0520 SQ. MI.

\*S \*\*ADD BASIN 402 TO THE TOTAL FLOW IN KIMELA DR AT ANALYSIS

\*S POINT B

\*S DESIGN KIMELA RD BASED ON THIS TOTAL FLOW

ADD HYD ID=6 HYD NO=402.1 ID=5 ID=20

PRINT HYD ID=6 CODE=1

HYDROGRAPH FROM AREA 402.10

RUNOFF VOLUME = 1.23077 INCHES = 9.4523 ACRE-FEET  
PEAK DISCHARGE RATE = 281.32 CFS AT 1.533 HOURS BASIN AREA = .1440 SQ. MI.

\*S \*\*ASSUME BASINS 403 THRU 407, ABO SOUTH UNIT 1 & VALLEY WEST,

\*S ZONED SU-1 PRD, WILL BUILD OUT AT 4 DU/AC

COMPUTE NM HYD

ID=7 HYD NO=403 AREA=0.0148 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 24.541 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.9000  
AREA = .006216 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
UNIT PEAK = 22.831 CFS UNIT VOLUME = .9999 B = 354.54 P60 = 1.9000  
AREA = .008584 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=7 CODE=1

HYDROGRAPH FROM AREA 403.00

RUNOFF VOLUME = 1.30834 INCHES = 1.0327 ACRE-FEET  
PEAK DISCHARGE RATE = 31.24 CFS AT 1.500 HOURS BASIN AREA = .0148 SQ. MI.

\*S ADD FLOW TO THAT IN SAPPHIRE ST.

ADD HYD ID=8 HYD NO=403.1 ID=4 ID=7

PRINT HYD ID=8 CODE=1

HYDROGRAPH FROM AREA 403.10

RUNOFF VOLUME = 1.18117 INCHES = 22.9428 ACRE-FEET  
PEAK DISCHARGE RATE = 594.66 CFS AT 1.567 HOURS BASIN AREA = .3642 SQ. MI.

COMPUTE NM HYD

ID=9 HYD NO=404 AREA=0.0108 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 17.908 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.9000  
AREA = .004536 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
UNIT PEAK = 16.660 CFS UNIT VOLUME = .9997 B = 354.54 P60 = 1.9000  
AREA = .006264 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=9 CODE=1

HYDROGRAPH FROM AREA 404.00

RUNOFF VOLUME = 1.30834 INCHES = .7536 ACRE-FEET  
PEAK DISCHARGE RATE = 22.80 CFS AT 1.500 HOURS BASIN AREA = .0108 SQ. MI.

\*S ADD FLOW TO THAT IN KIMELA DR.

ADD HYD ID=10 HYD NO=404.1 ID=6 ID=9  
PRINT HYD ID=10 CODE=1

HYDROGRAPH FROM AREA 404.10

RUNOFF VOLUME = 1.23618 INCHES = 10.2059 ACRE-FEET  
PEAK DISCHARGE RATE = 304.07 CFS AT 1.500 HOURS BASIN AREA = .1548 SQ. MI.

\*S \*\*BASIN 405 DRAINS TO THE SOUTH

COMPUTE NM HYD ID=11 HYD NO=405 AREA=0.0141 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 23.380 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 1.9000  
AREA = .005922 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548  
UNIT PEAK = 21.751 CFS UNIT VOLUME = .9999 B = 354.54 P60 = 1.9000  
AREA = .008178 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=11 CODE=1

HYDROGRAPH FROM AREA 405.00

RUNOFF VOLUME = 1.30834 INCHES = .9839 ACRE-FEET  
PEAK DISCHARGE RATE = 29.76 CFS AT 1.500 HOURS BASIN AREA = .0141 SQ. MI.

\*S ADD FLOW FROM BASIN 400

ADD HYD ID=11 HYD NO=405.1 ID=2 ID=11  
PRINT HYD ID=11 CODE=1

HYDROGRAPH FROM AREA 405.10

RUNOFF VOLUME = 1.30832 INCHES = 1.7374 ACRE-FEET  
PEAK DISCHARGE RATE = 52.57 CFS AT 1.500 HOURS BASIN AREA = .0249 SQ. MI.

\*S ADD FLOW TO THAT IN SAPPHIRE TO DESIGN DRAINAGE FACILITIES  
\*S IN ARENAL RD.

ADD HYD ID=12 HYD NO=405.1 ID=8 ID=11  
PRINT HYD ID=12 CODE=1

HYDROGRAPH FROM AREA 405.10

RUNOFF VOLUME = 1.18930 INCHES = 24.6803 ACRE-FEET  
PEAK DISCHARGE RATE = 639.61 CFS AT 1.567 HOURS BASIN AREA = .3891 SQ. MI.

\*S CALC BASIN 406 WHICH IS THE WEST PORTION OF THE VALLEY SOUTH  
\*S TRACT, THAT DRAINS TO THE AMOLE CHANNEL  
COMPUTE NM HYD

ID=13 HYD NO=406 AREA=0.0565 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 93.687 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 1.9000  
AREA = .023730 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

ADD HYD ID=14 HYD NO=406.1 ID=12 ID=13  
\*S \*\* TOTAL FLOW ENTERING THE AMOLE CHANNEL AT ARENAL RD.  
PRINT HYD ID=14 CODE=1

HYDROGRAPH FROM AREA 406.00

RUNOFF VOLUME = 1.30834 INCHES = 3.9424 ACRE-FEET  
PEAK DISCHARGE RATE = 119.22 CFS AT 1.500 HOURS BASIN AREA = .0565 SQ. MI.

ADD HYD ID=14 HYD NO=406.1 ID=12 ID=13  
\*S \*\* TOTAL FLOW ENTERING THE AMOLE CHANNEL AT ARENAL RD.  
PRINT HYD ID=14 CODE=1

HYDROGRAPH FROM AREA 406.10

RUNOFF VOLUME = 1.20440 INCHES = 28.6227 ACRE-FEET  
PEAK DISCHARGE RATE = 748.26 CFS AT 1.533 HOURS BASIN AREA = .4456 SQ. MI.

\*S CALC 407 AND ADD TO FLOW IN KIMELA, USE TO DESIGN OUTLET  
\*S TO THE AMOLE CHANNEL  
COMPUTE NM HYD

ID=15 HYD NO=407 AREA=0.0504 SQ MI  
PER A=0 PER B=29 PER C=29 PER D=42  
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420  
UNIT PEAK = 83.572 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.9000  
AREA = .021168 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR  
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

ADD HYD ID=16 HYD NO=407.1 ID=10 ID=15  
\*S \*\* FLOW ENTERING THE AMOLE CHANNEL  
PRINT HYD ID=16 CODE=1

HYDROGRAPH FROM AREA 407.00

RUNOFF VOLUME = 1.30834 INCHES = 3.5168 ACRE-FEET  
PEAK DISCHARGE RATE = 106.35 CFS AT 1.500 HOURS BASIN AREA = .0504 SQ. MI.

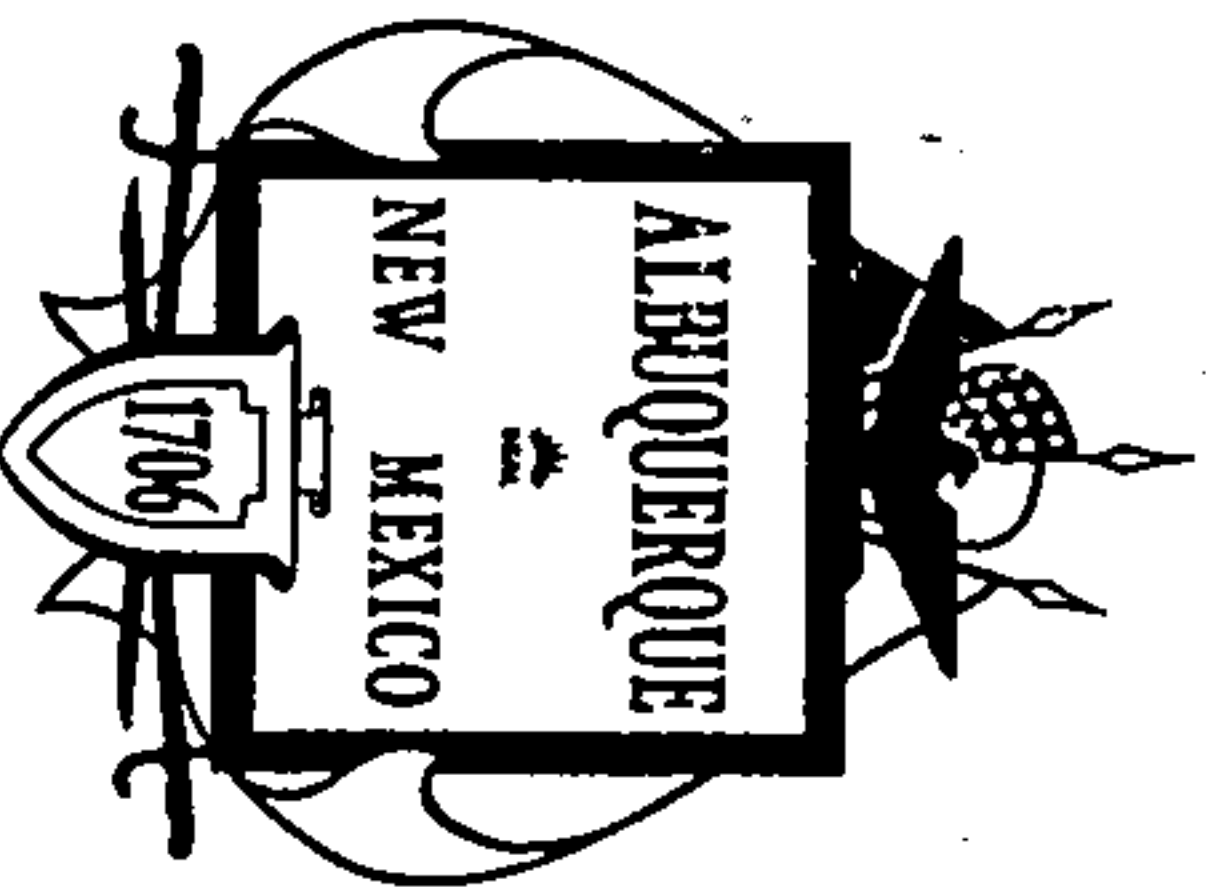
ADD HYD ID=16 HYD NO=407.1 ID=10 ID=15  
\*S \*\* FLOW ENTERING THE AMOLE CHANNEL  
PRINT HYD ID=16 CODE=1

HYDROGRAPH FROM AREA 407.10

RUNOFF VOLUME = 1.25391 INCHES = 13.7227 ACRE-FEET  
PEAK DISCHARGE RATE = 410.42 CFS AT 1.500 HOURS BASIN AREA = .2052 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 07:18:52



# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 7, 1995

Jud Lee  
Isaacson & Arfman  
128 Monroe NE  
Albuquerque, NM 87108

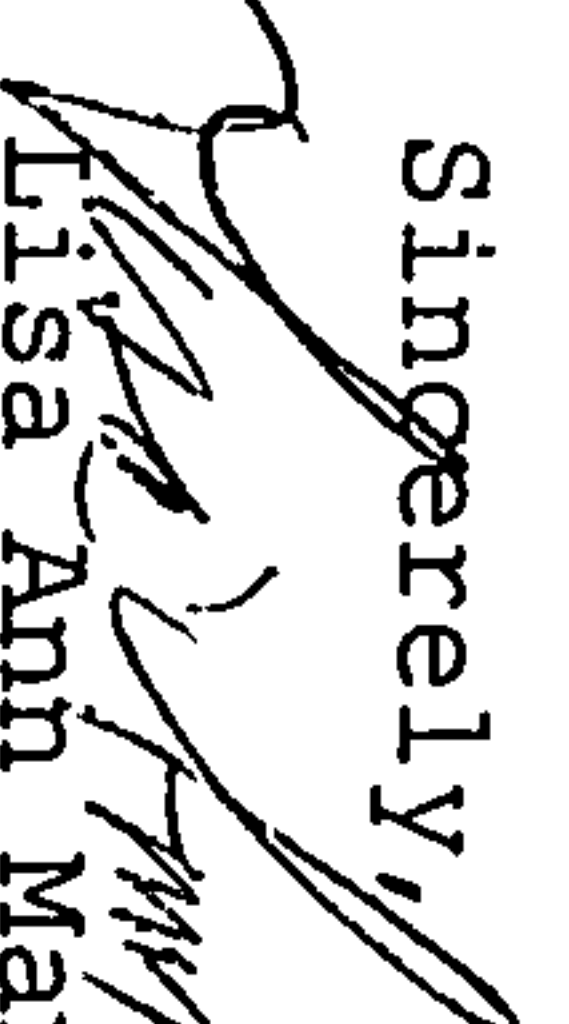
RE: SUNRISE ESTATES UNIT 1 (M10-D5A) ENGINEER'S CERTIFICATION  
FOR FINANCIAL GUARANTEE CERTIFICATION. ENGINEER'S  
CERTIFICATION STAMP DATED 8-28-95.

Dear Mr. Lee:

Based on the information provided on your August 29, 1995  
submittal, the above referenced project is approved for Financial  
Guarantee.

If I can be of further assistance, please feel free to contact me  
at 768-3622.

Sincerely,

  
Lisa Ann Manwill  
Engineering Assoc./Hyd.

c: Andrew Garcia  
Theresa Lucero  
File

LOMR?

# DRAINAGE INFORMATION SHEET

PROJECT TITLE: Sunrise Estates Unit 1 ZONE ATLAS/DRNG. FILE #: M10/25A

DRB #: 94-220 EPC #: \_\_\_\_\_ WORK ORDER #: \_\_\_\_\_

LEGAL DESCRIPTION: Tract A Vista Nueva

CITY ADDRESS: @ Sapphire St + Kinelda Dr.

ENGINEERING FIRM: Isaacson + Arfman PA CONTACT: Jud Lee

ADDRESS: 128 Monroe NE PHONE: 268-8828

OWNER: The Presley Companies CONTACT: \_\_\_\_\_

ADDRESS: 1909 Cur Lisle NE PHONE: 265-5811

ARCHITECT: N/A CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich

ADDRESS: \_\_\_\_\_ 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

## 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

☐ CERTIFICATE OF OCCUPANCY APPROVAL

☐ GRADING PERMIT APPROVAL

☐ PAVING PERMIT APPROVAL

☐ S.A.D. DRAINAGE REPORT

☐ DRAINAGE REQUIREMENTS

☐ OTHER \_\_\_\_\_ (SPECIFY)

## PRE-DESIGN MEETING:

☒ YES

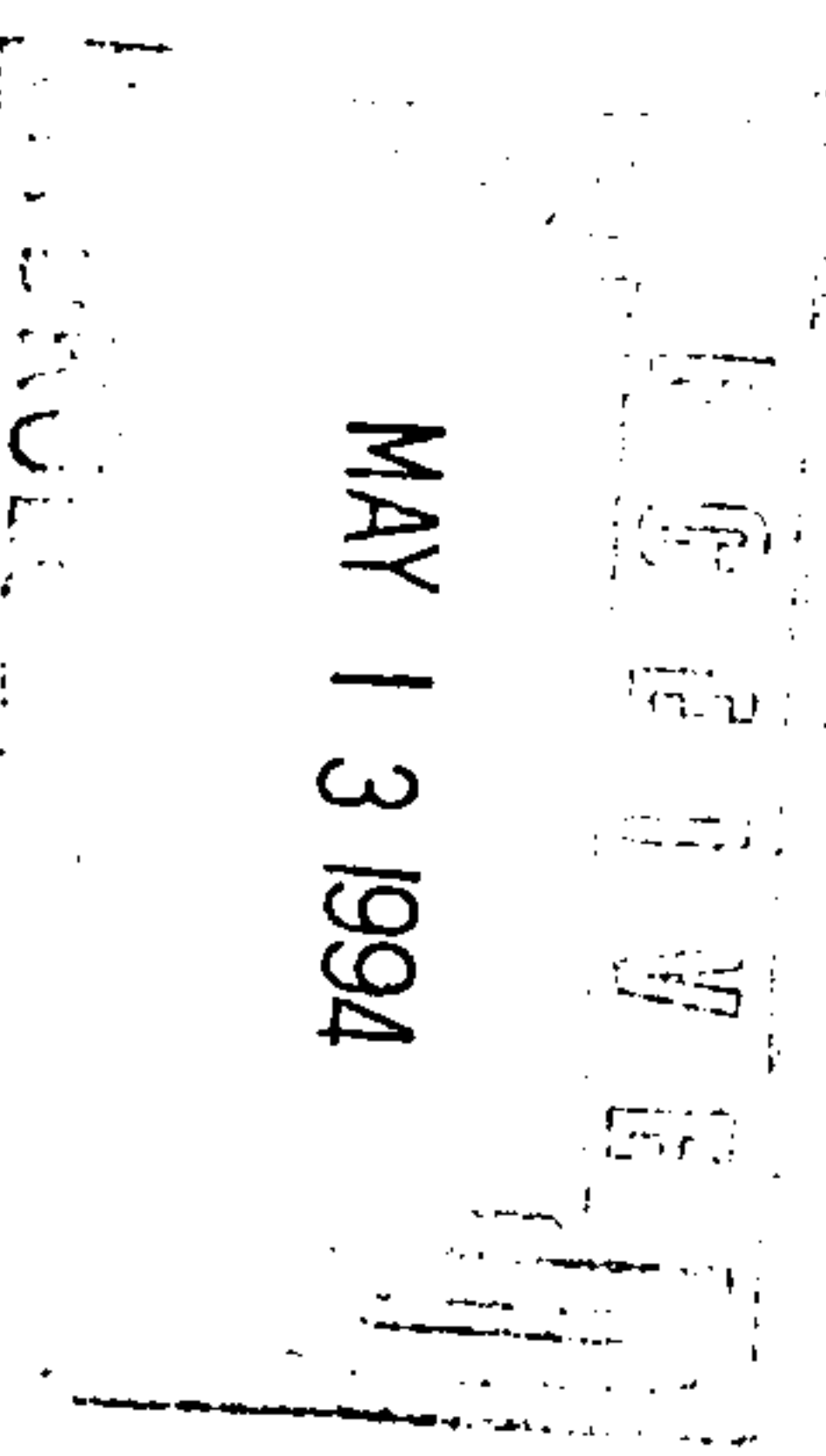
☐ NO

☐ COPY PROVIDED

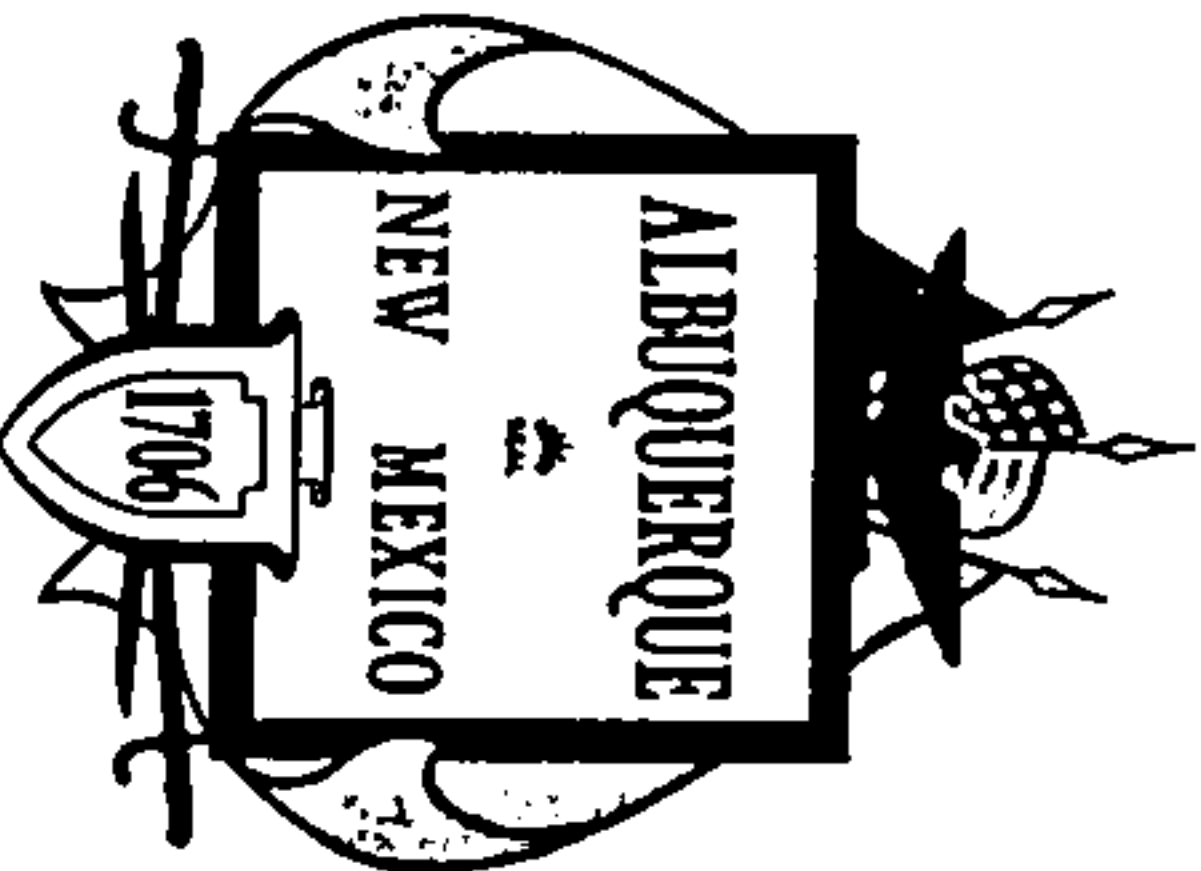
DATE SUBMITTED: May 12, 1994

BY: Jud Lee

MAY 13 1994



Meeting sched. by  
4/13/94 to make  
payments w/ 5/13  
submitted. No  
response given @  
this time



**City of Albuquerque**  
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 22, 1995

Fred Arfman  
Isaacson & Arfman  
128 Monroe NE  
Albuquerque, NM 87108

RE: GRADING PERMIT FOR SUNRISE ESTATES UNIT I, BORROW PIT AREA  
(M10-D5A) ENGINEER'S STAMP DATED 6/7/95.

Dear Mr. Arfman:

Based on the information provided on your June 8, 1995 submittal, the above referenced site is approved for grading permit.

Please be advised that a top soil disturbance permit is required from the Environmental Health Department.

Also, Engineer Certification per the D.P.M. checklist will be required.

If I can be of further assistance, please feel free to contact me at 768-2667.

Sincerely,

*Bernie J. Montoya*  
Bernie J. Montoya, CE  
Engineering Associate

BJM/dl

c: Andrew Garcia  
Larry Caudill

File

PROJECT TITLE: Sumrise Estates Unit 1 ZONE ATLAS/DRNG. FILE #: 11110/1154

DRB #: 94-220 EPC #: \_\_\_\_\_ WORK ORDER #: \_\_\_\_\_

LEGAL DESCRIPTION: Tract A Vista Nueva

CITY ADDRESS: @ Sapphire St. + Kimela Dr.

ENGINEERING FIRM: Isaacson, Arhman PA CONTACT: Tim Lee

ADDRESS: 128 Monroe Ave PHONE: 268-8828

OWNER: The Presley Companies CONTACT: \_\_\_\_\_

ADDRESS: 1909 Curly Isle NE PHONE: 265-5811

ARCHITECT: N/A CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich

ADDRESS: \_\_\_\_\_ 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

CHECK TYPE OF APPROVAL SOUGHT:

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☐ CERTIFICATE OF OCCUPANCY APPROVAL

☒ GRADING PERMIT APPROVAL

☐ PAVING PERMIT APPROVAL

☐ S.A.D. DRAINAGE REPORT

☐ DRAINAGE REQUIREMENTS

☐ OTHER \_\_\_\_\_ (SPECIFY)

PRE-DESIGN MEETING:

☒ YES

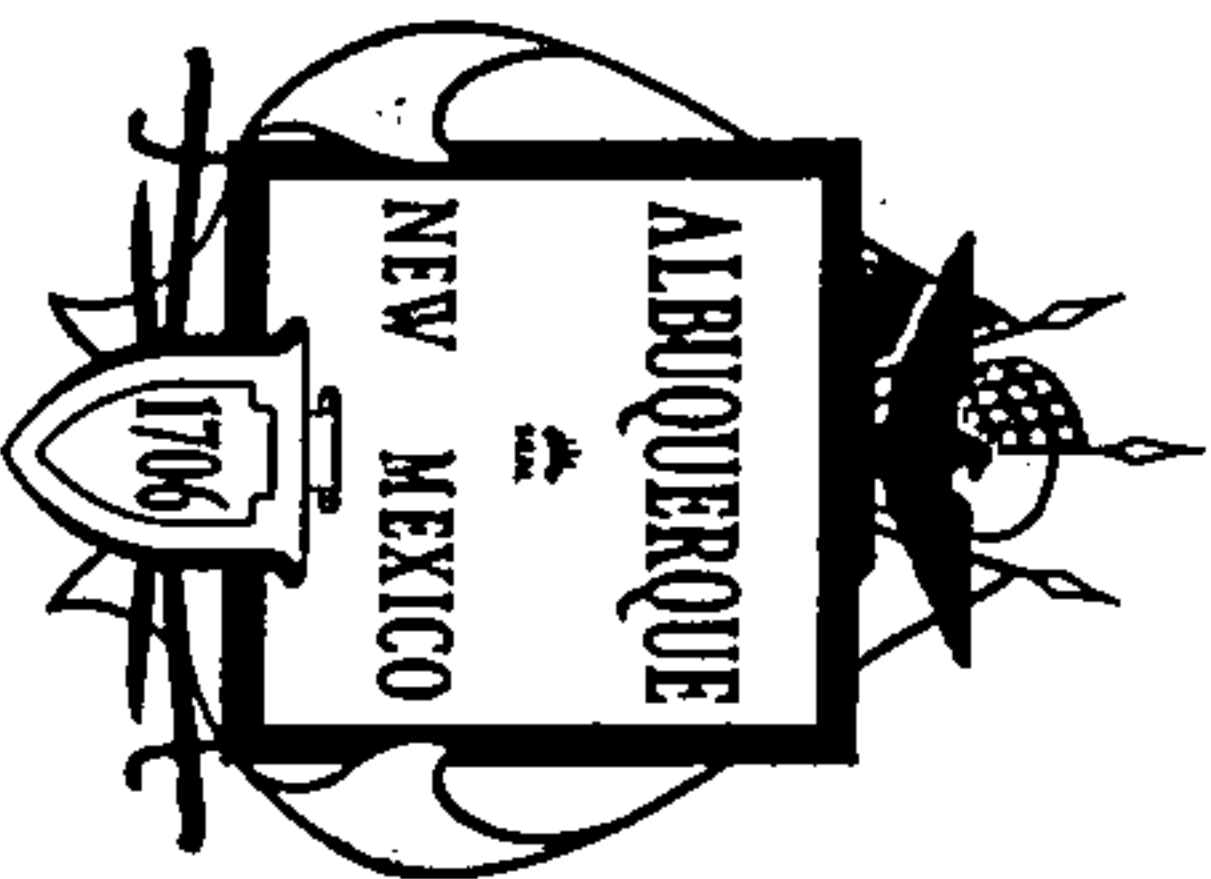
☐ NO

☐ COPY PROVIDED

DATE SUBMITTED:

BY: Paul Lee June 7, 1995

JUN - 8 1995



# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 25, 1995

Fred Arfman  
Isaacson & Arfman  
128 Monroe NE  
Albuquerque, NM 87108

RE: REVISED DRAINAGE PLAN FOR SUNRISE ESTATES UNIT 1 (M10-D5A)  
ENGINEER'S STAMP DATED 5/11/95.

Dear Mr. Arfman:

Based on the information provided on your May 23, 1995 submittal, and conversation with Scott Davis and Fred Aguirre, it seems that your evaluation of the trainer dike, sedimentation pond and outfall is sufficient to allow approval for Final Plat, Grading and Work Order.

Please be advised that prior to financial guarantee release, Engineer Certification per the D.P.M. checklist will be required. Also, prior to financial guarantee release for the storm drain improvements, a L.O.M.R. must be obtained.

If I can be of further assistance, please feel free to contact me at 768-2667.

Sincerely,

Bernie J. Montoya, CE  
Engineering Associate

BJM/dl

c: Andrew Garcia  
File

PROJECT TITLE: Surface States Unit ZONE ATLAS/DRNG. FILE #: 1110/1024

NRB #: 94-720 EPC #: \_\_\_\_\_ WORK ORDER #: \_\_\_\_\_

LEGAL DESCRIPTION: Tract A 11-5th Ave

CITY ADDRESS: 2 Sapphire St., Kinross, Dc.

ENGINEERING FIRM: Leacock & Adams PA

CONTACT: David Lee

ADDRESS: 128 Monroe Ave PHONE: 268-8860

OWNER: The Federal Companies CONTACT: \_\_\_\_\_

ADDRESS: 1909 Cune Isle NY

PHONE: 215-5811

ARCHITECT: N/A CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_  
PHONE: \_\_\_\_\_

SURVEYOR: Alldrich Land Surveying

CONTACT: Tim Alldrich

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

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

**CERTIFICATE OF OCCUPANCY APPROVAL**

# GRADING PERMIT APPROVAL

# PAVING PERMIT APPROVAL

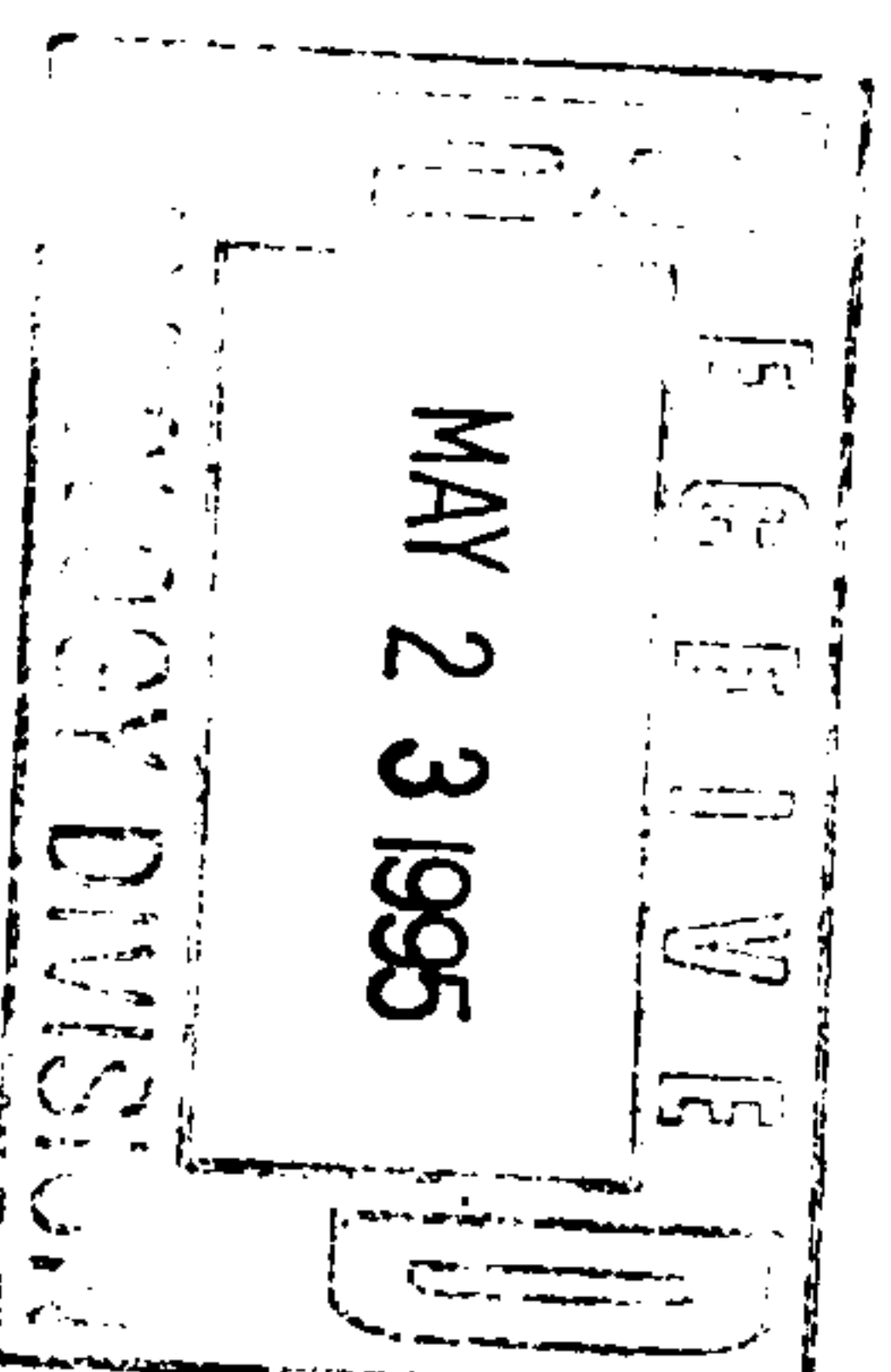
# S.A.D. DRAINAGE REPORT

## DRAINAGE REQUIREMENTS

OTHER DKC Sign-off (SPECIFY)

DATE SUBMITTED: 2/4/17

BY: 1) J. D. C.



## SECTION 601

### EARTHWORK FOR OPEN CHANNELS, DIKES, OR DAMS

#### 601.1 GENERAL

Earthwork specifications for channels, dikes, and dams shall consist of excavation, grading, side sloping, and compaction. Structural earthwork requirements are contained in Section 500.

#### 601.2 REFERENCES

ASTM D 1557

This publication:

SECTION 201

SECTION 204

#### 601.3 CLEARING AND GRUBBING

The area for clearing and grubbing shall be defined on the construction plans and this area shall be cleared and grubbed in compliance with Section 201.

#### 601.4 UNSUITABLE MATERIALS

601.4.1 Unsuitable materials include all material that contains debris, roots, organic matter, stones or boulders too large to be used in the intended construction, or other materials that are determined by the ENGINEER to be suitable. Otherwise suitable materials which are unsuitable due to excess moisture content will not be classified as unsuitable material unless it cannot be dried by manipulation, aeration or blending with other materials satisfactorily as determined by the ENGINEER.

601.4.2 On-site unsuitable materials will not be used for channel, dike, or dam construction. The CONTRACTOR shall remove and dispose of all unsuitable materials.

#### 601.5 ROCK EXCAVATION

601.5.1 Rock excavation shall consist of igneous, metamorphic and sedimentary rock, naturally in place, which cannot be excavated without blasting or the use of rippers, and all boulders or other detached stones having a volume of one (1) cubic yard or more, as determined by physical measurements or visually by the ENGINEER. Where any portion of the excavation contains strata classified as Rock Excavation and the various strata are parted with strips or strata not classified as Rock Excavation which constitute twenty-five (25) percent or less of the total thickness of the rock plus non-rock layers, the entire volume

of the combined layers shall be paid as Rock Excavation. Removal of surface boulders in excess of 1 cubic yard in volume shall be paid for under Clearing and Grubbing, unless specifically identified as Rock Excavation.

#### 601.6 CHANNELS

Open channels for the purpose of this section shall mean lined or unlined trapezoidal channels.

##### 601.6.1 EXCAVATION:

601.6.1.1 Excavation for channels shall be made to provide a uniform unlined channel surface for natural or earth channels or a surface suitable for placement of a specified lining material. Surfaces of the excavation shall be firm and unyielding and shall be such as will stand or can be made to stand without sloughing.

601.6.1.2 Excavation to provide a subgrade for lined channels or subdrainage material shall be to the lines indicated on the drawings; and excavation made below subgrade shall be backfilled and compacted to a density of not less than 90 percent, as determined by ASTM D 1557, or if approved by the ENGINEER with the concrete or other materials being placed. However, no payment will be made for such overexcavation or for the backfill thereof, regardless as to the approved material used for such backfill.

601.6.1.3 Where it becomes necessary to excavate beyond normal lines of excavation in order to remove boulders or other interfering objects, the voids remaining after the removal of such boulders or interfering objects shall be backfilled as follows:

601.6.1.4 When the void is below the subgrade for a lined channel, it shall be filled with suitable material, as approved by the ENGINEER, compacted to a density of not less than 90 percent, as determined by ASTM D 1557, or with the approval of the ENGINEER, concrete of the same mix as used in the concrete channel.

601.6.1.5 When the void is in the side of the excavation, suitable material, as approved by the ENGINEER, shall be placed in the manner and to the same relative density as the backfill in the vicinity of the void or, with the approval of the ENGINEER, concrete of the same mix as

used in a concrete lined channel. If concrete is placed prior to lining, a lower grade concrete may be used only if approved by the ENGINEER.

601.6.1.6 If during the progress of excavation material is encountered which, in the opinion of the ENGINEER, is unsuitable for subgrade for the structure to be constructed thereon, the ENGINEER may direct the CONTRACTOR to excavate beyond the pay lines shown on the drawings. However, suitability of subgrade shall be determined by the ENGINEER on the basis of its ability to withstand the load of the proposed channel and not upon the capacity to withstand the loads which may be placed thereon by the CONTRACTOR's equipment. Should the CONTRACTOR be directed to excavate beyond the pay lines shown on the drawings, said pay lines will be extended to include such ordered excavation and the pay lines for sub-drainage material, if used, will be adjusted accordingly.

601.6.1.7 Materials used for work performed by the CONTRACTOR to stabilize subgrade so it will withstand loads which may be placed thereon by his equipment shall be at the CONTRACTOR's expense.

#### 601.6.2 FILL AND COMPACTED BACKFILL:

601.6.2.1 Suitable material obtained from the project excavations will be used as fill or backfill provided all organic material, rubbish, debris, and other objectionable material contained therein are first removed. However, stone and broken Portland cement concrete pavement obtained from the project excavations will be permitted in the backfill or fill with the following limitations:

601.6.2.1.1 The maximum dimension of any piece used shall be 12 inches.

601.6.2.1.2 Pieces larger than 4 inches shall not be placed within 12 inches of any structure.

601.6.2.2 Unless otherwise specified on the plans, the density, placement, and compaction of fills and backfills shall be as specified in Section 204.

601.6.2.3 There shall be no extra payment made for moving and using excavated materials within the limits of the projects.

#### 601.6.3 GRADING

601.6.3.1 Grading of unlined channels and berms shall conform to the following tolerances:

601.6.3.1.1 A vertical tolerance of none above and 3 inches below the specified grade will be allowed on channel bottom, channel side slopes in both cut and fill, and berms and access road side slopes in cut.

601.6.3.1.2 A vertical tolerance of none below and 3 inches above the specified grade will be allowed on top surfaces of berms and access road in both cut and fill, and berm and access road side slopes in fill.

601.6.3.1.3 Regardless of the construction tolerances specified, excavation and grading shall be performed so that finished surfaces are in uniform planes with no abrupt breaks in the surface.

601.6.3.1.4 Construction tolerances specified hereinabove for grading are solely for purposes of field control.

601.6.3.2 Grading tolerances for channels which will be lined with concrete, riprap, or flexible matting shall be specified on the construction plans.

#### 601.7 DIKES AND DAMS

601.7.1 The construction plans shall specify the zones for key or core excavation, type of earth materials in each zone, maximum compaction required in each zone, and surface grading tolerances.

601.7.2 The CONTRACTOR will submit samples of the proposed fill materials for compliance with the specifications.

#### 601.8 MEASUREMENT AND PAYMENT

601.8.1 Earthwork for open channels shall be measured by the cubic yard in place at the time of excavation. Payment will be made at unit price per cubic yard for the particular operation, as specified in the Bid Proposal.

601.8.2 Clearing and grubbing may be included in the unit price of the excavation, or may be at a lump sum price, or may be at a unit price per cubic yard. Bid Proposal shall specify the unit of payment.

601.8.3 Compacted fill will be measured by the cubic yard of the material compacted in place. Payment will be made at the unit price per cubic yard per specified material as defined in the Bid Proposal.

601.8.4 Rock excavation will be paid by the cubic yard in place, prior to start of construction and measured to the



# ISAACSON & ARFMAN, P.A.

## Consulting Engineering Associates

Thomas O. Isaacson, PE & LS • Fred C. Arfman, PE  
Scott M. McGee, PE

May 24, 1995

Mr. Bernie Montoya  
Hydrology Division/P.W.D.  
City of Albuquerque  
P.O. Box 1293  
Albuquerque, NM 87103

**RE: Sunrise Estates, Unit One**

Dear Mr. Montoya:

This letter is written in response to correspondence we received from your office dated 7/18/94. Below is an item by item comment addressing your concerns and requests.

1. *Based upon your description of the existing training dike along Arenal Road, it will be necessary to bring the dike up to current City Standards as a part of your project.*

After reviewing the COA Standard Specifications Section 600 "Open Channels, Dikes or Dams", we have determined that the dike is presently adequate by COA standards. No prior flood damage has occurred to the dike to warrant any reconstruction and the natural vegetation that has grown on the dike over the past 10-15 years provides excellent stabilization and erosion control. The proposed drainage outfall structure handles approximately 85% of the developed storm water runoff. These flows are discharged via a broad crested weir over a 150' width. The resulting overland sheet flows are non-erosive and redirected to the south of the training dike. Therefore, the dike does not play a role in the routing of the majority of the storm waters to the Amole del Norte Diversion Channel.

2. *A better description of the existing and proposed outfall into the Amole del Norte Channel. You have stated in your submittal that the overland storm flows, as they approach the Amole del Norte Channel, will not be within well defined sections. If this is the case, how are you proposing to route the flows into the proposed sedimentation/stilling basin? Will training dikes be needed at this location as well? A topographic map at a larger scale would be helpful in determining the actual flow path.*

The existing outfall into the channel consists of several small (0.5' to 1.5' deep) gullies that have formed over the years. These gullies discharge directly to the channel without any desedimentation.

Mr. Bernie Montoya  
May 24, 1995  
Page 2

The proposed outfall consists of a desedimentation area that will be graded out at the triangular bow in the Amole right-of-way. A grading detail is shown on Sheet 21 of the construction plans.

As far as the flow path not being well defined as they approach the channel, the "opening" to the desedimentation is very wide and is placed with the existing topography as to allow for receiving a great majority of the upstream flows. A training dike was constructed as part of the channel initial improvements to handle the exact situation that we are describing.

3. *The sedimentation/stilling pond must be constructed for a 10-year minimum volume.*

The outfall structure at the east end of the project effectively reduces the erosion velocity of the discharge from 21 fps to about 3 fps. This action basically removes the subdivision area from consideration for design of the desiltation pond. When only the area between the subdivision and the channel is considered the pond is sized for the 10-year volume.

4. *A Drainage Covenant covering the maintenance of the downstream temporary facilities will be required.*

5. *The Blanket Drainage Easement must be granted to the City of Albuquerque.*

Items 4 and 5 have been executed and recorded. Copies of each are found in the City Hydrology files.

6. *The release of Financial Guaranties for the required storm drain improvements will be subject to obtaining a LOMR.*

We are aware a LOMR will be required for release of financial guaranties and are in the process of procuring this document.

If you have any questions or comments, please feel free to call me at 268-8828.

Very truly yours,

**ISAACSON & ARFMAN, P.A.**

  
Jud Lee

JL/rtl

/95040032

AMENDED AND RESTATED  
DRAINAGE EASEMENT  
AND  
AGREEMENT

THIS AMENDED AND RESTATED DRAINAGE EASEMENT AND AGREEMENT supersedes, replaces and restates that certain Drainage Easement recorded in the Bernalillo County, New Mexico real estate records on January 20, 1994, in Book 94-2, Pages 9787-9794 ("Agreement") and is entered into by and among THE PRESLEY COMPANIES, a California corporation ("Presley"), ALBUQUERQUE SOUTH, a New Mexico general partnership ("Alb. South"), and GREAT WESTERN LAND COMPANY, a New Mexico general partnership ("Great Western") [Presley, Alb. South and Great Western are sometimes collectively referred to herein as the "Owners"], and the CITY OF ALBUQUERQUE, a municipal corporation (the "City").

**RECITALS:**

A. Presley is the owner of the following property (the "Presley Property"):

TRACT A-1 PLAT OF VISTA NUEVA as shown on the plat thereof recorded in the Bernalillo County, New Mexico real estate records on April 12, 1988, in Vol. C-36, Folio 69

B. Alb. South is the owner of the following property (the "Alb. South Property"):

TRACTS B, C and D, ALBUQUERQUE SOUTH UNIT 1, as shown on the plat thereof recorded in the Bernalillo County, New Mexico real estate records on August 3, 1987, in Vol. C-34, Folio 74

C. Great Western is the owner of the following property (the "Great Western Property"):

1995 APR 24 PM 3:02  
 PLAT OF PRESLEY, the  
 City of Albuquerque  
 FILED FOR RECORD

BK 95-9 PG 9716-  
 JUDY D. WOODWARD  
 CO. CLERK & RECORDER  
 BERNALILLO

44.5280 acres of Valley West as shown on the plat thereof recorded in the Bernalillo County, New Mexico real estate records on April 17, 1980, in Vol. C-16, Folio 144, which 44.5280 acres is shown on Exhibit "A" attached hereto

D. Presley is in the process of developing the Presley Property into a single family residential subdivision (the "Presley Subdivision"), and as a condition of approval of the Presley Subdivision, the City requires Presley to obtain this Agreement, and the easements described herein (the "Easements").

NOW, THEREFORE, in consideration of the mutual covenants and conditions, the parties agree as follows:

1. Grants of Easement. Great Western grants to Alb. South, to Presley and to the City a non-exclusive blanket easement over all of the Great Western Property for purposes of accepting storm drainage waters from the Presley Property and the Alb. South Property. Alb. South grants to Presley and the City a non-exclusive blanket easement over all of the Alb. South Property for purposes of accepting storm drainage waters from the Presley Property.

The storm drainage waters which the Alb. South Property shall be obligated to accept shall be the historic storm waters which have flowed from the Presley Property to the Alb. South Property and flows from upstream properties developed as of the date of this Agreement (the "Presley Property Historic Flows"), and the increased flows from the Presley Property resulting from the development of the Presley Subdivision (the "Presley Property Developed Flows"). The Presley Property Historic Flows and the

Presley Property Developed Flows are jointly referred to herein as the "Presley Flows".

The storm drainage waters which the Great Western Property shall be obligated to accept shall be the Presley Property Historic Flows, the Presley Property Developed Flows, the historic storm waters which have flowed from the Alb. South Property to the Great Western Property (the "Alb. South Property Historic Flows"), and the increased flows resulting from the future development of the Alb. South Property (the "Alb. South Property Developed Flows"). The Alb. South Property Historic Flows and the Alb. South Property Developed Flows are jointly referred to herein as the Alb. South Flows. The Presley Flows and the Alb. South Flows are jointly referred to as the "Upstream Flows".

The Owner of the beneficial interest in the Easements granted herein shall have the right to construct temporary drainage facilities within the Easements to detain and/or alter the flow characteristics of the storm drainage waters which facilities may include, but are not limited to, pipes, culverts, channels and/or ponds [the "Temporary Facilities"]. The Temporary Facilities shall be those approved by the City pursuant to drainage plans submitted to, and approved by, the City for the benefitted properties. The Temporary Facilities to be constructed upon the Alb. South Property are described and shown on Exhibit "B" attached hereto (the "Albuquerque South Facility").

2. Points of Discharge of Flows. Upon development of the Presley Subdivision, Presley, at Presley's sole expense (or public

expense if agreed upon by the public agency) shall construct drainage facilities upon the Presley Property which collect the Presley Flows and discharge the Presley Flows onto the Alb. South Property in not more than three (3) locations (the "Presley Discharge Points"). Each of the Discharge Points shall be no greater than forty feet (40') in width. The Presley Discharge Points shall be shown and designated on the Presley Subdivision Plat, and Easements required by the City shall be granted on the Presley Subdivision Plat.

Upon development of the Alb. South Subdivision, Alb. South, at Alb. South's sole expense (or public expense if agreed upon by the public agency) shall construct drainage facilities upon the Alb. South Property to collect and discharge the Upstream Flows onto the Great Western Property in not more than three (3) locations (the "Alb. South Discharge Points"). Each of the Discharge Points shall be no greater than forty feet (40') in width. The Alb. South Discharge Points shall be shown and designated on the Alb. South Subdivision Plat, and easements required by the City shall be granted on the Alb. South Subdivision Plat.

Upon development of the Great Western Subdivision, Great Western, at Great Western's sole expense (or public expense if agreed upon by the public agency) shall construct drainage facilities upon the Great Western Property to collect and discharge the Upstream Flows into the Amole Del Norte Diversion Channel (the "Channel").

3. Right to Limit Alb. South Easement. Upon execution of

this Agreement, the easement across the Alb. South Property shall be a "Blanket Easement", that is the easement shall permit the discharge of the Presley Flows onto the Alb. South Property, in any manner and at any location.

Upon the recording of the Presley Subdivision Plat in the Bernalillo County, New Mexico real estate records, Alb. South's obligation shall be to: (i) accept the Presley Flows at the Presley Discharge Points and to convey the Presley Flows across the Alb. South Property as set forth on Exhibit "B", in any manner acceptable to Alb. South and approved by the City; and (ii) to satisfy the obligation of the Agreement and Covenant regarding maintenance of the Alb. South Property Facilities entered into by and between the City and Alb. South on even date herewith, a copy of which is attached as Exhibit "C" (the "Drainage Covenant"). Upon (i) Alb. South recording a subdivision plat of the Alb. South Property defining Easements for the passage of the Presley Flows across the Alb. South Property, (ii) Alb. South granting Easements to the City acceptable to the City, (iii) Alb. South constructing or causing to be constructed, drainage improvements acceptable to the City, and (iv) the City accepting the drainage improvements, this Blanket Easement to the extent it encumbers the Alb. South Property shall automatically (except as provided below) terminate and be of no further force and effect. To the extent that this Easement benefits Presley or Alb. South, this termination shall occur without any further consent or action by Presley or Alb. South. The termination of the City's rights in this Agreement

shall require the approval of the City.

4. Right to Limit Great Western Easement. Upon execution of this Agreement, the easement across the Great Western Property shall be a "Blanket Easement", that is permitting the discharge of the Upstream Flows onto the Great Western Property in any manner and at any location.

Upon the recording of the Alb. South Subdivision in the Bernalillo County, New Mexico real estate records, Great Western's sole obligation shall be to accept the Upstream Flows at the Alb. South Discharge Points and to convey the Upstream Flows across the Great Western Property, in any manner acceptable to Great Western, so long as the Upstream Flows are confined to the Great Western Property. Upon (i) Great Western recording a subdivision plat or approval of a site development plan of the Great Western Property defining easements for the passage of the Upstream Flows across the Great Western Property, (ii) Great Western granting easements to the City acceptable to the City, (iii) Great Western constructing drainage improvements acceptable to the City and (iv) the City accepting the drainage improvements, this Easement to the extent it encumbers the Great Western Property shall automatically terminate and be of no further force and effect. To the extent that this Easement benefits Presley or Alb. South, this termination shall occur without any further consent or action by Presley or Albuquerque South. The termination of the City's rights in this Easement shall require approval of the City.

5. Automatic Termination. In the event that Presley does

not record the Presley Subdivision Plat in the Bernalillo County, New Mexico real estate records on or before the second anniversary date of the recording of this Easement, this Easement shall automatically terminate and be of no further force or effect. The termination of this Easement shall not enlarge or diminish any common law rights which the parties hereto have with respect to the acceptance or discharge of historic storm drainage waters.

6. Maintenance Responsibilities. Alb. South shall have the obligation of maintaining the Alb. South Property Facilities, pursuant to the terms of the Drainage Covenant. Great Western agrees to confine the Upstream Flows to within the Great Western Property until they discharge into the Channel.

7. City Responsibility. In the event that any of the Owners fail to maintain the Temporary Facilities which they are obligated to maintain, then the City shall have the right, but not the obligation, to enter upon the easement properties to perform any required maintenance and to remove any improvements, and/or landscaping required for the performance of such maintenance, pursuant to the Drainage Covenant. The Drainage Covenant grants the City certain rights, as are more fully set out therein, in the event that the owners default in their maintenance obligations. The City shall not be responsible for any damage to the improvements and/or landscaping of the Owner's properties resulting from the exercise of such rights.

8. Indemnity. The Owners agree to indemnify and hold the City harmless from claims, actions, suits or proceedings of any

kind including any claims of third (3rd) parties resulting from the use of the Easement and properties pursuant to this Easement, except those resulting from the negligence of the City. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this obligation will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the City, or the agents or employees of the City; or (2) the giving of or the failure to give direction or instructions by the City, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

9. Termination/Modification. This Easement may not be terminated, nor may any of the City's rights hereunder be modified without the written joinder of the City.

10. Warranty. The Owners covenant and warrant that they are owners in fee simple of their respective Properties and that they have a good lawful right to convey the Easements or any part thereof, that their respective properties are free from all encumbrances except encumbrances of record and taxes due and owing the Treasurer of Bernalillo County, and that the Owners will forever warrant and defend the title to their respective properties against all claims from all persons or entities.

11. Appurtenant Agreement. The rights and obligations set out herein are appurtenant to the Presley Property, the Alb. South Property and the Great Western Property, as applicable, shall run

with, benefit and burden the Presley Property, the Alb. South Property and the Great Western Property and shall be binding upon the parties' successors and assigns.

12. City Drainage Ordinance. The City is a beneficiary of the easements granted by this Agreement because (i) public storm drainage waters which flow off of City Streets are being deposited on the down stream properties, and (ii) this Easement and Agreement is a requirement imposed by the City as a condition of the development of the Presley Property pursuant to the City's Flood Hazard and Drainage Control Ordinance [§14-5-1 et seq., City of Albuquerque, New Mexico] (the "Ordinance"). Presley and Alb. South are beneficiaries of the easements because ~~they are~~ discharging storm drainage waters upon the down stream property owners in a different manner, a greater volume and a greater rate than it would have flowed naturally.

Notwithstanding that Presley and Alb. South are beneficiaries of the easements, nothing herein shall permit Presley and/or Alb. South to use the easements in any manner contrary to approved drainage plans or contrary to the terms of the Ordinance, or to construct any drainage facilities within the easements contrary to any approved drainage plans or contrary to the Ordinance.

13. Execution. This Easement may be executed in counterparts.

EXECUTED March, 1995.

THE PRESLEY COMPANIES, a California corporation

BY: David M. Davis  
Its: Senior Vice Pres.

ALBUQUERQUE SOUTH, a New Mexico general partnership

partnership  
By: Aday, Inc., co-Managing Partner

BY: Joseph L. Lantry  
Its: President

GREAT WESTERN LAND COMPANY, a New Mexico  
general partnership

BY: Robert J. Schaefer  
 ITS: General & Management - Fisheries

CITY OF ALBUQUERQUE, a municipal corporation

By: [Signature]  
Its: [Signature]

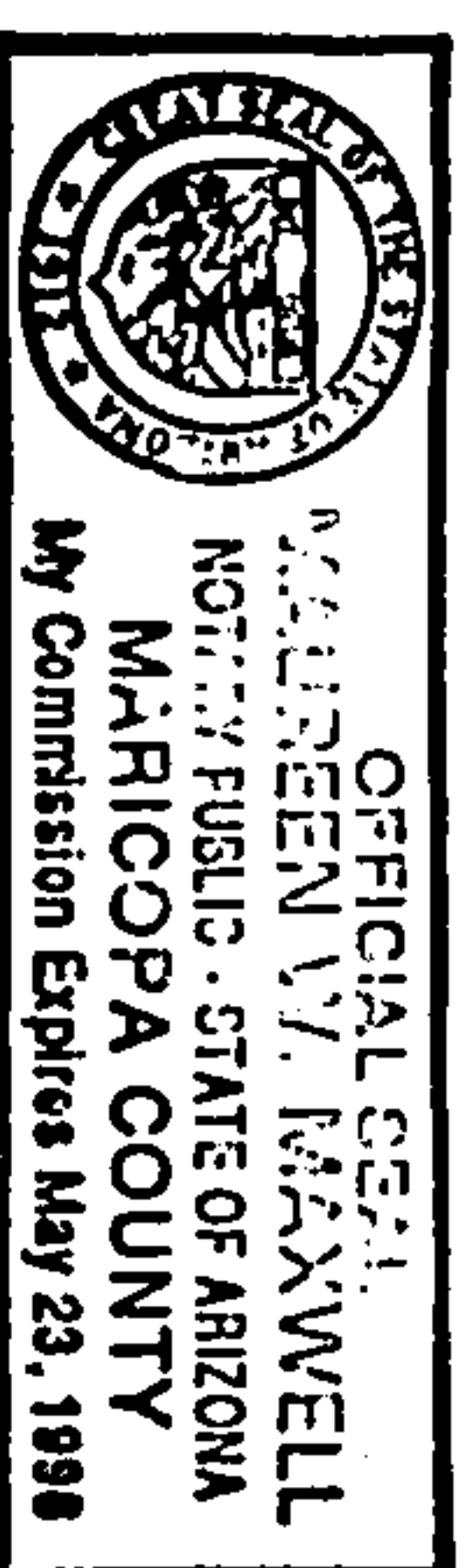
STATE OF ARIZONA  
COUNTY OF MARICOPA

This instrument was acknowledged before me on March 29, 1995, by CHARLES W. KEYNES SR. Vice President of The Presley Companies, a California corporation, on behalf of said corporation.

Margaret M. Nixon  
Notary Public

My Commission Expires: May 23 1996

STATE OF NEW MEXICO )  
COUNTY OF BERNALILLO ) ss.



This instrument was acknowledged before me on March 3, 1995, by José L. Wrentz, Jr., Co-Managing Partner of Albuquerque South, a New Mexico general partnership, on behalf of said partnership.

My Commission Expires: 12/8/95

STATE OF NEW MEXICO )  
 ) ss.  
COUNTY OF BERNALILLO )

This instrument was acknowledged before me on April 1, 1995, by P.J. Schaefer, General + managing partner of Great Western Land Company, a New Mexico general partnership, on behalf of said partnership.

Joseph L. Werntz  
Notary Public

OFFICIAL SEAL  
JOSEPH L. WERNITZ  
NOTARY PUBLIC - NEW MEXICO  
My Commission Expires 10-20-97  
STATE OF NEW MEXICO )  
 ) ss.  
COUNTY OF BERNALILLO )

This instrument was acknowledged before me on April 20, 1995, by Laura Rae, Chief Admin Officer of the City of Albuquerque, a municipal corporation, on behalf of said corporation.

Renie Herrera  
Notary Public

OFFICIAL SEAL  
RENIE HERRERA  
NOTARY PUBLIC  
STATE OF NEW MEXICO

My Commission Expires \_\_\_\_\_  
My Commission Expires: 1/3/98

97



SCALE: 1"=300'

ARENAL ROAD

End. Cor. Rebar

(S 81° 10' 08" E 1795.57' RECORD)

S 81° 10' 00" E 1795.67'

S 81° 10' 00" E 188.71'

A-2-1  
0.0901 AC

A-2-2  
0.3017 AC

End. Cor. Rebar

N 20° 52' 45" E 30.69'

N 20° 52' 45" E 511.4'

1042.0'

N 8° 50' 00" E 1200'

N 75° 31' 33" W 183.19'

N 20° 52' 45" E 116.50'

$\Delta = 12^\circ 03' 40''$   
R = 1563.00'  
L = 329.02'

$\Delta = 12^\circ 03' 40''$   
R = 1427.96'  
L = 300.59'

S 63° 52' 16" W 6285.36'  
TO "TRANS" ALBUQUERQUE  
CITY MONUMENT (BRASS)

S 65° 45' 35" W 6530.39'  
TO "TRANS" ALBUQUERQUE  
CITY MONUMENT (BRASS)

N 44° 32' 28" E 17.13'

N 8° 49' 06" E 299.47'

N 44° 32' 28" E 17.13'

Valley West

TEMPORARY

REMAINING

DRAINAGE

44.5280 ACRES

EASEMENT

A-1-15

2.3924 ACRES

S 76° 53' 51" W  
TO "TRANS" ALBUQUERQUE  
CITY MONUMENT (BRASS)

S 67° 51' 19" E  
TO "TRANS" ALBUQUERQUE  
CITY MONUMENT (BRASS)

N 8° 49' 06" E 263.98'

S 8° 49' 06" W 1239.91'

A-1-14

5.5702 ACRES

REMAINING  
19.5387 ACRES

1746.44'

S 8° 49' 06" W 1758.44'

(S 8° 49' 02" W 1758.14' RECORD)

UNPLATTED LAND  
N 8° 49' 28" E 1754.37' RECORD)  
N 8° 49' 13" E 1754.64'

4510.40'

S 74° 29' 28" W

1155.53'

N 81° 01' 42" W 1651.69'

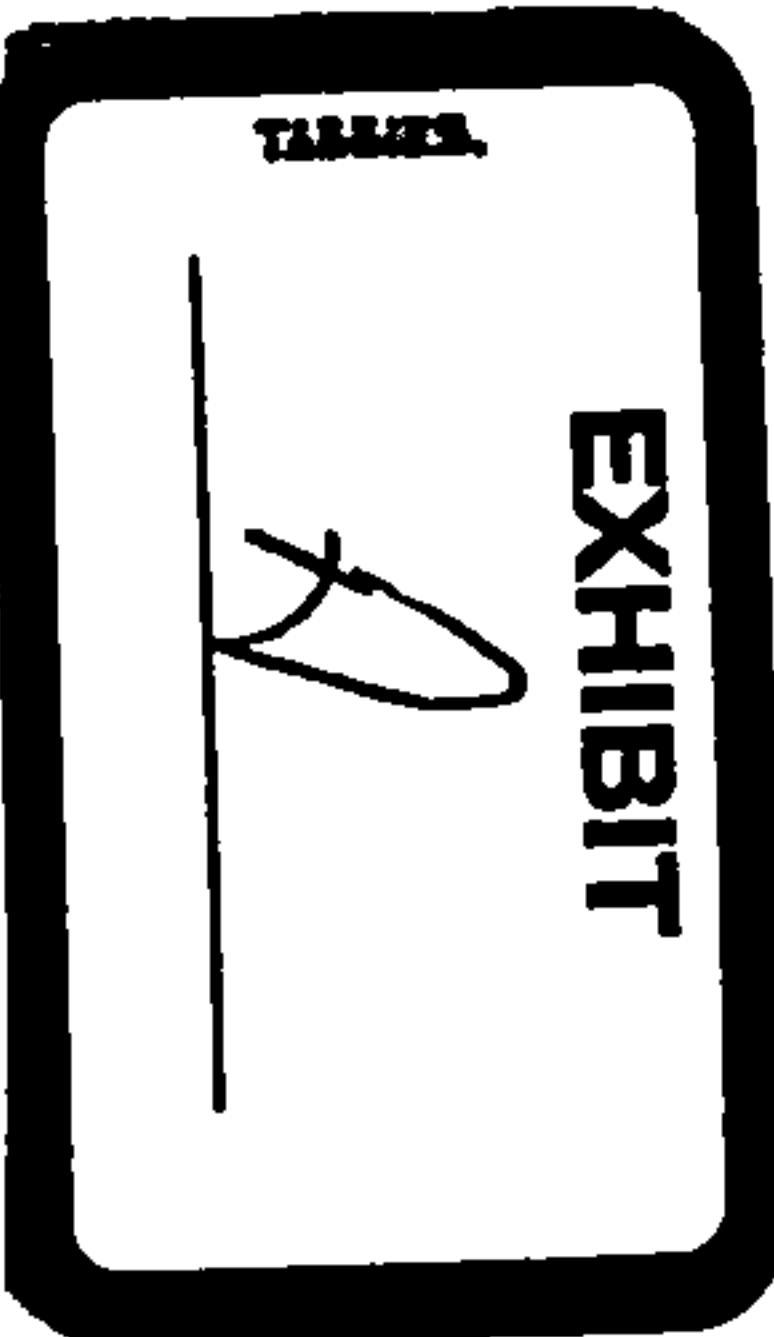
(N 81° 02' 55" W 1795.80' RECORD)

End. Cor. #4 Rebar  
N 81° 14' 33" W 144.05'

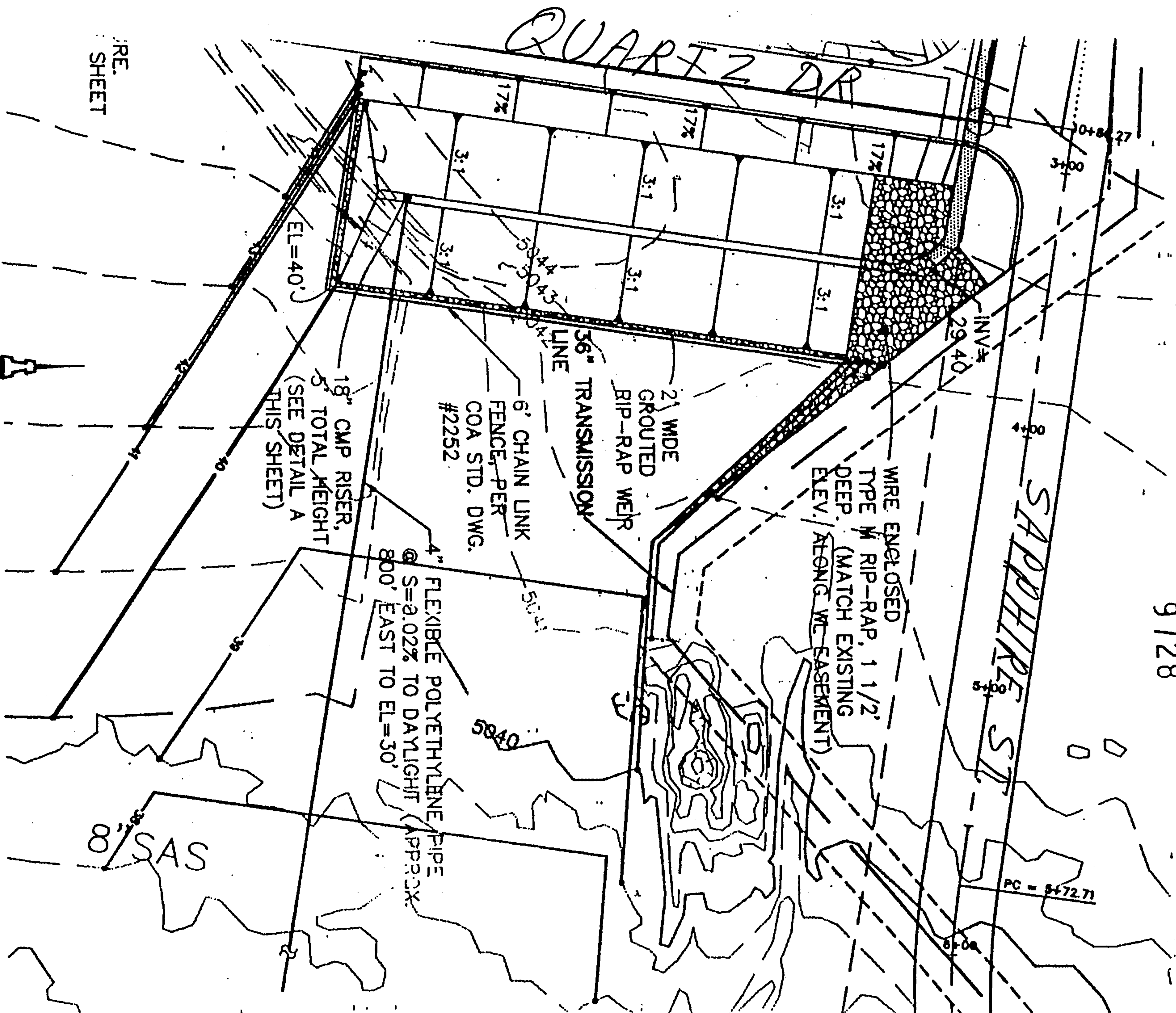
JOHN BLACK TRACT

S 55° 2' 62" E

S 79° 24' 42" W  
TO "TRANS" ALBUQUERQUE  
CITY MONUMENT (BRASS)



9728



RE.  
SHEET

## OUTLET STRUCTURE

**SCALE: 1"=50'**

# EXHIBIT

**TALKING**



9729

**AGREEMENT AND COVENANT**

\*a New Mexico general partnership

This Agreement and Covenant, between the City of Albuquerque, New Mexico ("City") and Albuquerque South\*, ("User") is made in Albuquerque, New Mexico and is entered into as of the date of recording this Agreement with the Bernalillo County Clerk.

\*the Amole del Norte Diversion Facility

1. Recital. The User is the owner of certain real property ("User's Property") located at south of Arenal and west of\*, in Albuquerque, New Mexico, and more particularly described as:

Tracts B, C and D, ALBUQUERQUE SOUTH UNIT 1, as shown on the plat thereof recorded in the Bernalillo County, New Mexico real estate records on August 3, 1987, in Vol. C-34, Folio 74

The City is the owner of certain real property, easement or public right-of-way ("City's Property") in the vicinity of, contiguous to, abutting or within User's Property, and more particularly described as:

Drainage Easement created pursuant to that certain Amended and Restated Drainage Easement recorded in the Bernalillo County, New Mexico real estate records on \_\_\_\_\_, 1995, in Vol. \_\_\_\_\_, Folio \_\_\_\_\_

The User wishes to construct upon, improve or repair and to maintain the following "Improvement" on the City's Property (or already has done so):

Temporary drainage facilities shown and described on Exhibit "A"

A sketch of the proposed or existing Improvement is attached as Exhibit A and made a part of this Agreement.

The City agrees to permit the Improvement to exist on the City's Property provided the User complies with the terms of this Agreement.

2. City Use of City's Property and City Liability. The City has the right to enter upon the City's Property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the User. If the Work affects the Improvement the City will not be financially or otherwise responsible for rebuilding or repairing the Improvement. The User promptly will repair the Improvement to the City's satisfaction. The cost of repairing the Improvement will be paid by User.

3. User's Responsibility for Improvement. The User will be solely responsible for constructing, maintaining, repairing and, if required, removing the

Approved as to form by  
Legal Department 9/30/94

**EXHIBIT**

9730

Improvement, all in accordance with standards required by the City as per the approved Grading and Drainage Plan M10/D5A. The User will be solely responsible for paying all related costs. The User will not permit the Improvement to constitute a hazard to the health or safety of the general public or to interfere with the City's use of the City's Property. The User will conform with all applicable laws, ordinances and regulations.

4. Use of the Improvement. If the City's Property is a public right-of-way, it shall be open to the use of the general public at all times, subject to reasonable curtailment during periods of construction, maintenance or repair.

5. Demand for Repair, Modification or Removal. The City may send written notice ("Notice") to the User requiring the User to repair, modify or remove the Improvement within 30 days ("Deadline") and the User will comply promptly with the requirements of the Notice. If removal is demanded, the City also may require the User to return the City's Property to its original condition by the Deadline. The User will perform all required work by the Deadline, at User's sole expense.

6. Failure to Perform by User and Emergency Work by City. If the User fails to comply with the terms of the Notice by the Deadline stated, or, if the City determines that an emergency condition exists, the City may perform the work itself. The City then may assess the User for the cost of the work and for any other expenses or damages which result from User's failure to perform. The User agrees promptly to pay the City the amount assessed. If the User fails to pay the City within thirty (30) days after the City gives the User written notice of the amount due, the City may impose a lien against User's Property for the total resulting amount.

7. Cancellation of Agreement and Release of Covenant. This Agreement may be cancelled and User's covenants released by the City at will by the City's mailing to the User notice of the City's intention to record a Cancellation and Release with the Bernalillo County Clerk. The Cancellation and Release will be effective thirty (30) days after the date of mailing the notice to the User unless a later date is stated in the notice or the Cancellation and Release. After the effective date, the City will record the Cancellation and Release with the Bernalillo County Clerk.

8. Condemnation. If any part of the User's Property is ever condemned by the City, the User will forego all claims to compensation for any portion of User's structure which encroaches on City Property and for severance damage to the remaining portion of User's structure on User's Property.

9. Assessment. Nothing in this Agreement shall be construed to relieve the

5731

User, his heirs, assigns and successors from an assessment against User's Property for improvements to the City Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the improvement will not reduce the amount assessed by the City.

10. Notice. For purposes of giving formal written notice to the User, User's address is:

Albuquerque South, a New Mexico general partnership  
c/o Joe Werntz, Esq.  
P.O. Box 27047  
Albuquerque, New Mexico 87125-7047

Notice may be given to the User either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the User within 3 days after the notice is mailed if there is no actual evidence of receipt. The User may change User's address by giving written notice of the change by certified mail, return receipt requested, to the City Engineer at P.O. Box 1293, Albuquerque, New Mexico 87103.

11. Indemnification. The User agrees to defend, indemnify and hold harmless the City, its officials, agents and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties as a result of User's use of the City's Property. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee; or (2) the giving of or the failure to give direction or instructions by the indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

12. Term. This Agreement shall continue until revoked by the City pursuant to Section 7 above.

13. Binding on User's Property. The covenants and obligations of the User set forth herein shall be binding on User, his heirs, assigns and successors and on User's Property and constitute covenants running with User's Property until released by the City.

14. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.

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-3-

Approved as to form by  
Legal Department 9/30/94

9732

15. Changes of Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

16. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder of the Agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning or construction of any of its provisions.

**CITY OF ALBUQUERQUE**

**USER:** ALBUQUERQUE SOUTH, a New

Mexico general partnership

By: Lawrence Rael  
Chief Administrative Officer

~~By: ARJAY, INC, co-managing partner~~  
~~By: Joseph L. Lantry~~  
~~Its: President~~

Dated: \_\_\_\_\_

Dated: 4-3-95

STATE OF NEW MEXICO )  
 ) ss.  
COUNTY OF BERNALILLO )

1995

This instrument was acknowledged before me on \_\_\_\_\_, ~~1994~~, by Lawrence Rael, Chief Administrative Officer of the City of Albuquerque, a municipal corporation, on behalf of the municipal corporation.

My Commission Expires: \_\_\_\_\_

Notary Public \_\_\_\_\_

STATE OF NEW MEXICO )  
 ) ss.  
COUNTY OF BERNALILLO )

1995

This instrument was acknowledged before me on \_\_\_\_\_, ~~1994~~ by \_\_\_\_\_, on behalf of \_\_\_\_\_.

9733

**My Commission Expires:**

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**Notary Public**

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-5-

Approved as to form by  
Legal Department 9/30/94

9734

SAPPHIRE ST

PC = 5+72.71

3+00  
3+27

WIRE ENCLOSED  
TYPE M RIP-RAP, 1 1/2'  
DEEP. (MATCH EXISTING  
ELEV. ALONG MT EASEMENT)

2' WIDE  
GROUTED  
RIP-RAP WEIR

36" TRANSMISSION  
LINE

6' CHAIN LINK  
FENCE, PER  
COA STD. DWG.  
#2252

4" FLEXIBLE POLYETHYLENE PIPE  
@ S=2.02% TO DAYLIGHT (APPROX.  
800' EAST TO EL=30')

18" CMP RISER,  
5' TOTAL HEIGHT  
(SEE DETAIL A  
THIS SHEET)

SAS

QUARTZ DR

RE.  
SHEET

OUTLET STRUCTURE

SCALE: 1"=50'

EXHIBIT

155571

2

95040033

9735

**AGREEMENT AND COVENANT**

\*a New Mexico general partnership

This Agreement and Covenant, between the City of Albuquerque, New Mexico ("City") and Albuquerque South\*, ("User") is made in Albuquerque, New Mexico and is entered into as of the date of recording this Agreement with the Bernalillo County Clerk.

\*the Amole del Norte Diversion Facility

1. **Recital.** The User is the owner of certain real property ("User's Property") located at south of Arenal and west of\*, in Albuquerque, New Mexico, and more particularly described as:

Tracts B, C and D, ALBUQUERQUE SOUTH UNIT 1, as shown on the plat thereof recorded in the Bernalillo County, New Mexico real estate records on August 3, 1987, in Vol. C-34, Folio 74

The City is the owner of certain real property, easement or public right-of-way ("City's Property") in the vicinity of, contiguous to, abutting or within User's Property, and more particularly described as:

Drainage Easement created pursuant to that certain Amended and Restated Drainage Easement recorded in the Bernalillo County, New Mexico real estate records on Apr. 24, 1995, in Vol. 95-2, Folio 9716-34

The User wishes to construct upon, improve or repair and to maintain the following "Improvement" on the City's Property (or already has done so):

Temporary drainage facilities shown and described on Exhibit "A"

A sketch of the proposed or existing Improvement is attached as Exhibit A and made a part of this Agreement.

The City agrees to permit the Improvement to exist on the City's Property provided the User complies with the terms of this Agreement.

2. **City Use of City's Property and City Liability.** The City has the right to enter upon the City's Property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the User. If the Work affects the Improvement the City will not be financially or otherwise responsible for rebuilding or repairing the Improvement. The User promptly will repair the Improvement to the City's satisfaction. The cost of repairing the Improvement will be paid by User.

3. **User's Responsibility for Improvement.** The User will be solely responsible for constructing, maintaining, repairing and, if required, removing the

9736

Improvement, all in accordance with standards required by the City as per the approved Grading and Drainage Plan M10/D54. The User will be solely responsible for paying all related costs. The User will not permit the Improvement to constitute a hazard to the health or safety of the general public or to interfere with the City's use of the City's Property. The User will conform with all applicable laws, ordinances and regulations.

4. Use of the Improvement. If the City's Property is a public right-of-way, it shall be open to the use of the general public at all times, subject to reasonable curtailment during periods of construction, maintenance or repair.

5. Demand for Repair, Modification or Removal. The City may send written notice ("Notice") to the User requiring the User to repair, modify or remove the Improvement within 30 days ("Deadline") and the User will comply promptly with the requirements of the Notice. If removal is demanded, the City also may require the User to return the City's Property to its original condition by the Deadline. The User will perform all required work by the Deadline, at User's sole expense.

6. Failure to Perform by User and Emergency Work by City. If the User fails to comply with the terms of the Notice by the Deadline stated, or, if the City determines that an emergency condition exists, the City may perform the work itself. The City then may assess the User for the cost of the work and for any other expenses or damages which result from User's failure to perform. The User agrees promptly to pay the City the amount assessed. If the User fails to pay the City within thirty (30) days after the City gives the User written notice of the amount due, the City may impose a lien against User's Property for the total resulting amount.

7. Cancellation of Agreement and Release of Covenant. This Agreement may be cancelled and User's covenants released by the City at will by the City's mailing to the User notice of the City's intention to record a Cancellation and Release with the Bernalillo County Clerk. The Cancellation and Release will be effective thirty (30) days after the date of mailing the notice to the User unless a later date is stated in the notice or the Cancellation and Release. After the effective date, the City will record the Cancellation and Release with the Bernalillo County Clerk.

8. Condemnation. If any part of the User's Property is ever condemned by the City, the User will forego all claims to compensation for any portion of User's structure which encroaches on City Property and for severance damage to the remaining portion of User's structure on User's Property.

9. Assessment. Nothing in this Agreement shall be construed to relieve the

User, his heirs, assigns and successors from an assessment against User's Property for improvements to the City Property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the improvement will not reduce the amount assessed by the City.

10. Notice. For purposes of giving formal written notice to the User, User's address is:  
Albuquerque South, a New Mexico general partnership  
c/o Joe Wernitz, Esq.  
P.O. Box 27047  
Albuquerque, New Mexico 87125-7047

Notice may be given to the User either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the User within 3 days after the notice is mailed if there is no actual evidence of receipt. The User may change User's address by giving written notice of the change by certified mail, return receipt requested, to the City Engineer at P.O. Box 1293, Albuquerque, New Mexico 87103.

11. Indemnification. The User agrees to defend, indemnify and hold harmless the City, its officials, agents and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties as a result of User's use of the City's Property. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee; or (2) the giving of or the failure to give direction or instructions by the indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

12. Term. This Agreement shall continue until revoked by the City pursuant to Section 7 above.

13. Binding on User's Property. The covenants and obligations of the User set forth herein shall be binding on User, his heirs, assigns and successors and on User's Property and constitute covenants running with User's Property until released by the City.

14. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith.

j:\rpd4\egmcoy.egm

-3-

Approved as to form by  
Legal Department 9/30/94

9738

15. Changes of Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

16. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder of the Agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning or construction of any of its provisions.

**CITY OF ALBUQUERQUE**

By: [Signature]  
Lawrence Rael  
Chief Administrative Officer

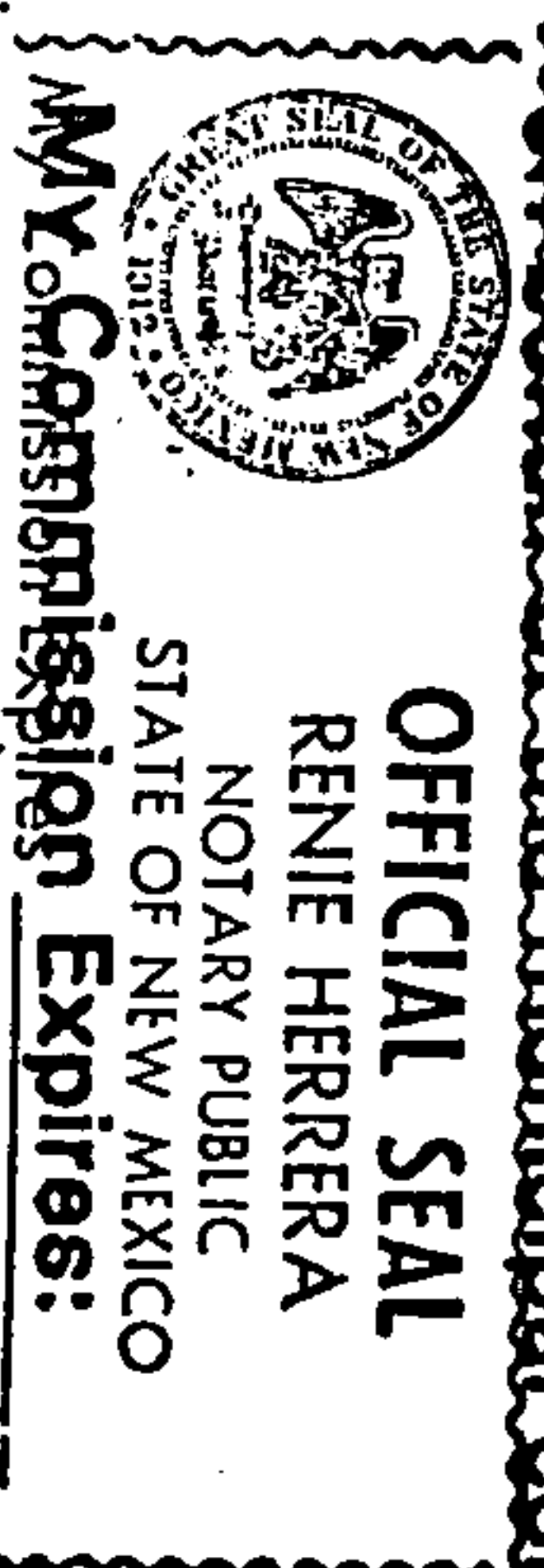
Dated: 4/20/95

STATE OF NEW MEXICO )  
 ) ss.  
COUNTY OF BERNALILLO )

**USER:** ALBUQUERQUE SOUTH, a New Mexico general partnership  
By: Joseph L. Henry  
Its: President

Dated: 4-3-95

This instrument was acknowledged before me on April 20 1995, by Lawrence Rael, Chief Administrative Officer of the City of Albuquerque, a municipal corporation, on behalf of the municipal corporation.



Renie Herrera  
Notary Public

STATE OF NEW MEXICO )  
 ) ss.  
COUNTY OF BERNALILLO )

This instrument was acknowledged before me on 4/3 1995 by Joseph L. Wernitz, Pres., Co-Managing Partner, on behalf of Albuquerque South, of AEGAY, INC.

9739

My Commission Expires:

12/8/95

*Armando H. Hernandez*  
Notary Public

STATE OF NEW MEXICO  
COUNTY OF BERNALILLO  
FILED FOR RECORD

1995 APR 24 PH 3:05

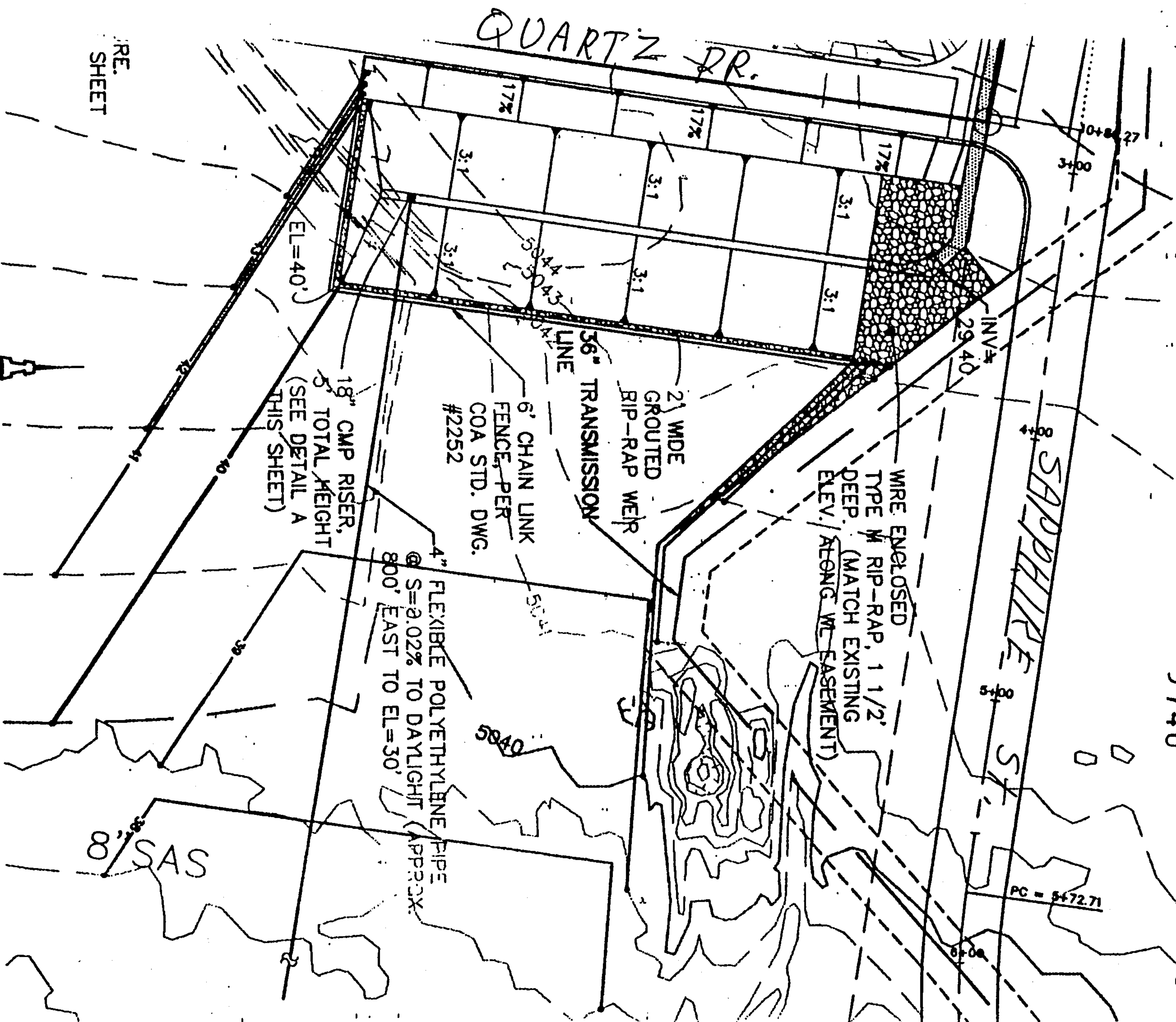
BK 95-9 PG 9735-40  
JUDY D. WOODWARD  
CO. CLERK & RECORDER  
*J. Yamamoto*

j:\vpd\lbgmcoy.egm

-5-

Approved as to form by  
Legal Department 9/30/94

9740

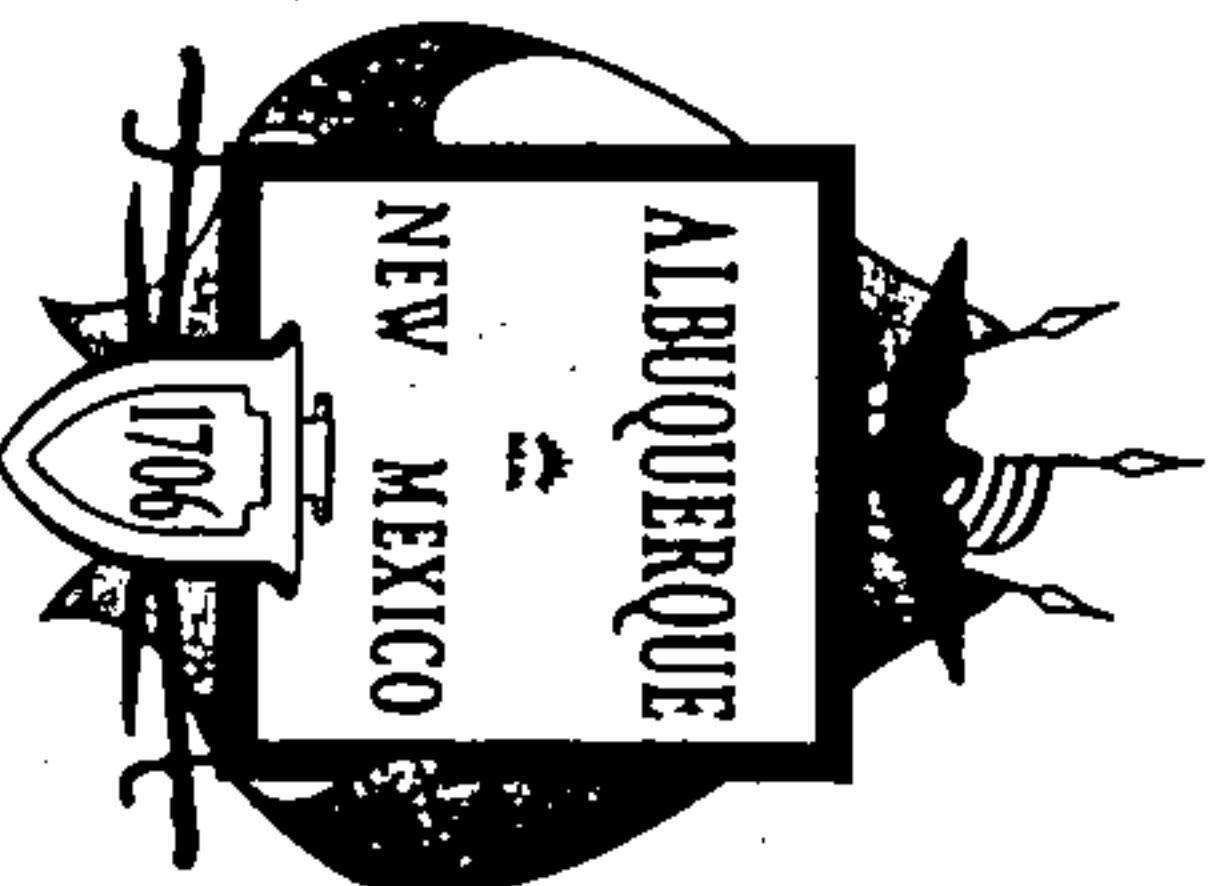


## OUTLET STRUCTURE

**SCALE: 1"=50'**

# EXHIBIT

**TAKEN**



**City of Albuquerque**  
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 18, 1994

Mr. Jud Lee  
Isaacson & Arfman PA  
128 Monroe NE  
Albuquerque, NM 87108

RE: PRELIMINARY PLAT APPROVAL FOR SUNRISE ESTATES, UNIT 1 (M-10/D5A)

Dear Jud:

Based upon your 7/15/94 resubmittal, the referenced project is approved for Preliminary Plat contingent upon the following items being addressed:

1. Based upon your description of the existing training dike along Arenal Road, it will be necessary to bring the dike up to current City Standards as a part of your project.
2. A better description of the existing and proposed outfall into the Amole del Norte Channel. You have stated in your submittal that the overland storm flows, as they approach the Amole del Norte Channel, will not be within well defined sections. If this is the case, how are you proposing to route the flows into the proposed sedimentation/stilling basin? Will training dikes be needed at this location as well? A topographic map at a larger scale would be helpful in determining the actual flow path.
3. The sedimentation/stilling pond must be constructed for a 10-year minimum volume.
4. A Drainage Covenant covering the maintenance of the downstream temporary facilities will be required.
5. The Blanket Drainage Easement must be granted to the City of Albuquerque.
6. The release of Financial Guaranties for the required storm drain improvements will be subject to obtaining a LOMR.

If I can be of further assistance, feel free to contact me at 768-3622.

Cordially,

c: Andrew Garcia  
Fred Aguirre

Scott Davis  
PWD, Hydrology Division

File  
(wp+8621)

# IMMAGE INFORMATION SHEET

PROJECT TITLE: Sunrise Estates ZONE ATLAS/DRNG. FILE #: M10/054

DRB #: 94-220 EPC #: \_\_\_\_\_ WORK ORDER #: \_\_\_\_\_

LEGAL DESCRIPTION: Tract A Vista Nueva

CITY ADDRESS: Sapphire St & Kimela Dr.

ENGINEERING FIRM: Isaacson & Arfman PA CONTACT: Jed Lee

ADDRESS: 128 Monroe NE PHONE: 268-8828

OWNER: The Presley Companies CONTACT: \_\_\_\_\_

ADDRESS: 1909 Carlisle NE PHONE: 265-5811

ARCHITECT: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich

ADDRESS: \_\_\_\_\_ PHONE: 884-1990

CONTRACTOR: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

## TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT

☐ DRAINAGE PLAN

☐ CONCEPTUAL GRADING & DRAINAGE PLAN

☐ GRADING PLAN

☐ EROSION CONTROL PLAN

☐ ENGINEER'S CERTIFICATION

☒ OTHER

## 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

☐ CERTIFICATE OF OCCUPANCY APPROVAL

☐ GRADING PERMIT APPROVAL

☐ PAVING PERMIT APPROVAL

☐ S.A.D. DRAINAGE REPORT

☐ DRAINAGE REQUIREMENTS

☐ OTHER \_\_\_\_\_ (SPECIFY)

## PRE-DESIGN MEETING:

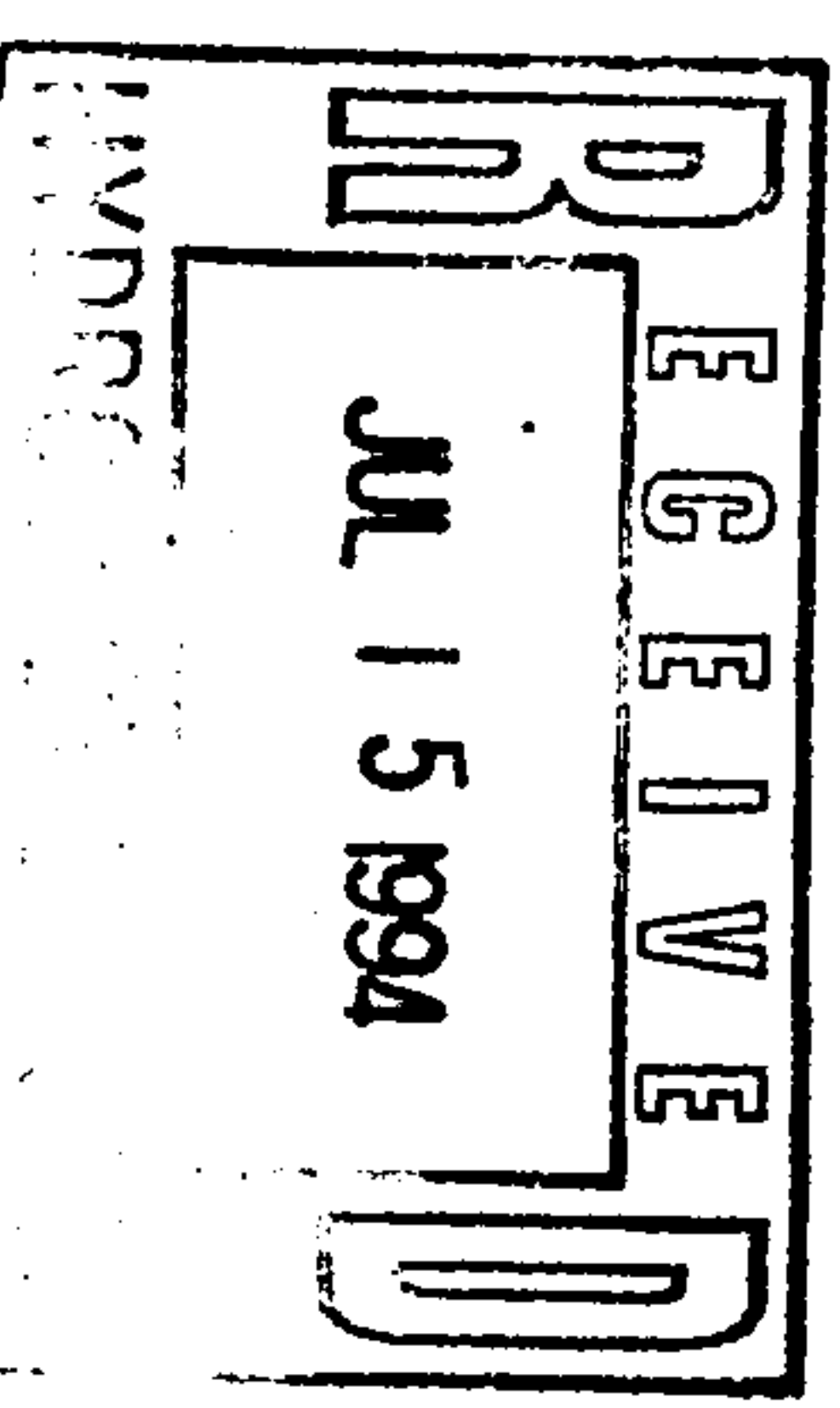
☒ YES

☐ NO

☐ COPY PROVIDED

DATE SUBMITTED: July 14, 1994

BY: Paul A. J.





**ISAACSON & ARFMAN, P.A.**

*Consulting Engineering Associates*

*Thomas O. Isaacson, PE & LS • Fred C. Arfman, PE  
Scott M. McGee, PE*

July 14, 1994

Mr. Scott Davis  
Hydrology Division  
Public Works Department  
City of Albuquerque  
P.O. Box 1293  
Albuquerque, NM 87103

**RE: Sunrise Estates, Unit One**

Dear Mr. Davis:

This letter is written in response to correspondence we received from your office dated 6/28/94. Below is an item by item comment addressing your concerns and request.

1. *The Required Infrastructure List should include a detailed breakdown of the needed storm drainage improvements associated with your project.*

We have revised the Infrastructure List to reflect the required storm drainage items. In addition, preliminary cost estimates for both the upstream inlets and onsite system are also included.

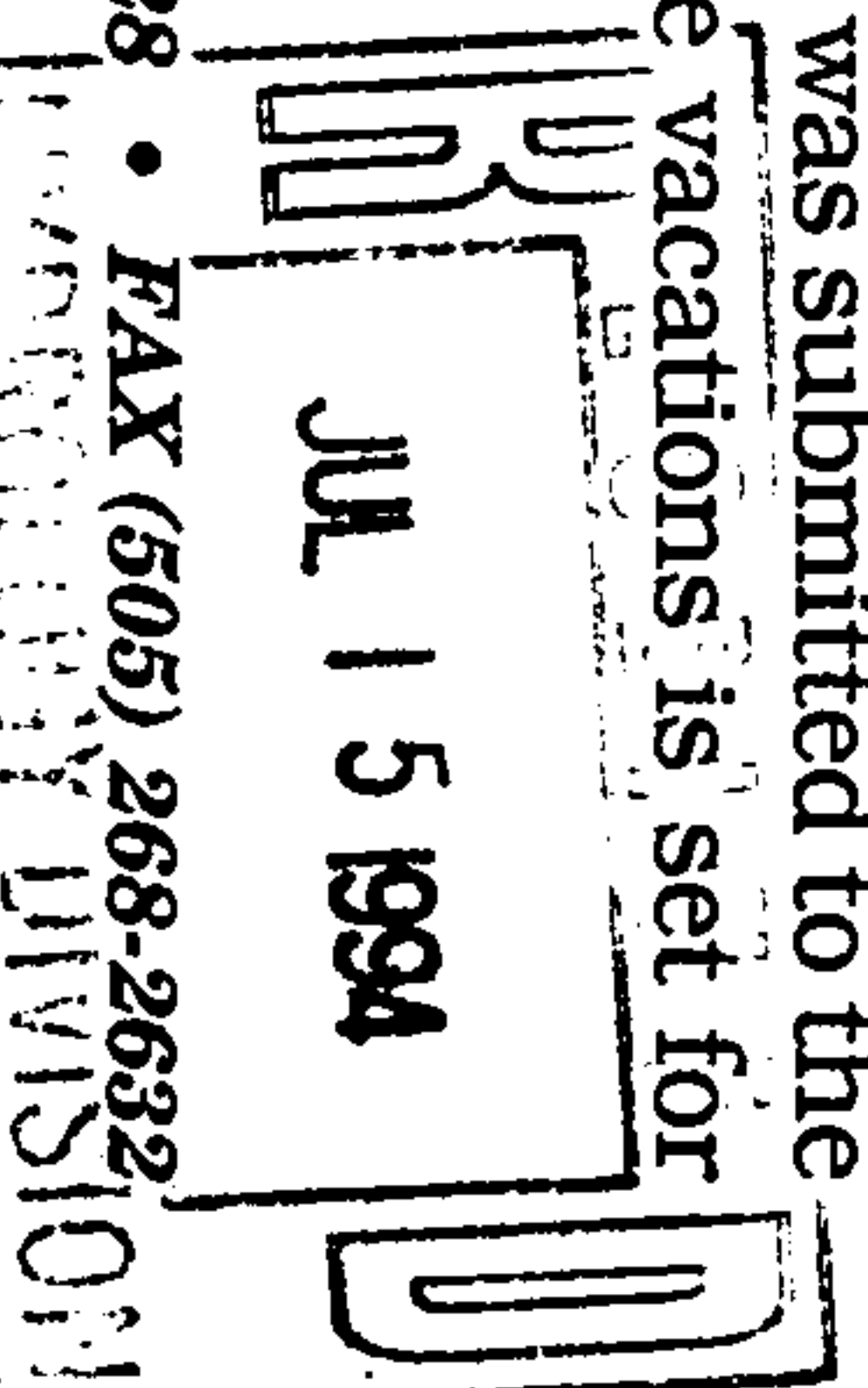
2. *Since the blanket easement you have obtained was between private parties, it will be necessary to have the City's legal staff review the document to determine if it is satisfactory.*

Unfortunately this item is out of our hands. I believe the City's legal staff is still reviewing the document.

3. *It appears from the existing Vista Nueva plat that there are several drainage easements which, if not already vacated, will need to be included in a vacation action at this time.*

An application for vacation of public easements was submitted to the DRB on 7/8/94. The public hearing for these vacations is set for 8/2/94.

JUL 15 1994



4. *Again, the onsite improvements you have proposed appear to be acceptable. Of concern is the interim conditions downstream of your site. Please identify the proposed temporary improvements and the justification for these improvements. You mentioned in an earlier conversation that a training dike along Arenal routes storm flows back onto the properties covered in the Blanket Drainage Easement. Could you please be more specific on the training dike. What are the physical characteristics of the dike? Was it constructed by a government agency? If the dike were to fail, what would be the consequences? Could you also please define in greater detail the entire flow path including the confluence at the Amole Channel.*

Enclosed is a sketch of the conceptual design for the outlet structure at the terminus of the proposed storm drain. The rip-rap lined stilling basin will be about 20-25' wide and 150' long. As the brief hydraulic summary illustrates, the velocity of the 505 cfs is reduced from over 20 fps to about 3 fps with this facility. It also helps distribute the flow to a greater area decreasing the discharge concentration.

The training dike along the south right-of-way line of Arenal has been in existence for about 20 years. Although there is no documentation of the construction. It is believed the dike was built with either the Arenal paving project or the Thomas Tonerio Park project. The latter project was a County undertaking that served to protect the South Valley from flooding before the Amole del Norte Channel was built. From a field visit, it was gathered that the dike is about 4 to 5' wide at the top of the trapezoidal section and about 6' high with side slopes of 2:1. As to the repercussion of a failure of this dike, it probably won't happen as a result of this project. The outlet structure we are proposing will effectively slow and spread the flows enough such that a breach of the dike is no more likely then it is now. From a visual inspection of the topographic map of the area, the natural flow path of the majority of the area is away from the dike anyway.

The flow path after leaving the outlet structure tends to confine itself in gullies through basin #401. Then the topography flattens out and the flows will spread and sheet flow across basins 403, 406, and 407. The shaded area on the exhibit in the master plan shows the FEMA 100-year flood plain which summarize the flow path pretty well.

Mr. Scott Davis  
July 14, 1994  
Page 3

A desiltation area will be graded out at the triangular "bow" in the Amole del Norte right-of-way. This facility will have a trapezoidal cross-section and will be at a slope of 0.05 ft./ft. It will be approximately 100' long and have a top width of about 60'. A more complete design will be provided at DRC.

Please do not hesitate to call me at 268-8828 if you have any questions or comments.

Very truly yours,

**ISAACSON & ARFMAN, P.A.**



Chad Lee

Chad Lee

JL/rtl

Enclosures

FIGURE 12

INFRASTRUCTURE LIST

EXHIBIT "A"

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

**SUNRISE ESTATES, UNIT ONE**

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided by the City.

| <u>SIZE</u>                | <u>IMPROVEMENT</u> | <u>LOCATION</u> | <u>FROM</u>        | <u>TO</u>                        |
|----------------------------|--------------------|-----------------|--------------------|----------------------------------|
| <b>PUBLIC IMPROVEMENTS</b> |                    |                 |                    |                                  |
| 40FF Std.                  | Res. Paving        | Sapphire Street | West Terminus      | Quartz Drive                     |
| 4'                         | C&G (1t&rt)        | "               | "                  | "                                |
| 8"                         | *Sidewalk (1t&rt)  | "               | "                  | "                                |
| 12"                        | Sanitary Sewer     | "               | "                  | "                                |
|                            | Waterline          | "               | "                  | "                                |
| 28FF                       | Res. Paving        | Diamond Place   | North Cul-de-Sac   | Approx. 855' to South Cul-de-Sac |
| Std.                       | C&G (1t&rt)        | "               | "                  | "                                |
| 4'                         | *Sidewalk (1t&rt)  | "               | "                  | "                                |
| 8"                         | Sanitary Sewer     | "               | "                  | "                                |
| 6"                         | Waterline          | "               | "                  | "                                |
| 30FF Std.                  | Res. Paving        | 82nd Street     | N. Pl. Lot 1 Bl. B | Quartz Drive                     |
| 4'                         | C&G (1t&rt)        | "               | "                  | "                                |
| 8"                         | *Sidewalk (1t&rt)  | "               | "                  | "                                |
| 12"                        | Sanitary Sewer     | "               | "                  | "                                |
|                            | Waterline          | "               | "                  | "                                |

| <u>SIZE</u>           | <u>IMPROVEMENT</u>                                                                                          | <u>LOCATION</u>                  | <u>FROM</u>                   | <u>TO</u>                         |
|-----------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------|-----------------------------------|
| 30TF<br>Std.          | Res. Paving<br>C&G (1t&rt)                                                                                  | Zircon Place                     | Cul-de-Sac                    | Sapphire Street                   |
| 4'                    | *Sidewalk (1t&rt)                                                                                           | "                                | "                             | "                                 |
| 8"                    | Sanitary Sewer                                                                                              | "                                | "                             | "                                 |
| 6"                    | Waterline                                                                                                   | "                                | "                             | "                                 |
| 28TF                  | Res. Paving                                                                                                 | 82nd Street                      | Cul-de-Sac                    | 82nd Street                       |
| Std.                  | C&G (1t&rt)                                                                                                 | "                                | "                             | "                                 |
| 4'                    | *Sidewalk (1t&rt)                                                                                           | "                                | "                             | "                                 |
| 8"                    | Sanitary Sewer                                                                                              | "                                | "                             | "                                 |
| 4"                    | Waterline                                                                                                   | "                                | "                             | "                                 |
| 24TFE<br>Std.<br>Med. | Res. Paving<br>C&G (West)<br>Extr. Asph.<br>Curb (East)<br>*Sidewalk (1t&rt)<br>Sanitary Sewer<br>Waterline | Quartz Drive                     | S. Pl, Lot 26 Bk. C           | Sapphire Street                   |
| 4'                    |                                                                                                             | "                                | "                             | "                                 |
| 8"                    |                                                                                                             | "                                | "                             | "                                 |
| 6"                    |                                                                                                             | "                                | "                             | "                                 |
| 12"                   | Waterline                                                                                                   | Proposed Unit II<br>Quartz Drive | End of Unit I<br>Quartz Drive | Existing Line in<br>Kinnela Drive |

#### STORM DRAIN ITEMS

|       |                                                                          |                                            |                |                                            |
|-------|--------------------------------------------------------------------------|--------------------------------------------|----------------|--------------------------------------------|
| 60*** | "Cattle Guard"<br>Inlet & Catch<br>Basins<br>RCP Storm<br>Drain w/Inlets | Sapphire Street                            | West Terminus  | Approx. 470' East                          |
| 66*** | RCP Storm<br>Drain w/Inlets                                              | Sapphire Street                            | End of 60" RCP | Proposed East<br>End of Sapphire<br>Street |
| ***   | Rip-Rap Lined<br>Outlet Structure                                        | Proposed East<br>End of Sapphire<br>Street |                |                                            |

#### MISCELLANEOUS

Residential street lighting per DPM.

Grading: Certification per DPM (prior to release of financial guarantees). To include private retaining and perimeter walls as required on the approved grading plan (not to be financially guaranteed).

- \*Sidewalks to be deferred
- \*\*Storm drain size to be verified at DRC and will include all catch basins per approved Drainage Report
- \*\*\*To be designed at DRC

All waterlines to include fire hydrants, valves, & appurtenances per DPM

Street trees per ordinance (not to be financial guaranteed)

Prepared by: Jud Lee 6-7-94  
Jud Lee Date  
Isaacson & Arfman, P.A.

\*\*\*\*\*

Development Review Board Member Approval

|                            |      |
|----------------------------|------|
| Transportation Development | Date |
| Utility Development        | Date |
| Parks & Recreation         | Date |
| City Engineer/AMAFCA       | Date |
| DRB Chairman               | Date |

# Preliminary Cost Estimate for

## Onsite Storm Drain Improvements

| Item #  | Description                                 | Unit  | Quantity | Unit Price | Cost   |
|---------|---------------------------------------------|-------|----------|------------|--------|
| 0701.21 | Trchq. BF Comp. > 36" SAS, 8-12' In Dia. LF | 2BZD0 | 0.65     | #          | 18,330 |
| 0701.22 | Trchq. BF Comp. > 36" SAS 12-16' In Dia. LF | 35970 | 0.80     |            | 28,776 |
| 0910.25 | 60" RCP, III                                | LF    | 470      | 100        | 47,000 |
| 0910.27 | 66" RCP, III                                | LF    | 545      | 109        | 59,405 |
| 0915.04 | Ctn Bsn, C, DG                              | EA    | 4        | 2400       | 9,600  |
| 0920.15 | MH, 6' Dia. C, 10-14' D.                    | EA    | 2        | 2500       | 5,000  |
| XXX. XX | Outlet Structure                            | LS    | 1        | 10,000     | 10,000 |

Cost per LF of storm drain =  $\frac{175}{ft}$

Σ = 178,111

## Preliminary Cost Estimate for

### Inlets @ West End of Sapphire St.

From the master Drainage Report. Gravel = 450 cfs,  
of which 380 cfs needs to be removed from the street.

From the Heenah grate capacity manual, the "K" value for  
a vane grate  $17\frac{3}{4}" \times 35\frac{1}{2}"$ , @  $S = 306 = 22$ .

The grate capacity equation =  $K D^{5/3}$ , where  $D = 0.67$ .  
Capacity / grate =  $22 (0.67)^{5/3} = 11.3 \text{ cfs/grate}$

Assume the grates run the entire 40' width, so

$$40' / 11.479 = 27, \quad 27 (11.3) = \underline{304 \text{ cfs}}$$

Cost for grates = "250 each (including framing)  
so  $27 (250) = \underline{\$6750}$

Estimate volume of concrete needed = 10 cy.

From CMA prices,  $\$325/\text{cy} (10 \text{ cy}) = \underline{\$3250}$

Total for inlet structure = \\$10,000

Remaining flow =  $380 - 304 = 76 \text{ cfs}$

Assume use of Type C Double grate inlets to pick-up  
76 cfs. Each inlet will remove about 12 cfs, so,

$76/12 = 6.33$ , assume 7 inlets are needed.

From CMA prices:  $\$2100/\text{inlet} (7) = \underline{\$14,700}$

Total cost =  $10,000 + 14,700 = \underline{\underline{\$24,700}}$

7-6-94

mtg  
v1

@ AMAF  
Don Hagan  
Fred Aguirre  
Charlie Castaneda  
Fred Lofgren  
Paul W  
Johnny Evans  
John Kelly  
Alvin Breckinridge

Recap mtg. for AMGLA Board mtg.  
July 28

2 copies of record kept for cost & AMAFCA.

Refer to July 19.

let response to Scott's comments (tongue improvements)

# Conceptual Design of Outlet Structure

Flow coming out of 66" RCP  
= 505 cfs @  $V = 21.3$  fps

Flow will fill stilling basin & overtop on the north side.

Use weir equation to solve for height of flow.

$$Q = CLH^{1.5}, \text{ assume } C = 3.0$$

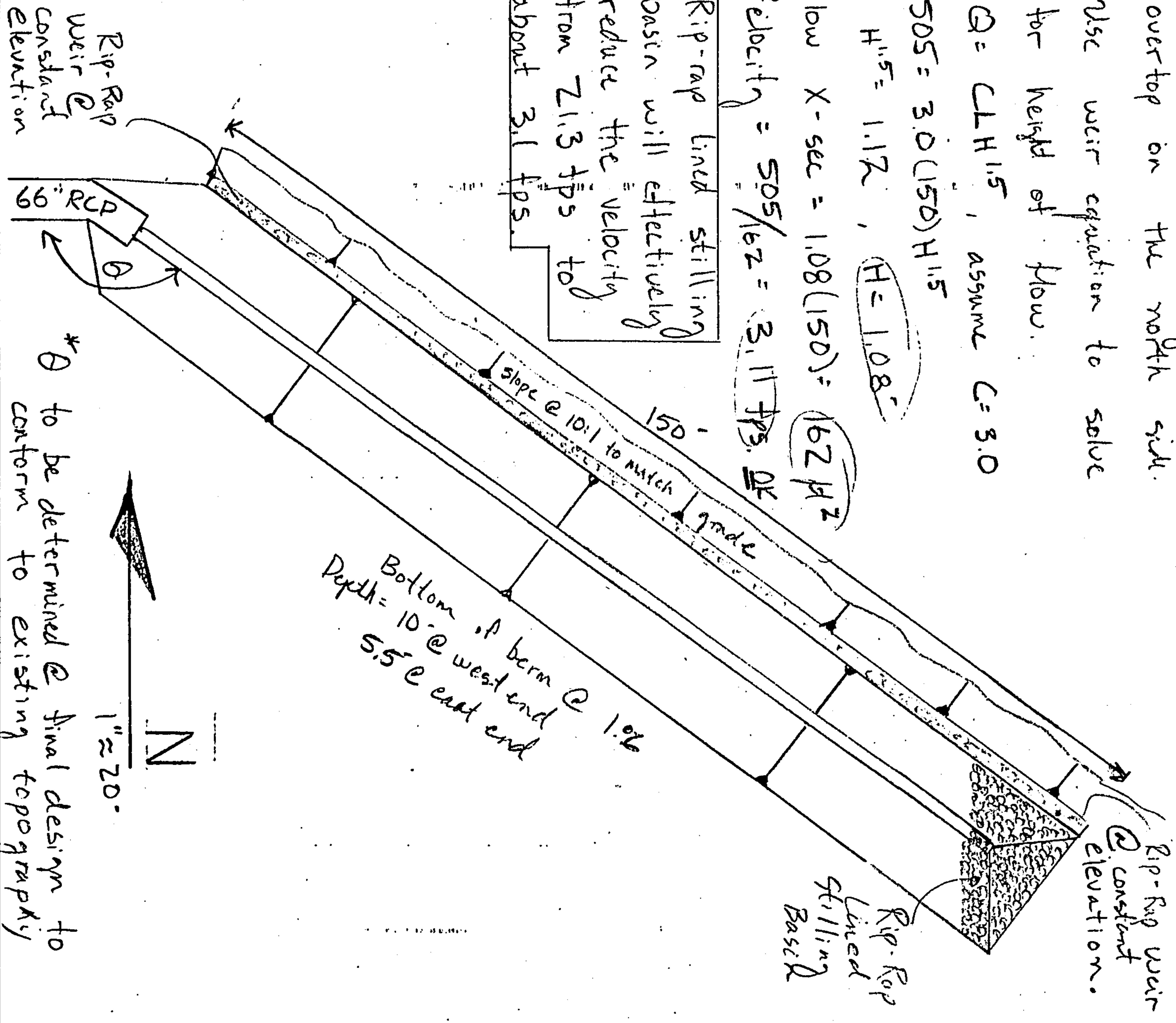
$$505 = 3.0(150)H^{1.5}$$

$$H^{1.5} = 1.17, \quad (H = 1.08')$$

$$\text{Flow } X\text{-sec} = 1.08(150) = 162 \text{ ft}^2$$

$$\text{Velocity} = 505/162 = 3.11 \text{ fps. OK}$$

∴ Rip-rap lined stilling basin will effectively reduce the velocity from 21.3 fps to about 3.1 fps.





# *City of Albuquerque*

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 28, 1994

Mr. Jud Lee  
Isaacson & Arfman, P.A.  
128 Monroe Street NE  
Albuquerque, NM 87108

RE: PRELIMINARY PLAT APPROVAL FOR SUNRISE ESTATES, UNIT I (M-10/D5A)  
ENGINEER'S STAMP DATED 6/15/94

Dear Mr. Lee:

Based upon your submittal made on 6/15/94, a number of outstanding concerns will need to be addressed prior to gaining Hydrology Division approval of the Preliminary Plat. Those concerns include:

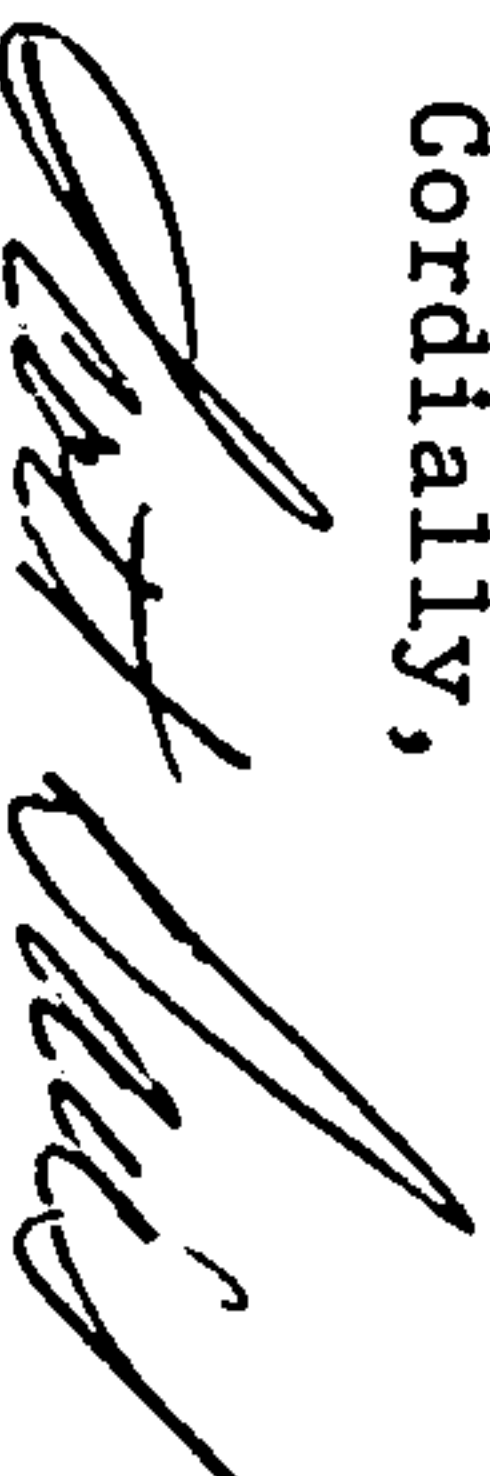
1. I accept your revised analysis as it pertains to storm flows impacting your site as well as flows generated from your proposed site. Given that, the Required Infrastructure List should include a detailed breakdown of the needed storm drainage improvements associated with your project. As it relates to the Preliminary Plat process, this information is needed for determination of the Financial Guarantee. As was discussed in a previous meeting, the City is investigating extending your proposed storm drain further upstream to lessen flooding at existing intersections. If this were to occur, rather than construct the numerous inlets you are currently proposing, your developer might instead contribute an equal amount to the City project. For that reason, a list of your planned improvements would be helpful in determining a dollar amount.
2. Since the Blanket Easement you have obtained was between private parties, it will be necessary to have the City's legal staff review the document to determine if it is satisfactory. That review is currently being conducted. Keep in mind that current Drainage Ordinances state that Public waters must be maintained within a Public Drainage Easement.
3. It appears from the existing Vista Nueva plat, recorded on 4/12/88, that there are several drainage easements which, if not already vacated, will need to be included in a vacation action at this time.

4. Again, the onsite improvements you have proposed appear to be acceptable. Of concern is the interim conditions downstream of your site. Please identify the proposed temporary improvements and the justification for those improvements. You mentioned in an earlier conversation that a training dike along Arenal routes storm flows back onto the properties covered in the Blanket Drainage Easement. Could you please be more specific on the training dike. What are the physical characteristics of the dike? Was it constructed by a government agency? If the dike were to fail, what would be the consequences? Could you also please define in greater detail the entire flow path including the confluence at the Amole Channel.

Once the downstream concerns have been addressed, I believe that Preliminary Plat approval will be forthcoming.

If I can be of further assistance, feel free to contact me at 768-3622.

Cordially,



Scott Davis  
PWD, Hydrology Division

c: ~~File~~

(WP+8621)

8621

PROJECT TITLE: Sumrise Estates Unit 1 ZONE ATLAS/DRNG. FILE #: M10/054DRB #: 94-200 EPC #: \_\_\_\_\_ WORK ORDER #: \_\_\_\_\_LEGAL DESCRIPTION: Tract A Vista NuevaCITY ADDRESS: @ Sapphire St + Kinshel Dr.ENGINEERING FIRM: Isaacs + Arman PA CONTACT: Jud LeeADDRESS: 128 Marne NE PHONE: 268-8828OWNER: The Presley Companies CONTACT: \_\_\_\_\_ADDRESS: 1909 Curlygle NE PHONE: 265-5811ARCHITECT: N/A CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

SURVEYOR: Aldrich Land Surveying CONTACT: Tim AldrichADDRESS: \_\_\_\_\_ PHONE: 884-1990CONTRACTOR: 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☐ CERTIFICATE OF OCCUPANCY APPROVAL☐ GRADING PERMIT APPROVAL☐ PAVING PERMIT APPROVAL☐ S.A.D. DRAINAGE REPORT☐ DRAINAGE REQUIREMENTS☐ OTHER \_\_\_\_\_ (SPECIFY)DATE SUBMITTED: June 15, 1994BY: David Lee

JUN 15 1994

M10-D5A

DRB Case No. 94-220  
 DRC Project No.:  
 Date Submitted: 5-12-94  
 Revised: 6-6-94

FIGURE 12

INFRASTRUCTURE LIST

EXHIBIT "A"

TO SUBDIVISION IMPROVEMENTS AGREEMENT

DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

**SUNRISE ESTATES, UNIT ONE**

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are Subdivider responsibility. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided by the City.

| <u>SIZE</u>                | <u>IMPROVEMENT</u> | <u>LOCATION</u> | <u>FROM</u>        | <u>TO</u>                        |
|----------------------------|--------------------|-----------------|--------------------|----------------------------------|
| <b>PUBLIC IMPROVEMENTS</b> |                    |                 |                    |                                  |
| 40'F Std.                  | Res. Paving        | Sapphire Street | West Terminus      | Quartz Drive                     |
|                            | C&G (1t&rt)        | "               | "                  | "                                |
| 4' Std.                    | *Sidewalk (1t&rt)  | "               | "                  | "                                |
| 8" Std.                    | Sanitary Sewer     | "               | "                  | "                                |
| 12" Std.                   | Waterline          | "               | "                  | "                                |
| 28'F Std.                  | Res. Paving        | Diamond Place   | North Cul-de-Sac   | Approx. 855' to South Cul-de-Sac |
|                            | C&G (1t&rt)        | "               | "                  | "                                |
| 4' Std.                    | *Sidewalk (1t&rt)  | "               | "                  | "                                |
| 8" Std.                    | Sanitary Sewer     | "               | "                  | "                                |
| 6" Std.                    | Waterline          | "               | "                  | "                                |
| 30'F Std.                  | Res. Paving        | 82nd Street     | N. Pl. Lot 1 Bl. B | Quartz Drive                     |
|                            | C&G (1t&rt)        | "               | "                  | "                                |
| 4' Std.                    | *Sidewalk (1t&rt)  | "               | "                  | "                                |
| 8" Std.                    | Sanitary Sewer     | "               | "                  | "                                |
| 12" Std.                   | Waterline          | "               | "                  | "                                |

| <u>SIZE</u>          | <u>IMPROVEMENT</u>                                      | <u>LOCATION</u>                  | <u>FROM</u>                   | <u>TO</u>                        |
|----------------------|---------------------------------------------------------|----------------------------------|-------------------------------|----------------------------------|
| 30FF<br>Std.         | Res. Paving<br>C&G (1t&rt)                              | Zircon Place                     | Cul-de-Sac                    | Sapphire Street                  |
| 4'                   | *Sidewalk (1t&rt)                                       | "                                | "                             | "                                |
| 8"                   | Sanitary Sewer                                          | "                                | "                             | "                                |
| 6"                   | Waterline                                               | "                                | "                             | "                                |
| 28FF                 | Res. Paving                                             | 82nd Street<br>Cul-de-Sac        | Cul-de-Sac                    | 82nd Street                      |
| Std.                 | C&G (1t&rt)                                             | "                                | "                             | "                                |
| 4'                   | *Sidewalk (1t&rt)                                       | "                                | "                             | "                                |
| 8"                   | Sanitary Sewer                                          | "                                | "                             | "                                |
| 4"                   | Waterline                                               | "                                | "                             | "                                |
| 24FE<br>Std.<br>Med. | Res. Paving<br>C&G (West)<br>Extr. Asph.<br>Curb (East) | Quartz Drive                     | S. Pl, Lot 26 Bk. C           | Sapphire Street                  |
| 4'                   | *Sidewalk (1t&rt)                                       | "                                | "                             | "                                |
| 8"                   | Sanitary Sewer                                          | "                                | "                             | "                                |
| 6"                   | Waterline                                               | "                                | "                             | "                                |
| 12"                  | Waterline                                               | Proposed Unit II<br>Quartz Drive | End of Unit I<br>Quartz Drive | Existing Line In<br>Kimela Drive |

#### STORM DRAIN ITEMS

|                                           |                 |                |                                            |
|-------------------------------------------|-----------------|----------------|--------------------------------------------|
| "Cattle Guard"<br>Inlet & Catch<br>Basins | Sapphire Street |                |                                            |
| 60"***<br>RCP Storm<br>Drain w/Inlets     | Sapphire Street | West Terminus  | Approx. 470' East                          |
| 66"***<br>RCP Storm<br>Drain w/Inlets     | Sapphire Street | End of 60" RCP | Proposed East<br>End of Sapphire<br>Street |

\*\*\*  
Rip-Rap Lined  
Outlet Structure

Proposed East  
End of Sapphire  
Street

*Downstream Infrastructure Includes:  
1. TRADING DITCHES PER DPM STANDARD  
2. Sedimentation / Filtering Basin.*

*to be determined @ DRC*

#### MISCELLANEOUS

Residential street lighting per DPM.

Grading: Certification per DPM (prior to release of financial guarantees). To include private retaining and perimeter walls as required on the approved grading plan (not to be financially guaranteed).

\*Sidewalks to be deferred  
\*\*Storm drain size to be verified at DRC and will include all catch basins per approved Drainage Report  
\*\*\*To be designed at DRC

All waterlines to include fire hydrants, valves, & appurtenances per DPM

Street trees per ordinance (not to be financial guaranteed)

Prepared by: Paul Lee 6-7-94  
Jud/lee Date  
Isaacson & Arfman, P.A.

\*\*\*\*\*

Development Review Board Member Approval

Mark Stark 7-19-94  
Transportation Development Date

Robert W. Howe 7-18-94  
Utility Development Date

Carol Schneider Dumont 7-19-94  
Parks & Recreation Gen. Services Date

Paul J. Cyren 7-19-94  
City Engineer/AMABCA Date

Jack Cleard 7-19-94  
DRB Chairman Date

FIGURE 12

INFRASTRUCTURE LIST

EXHIBIT "A"

TO SUBDIVISION IMPROVEMENTS AGREEMENT

DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

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| <u>SIZE</u>                | <u>IMPROVEMENT</u>                               | <u>LOCATION</u> | <u>FROM</u>        | <u>TO</u>                           |
|----------------------------|--------------------------------------------------|-----------------|--------------------|-------------------------------------|
| <b>PUBLIC IMPROVEMENTS</b> |                                                  |                 |                    |                                     |
| 40'FF Std.                 | Res. Paving                                      | Sapphire Street | West Terminus      | Quartz Drive                        |
|                            | C&G (1t&rt)                                      | "               | "                  | "                                   |
| 4' 8" 12"                  | *Sidewalk (1t&rt)<br>Sanitary Sewer<br>Waterline | "<br>"<br>"     | "<br>"<br>"        | "<br>"<br>"                         |
| 28'FF Std.                 | Res. Paving                                      | Diamond Place   | North Cul-de-Sac   | Approx. 855' to<br>South Cul-de-Sac |
|                            | C&G (1t&rt)                                      | "               | "                  | "                                   |
| 4' 8" 6"                   | *Sidewalk (1t&rt)<br>Sanitary Sewer<br>Waterline | "<br>"<br>"     | "<br>"<br>"        | "<br>"<br>"                         |
| 30'FF Std.                 | Res. Paving                                      | 82nd Street     | N. PL, Lot 1 Bl. B | Quartz Drive                        |
|                            | C&G (1t&rt)                                      | "               | "                  | "                                   |
| 4' 8" 12"                  | *Sidewalk (1t&rt)<br>Sanitary Sewer<br>Waterline | "<br>"<br>"     | "<br>"<br>"        | "<br>"<br>"                         |

| <u>SIZE</u>      | <u>IMPROVEMENT</u> | <u>LOCATION</u>         | <u>FROM</u>         | <u>TO</u>       |
|------------------|--------------------|-------------------------|---------------------|-----------------|
| 30" FF Std.      | Res. Paving        | Zircon Place            | Cul-de-Sac          | Sapphire Street |
| 4'               | C&G (1t&rt)        | "                       | "                   | "               |
| 8"               | *Sidewalk (1t&rt)  | "                       | "                   | "               |
| 6"               | Sanitary Sewer     | "                       | "                   | "               |
|                  | Waterline          | "                       | "                   | "               |
| 28" FF           | Res. Paving        | 82nd Street             | Cul-de-Sac          | 82nd Street     |
|                  |                    | Cul-de-Sac              |                     |                 |
| Std.             | C&G (1t&rt)        | "                       | "                   | "               |
| 4'               | *Sidewalk (1t&rt)  | "                       | "                   | "               |
| 8"               | Sanitary Sewer     | "                       | "                   | "               |
| 4"               | Waterline          | "                       | "                   | "               |
| 24" FE Std. Med. | Res. Paving        | Quartz Drive            | S. Pl, Lot 26 Bk. C | Sapphire Street |
|                  | C&G (West)         | "                       | "                   | "               |
|                  | Extr. Asph.        | "                       | "                   | "               |
| 4'               | Curb (East)        | "                       | "                   | "               |
| 8"               | *Sidewalk (1t&rt)  | "                       | "                   | "               |
| 6"               | Sanitary Sewer     | "                       | "                   | "               |
| 12"              | Waterline          | "                       | "                   | "               |
| **               | Storm Drain        | Sapphire Street         | West Terminus       | Quartz Drive    |
| ***              | Outlet Structure   | East of Sapphire Street |                     |                 |

## MISCELLANEOUS

Residential street lighting per DPM.

Grading: Certification per DPM (prior to release of financial guarantees). To include private retaining and perimeter walls as required on the approved grading plan (not to be financially guaranteed).

\*Sidewalks to be deferred

\*\*Storm drain size to be determined at DRC and will include all catch basins per approved Drainage Report

\*\*\*To be designed per approved Drainage Report and DRC.

All waterlines to include fire hydrants, valves, & appurtenances per DPM

Street trees per ordinance (not to be financial guaranteed)

Prepared by: Jud Lee Date 6-7-94  
Jud Lee  
Isaacson & Arfman, P.A.

\*\*\*\*\*

Development Review Board Member Approval

|                                   |             |
|-----------------------------------|-------------|
| <u>Transportation Development</u> | <u>Date</u> |
| <u>Utility Development</u>        | <u>Date</u> |
| <u>Parks &amp; Recreation</u>     | <u>Date</u> |
| <u>City Engineer / AMAFCA</u>     | <u>Date</u> |
| <u>DRB Chairman</u>               | <u>Date</u> |

# IMAGE INFORMATION SHEET

PROJECT TITLE: Sunrise Estates Unit 1 ZONE ATLAS/DRNG. FILE #: M 10/105A  
 DRB #: 94-220 EPC #: \_\_\_\_\_ WORK ORDER #: \_\_\_\_\_  
 LEGAL DESCRIPTION: Tract A Vista Nueva  
 CITY ADDRESS: @ Sapphire St & Kincaid Dr.  
 ENGINEERING FIRM: Isaacson & Artman PA CONTACT: Jud Lee  
 ADDRESS: 128 Monroe NE PHONE: 268-8828  
 OWNER: The Presley Companies CONTACT: \_\_\_\_\_  
 ADDRESS: 1909 Curlygate NE PHONE: 265-5811  
 ARCHITECT: N/A CONTACT: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_  
 SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich  
 ADDRESS: \_\_\_\_\_ 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:

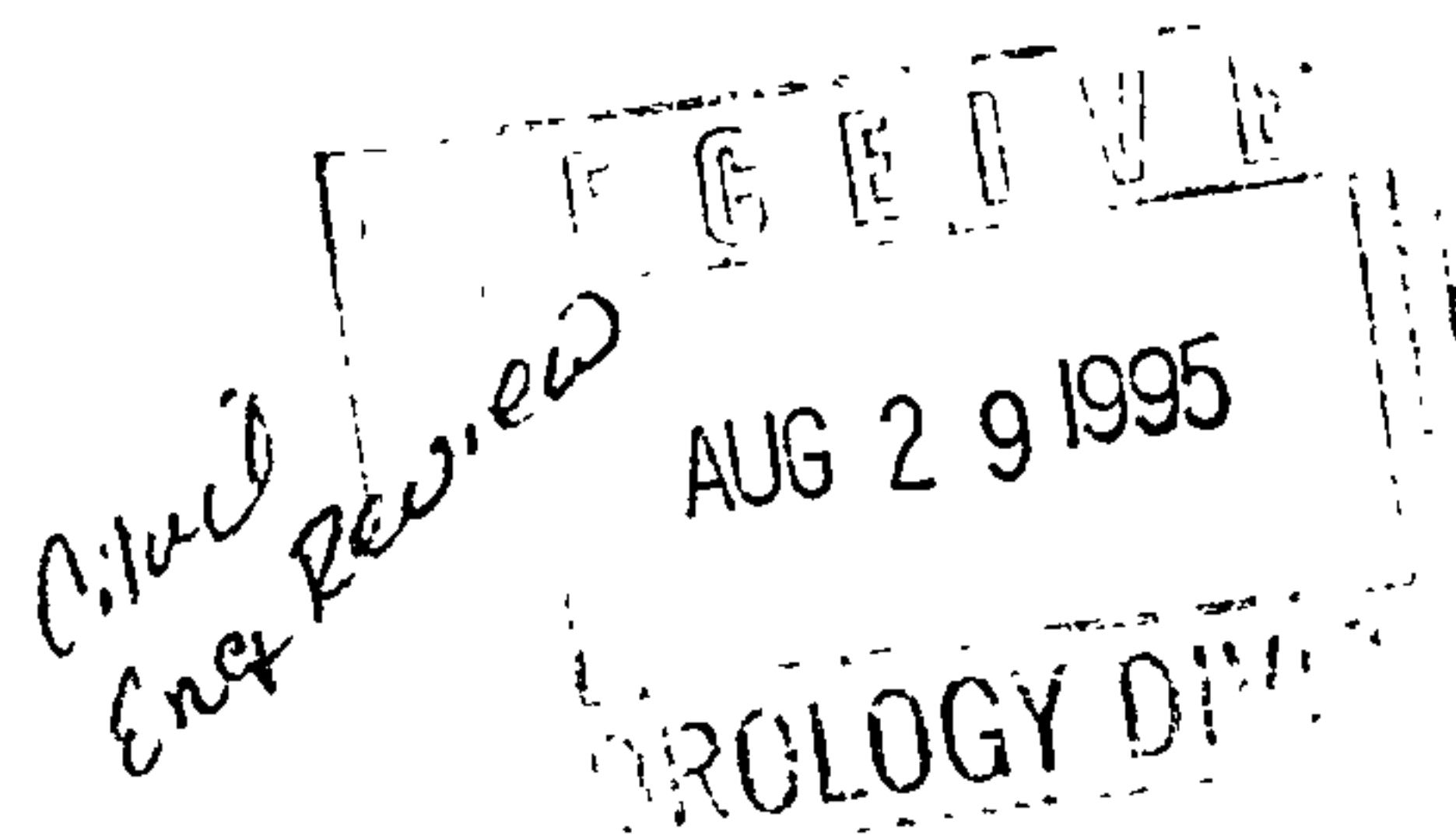
- ☒ YES  
☐ NO  
☐ COPY PROVIDED

## 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  
☐ CERTIFICATE OF OCCUPANCY APPROVAL  
☐ GRADING PERMIT APPROVAL  
☐ PAVING PERMIT APPROVAL  
☐ S.A.D. DRAINAGE REPORT  
☐ DRAINAGE REQUIREMENTS  
☒ OTHER Enggr. Grading (SPECIFY)  
Cert. fication

DATE SUBMITTED: August 28 1995

BY: Jud Lee



## DRAINAGE INFORMATION SHEET

Background info for Sunrise Estates

PROJECT TITLE: Master Drainage Report for 417 AC. Portion of Land between the Snow Vista Channel & the Amate del Norte Channel  
 DRB #: 94-220 EPC #:                      WORK ORDER #:                     

LEGAL DESCRIPTION: Vista Nueva & Alb. South Unit 1

CITY ADDRESS: Kimela Dr & Sapphire Rd.

ENGINEERING FIRM: Isaacson & Araman PA CONTACT: Jud Lee

ADDRESS: 128 Monroe NE PHONE: 268-8828

OWNER: The Presley Companies CONTACT:                     

ADDRESS: 1909 Carlisle NE PHONE: 265-5811

ARCHITECT: N/A CONTACT:                     

ADDRESS:                      PHONE:                     

SURVEYOR: Aldrich Land Surveying CONTACT: Tim Aldrich

ADDRESS:                      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:

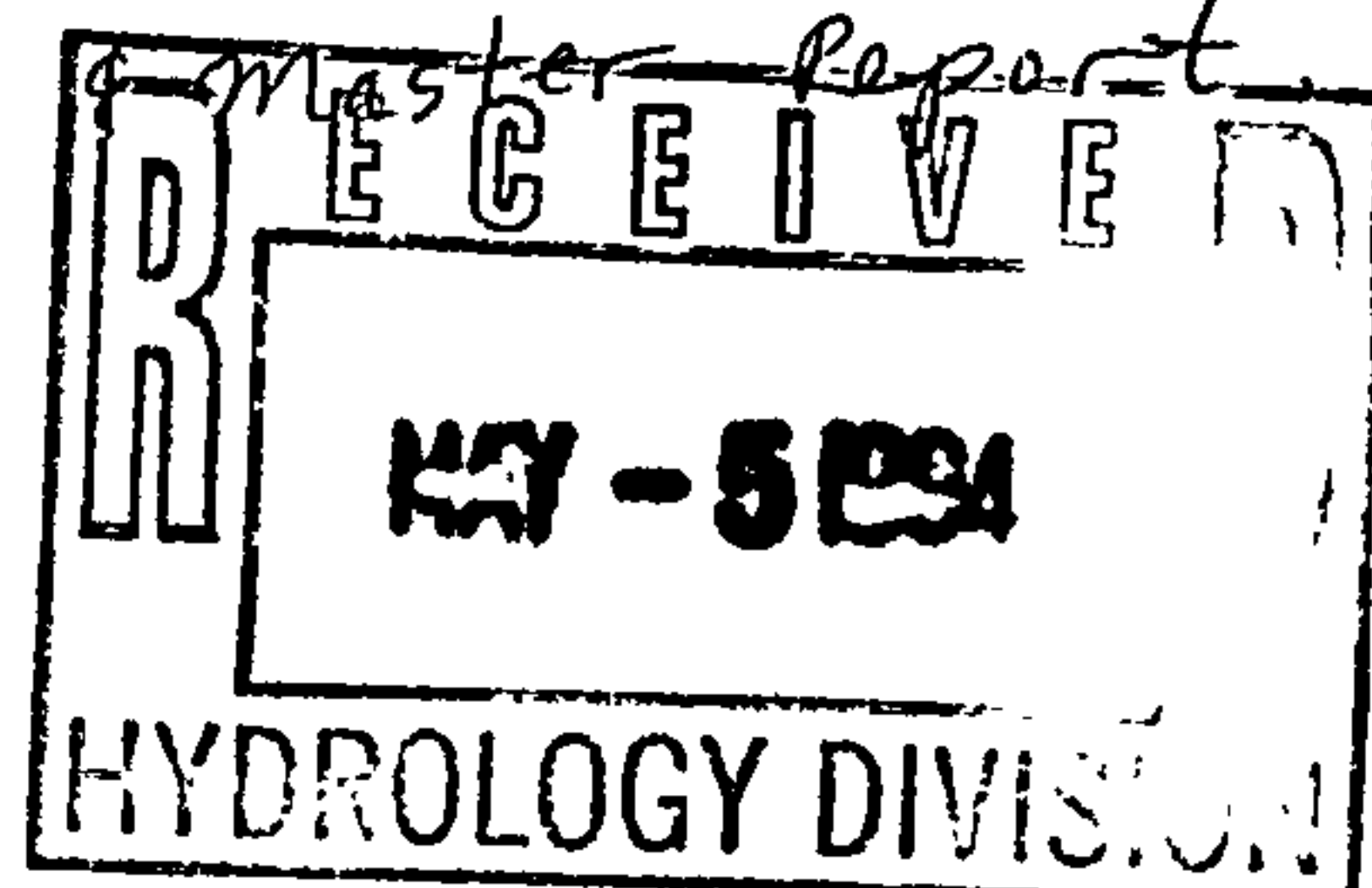
- ☐ YES  
☒ NO  
☐ COPY PROVIDED

## 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  
☐ CERTIFICATE OF OCCUPANCY APPROVAL  
☐ GRADING PERMIT APPROVAL  
☐ PAVING PERMIT APPROVAL  
☐ S.A.D. DRAINAGE REPORT  
☐ DRAINAGE REQUIREMENTS  
☒ OTHER, Review & Comment (SPECIFY)

DATE SUBMITTED: 5-5-94

BY: Jud Lee



1. Cattle guard hard sell w/ trees.
2. Street carrying cap. 10' cr. / lane dy.
3. Erosive downstream of outfall. Will flow stop w/in easement?
4. Flow in 8' x 8' should be picked up prior to sagamore
5. Where does flow in Quartz go to south - may need to pond.
6. Where is outfall for school pond?
7. Hydraulic jumps w/in Sagamore?
8. Show brdgs. of floodplain
9. Does Humele meet 10' cr. / lane dy criteria?
10. Infra. list will need to include offsite impv. adj. to site
11. ~~It~~ When there is developed + 200 cfs overbank flow is in Sagamore how will this flow be routed north to channel along Humele?

# **DRAINAGE REPORT**

for

## **SUNRISE ESTATES, UNIT 1**

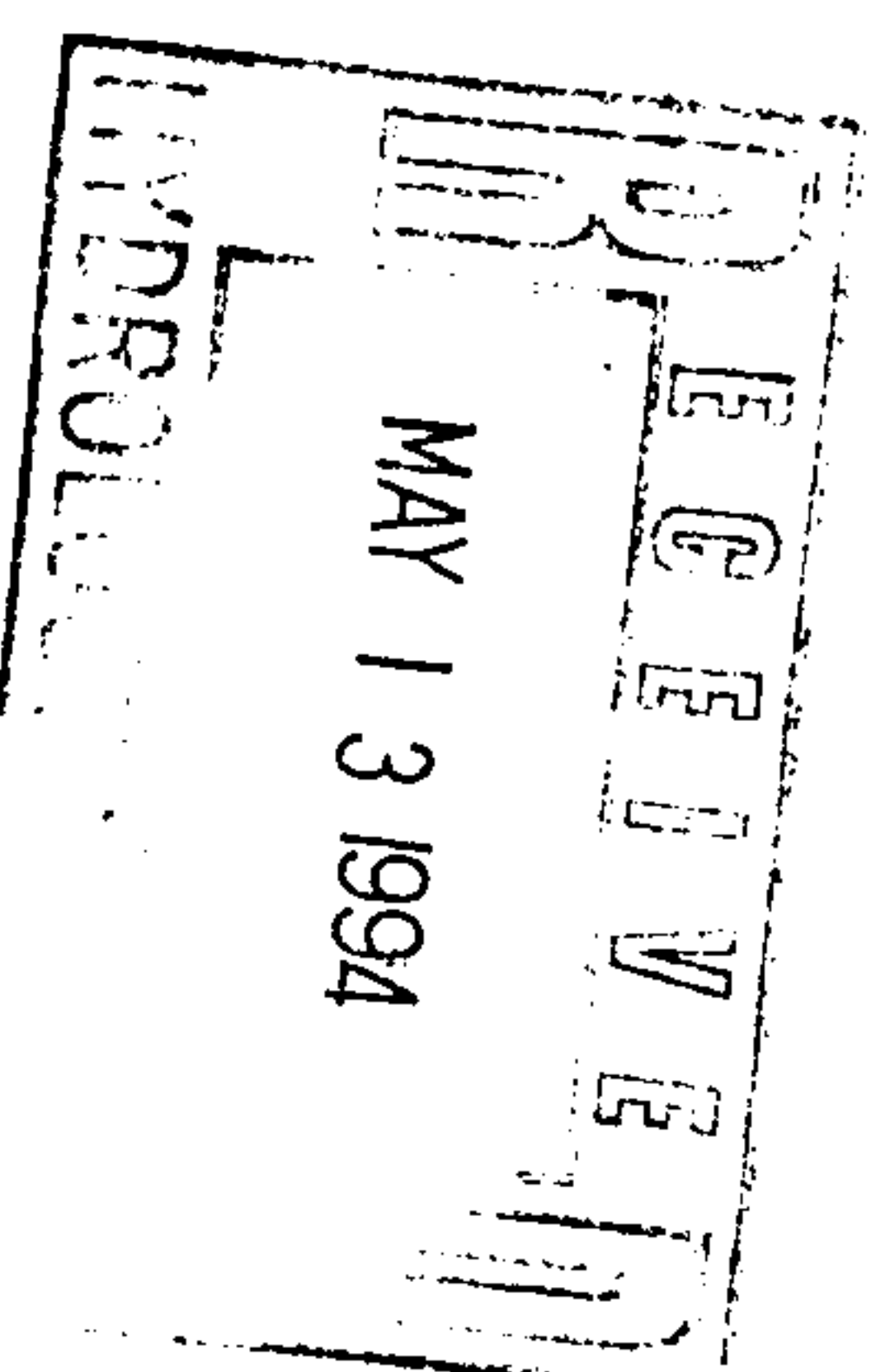
**A 94 Lot Single Family Lot  
Residential Subdivision**

## **Hydrological Data & Calculations**

**May 1994**

**Prepared by:**

**Isaacson & Arfman, P.A.  
128 Monroe Street, NE  
Albuquerque, NM 87108  
(505) 268-8828  
c/o Jud Lee**



GENERAL NOTES

LEGAL DESCRIPTION: TRACT A-1, VISTA NUEVA, FILED IN VOL. C36, FOLIO 69 ON APRIL 12, 1988; TRACT C, ALBUQUERQUE SOUTH UNIT ONE, FILED IN VOL. C34, FOLIO 74 ON AUGUST 3, 1987.

ENGINEER: ISACSON & ARFMAN, P.A.  
128 MONROE STREET NE  
ALBUQUERQUE, NM 87108

SURVEYOR: ALDRICH LAND SURVEYING  
ATTN: TIM ALDRICH, NMPLS NO. 7719  
(505) 884-1990

BENCHMARK: ACS CONTROL STATION "4-M9" LOCATED WEST OF POWER POLE IN THE NW CORNER OF THE INTERSECTION OF 86TH STREET AND SAGE.

ELEVATION: 5093.09

ZONING: R1.

PROPOSED: 94 SINGLE FAMILY RESIDENTIAL LOTS.

AREA: 51.33 AC (20.49 AC TO BE DEVELOPED AT THIS TIME).

FLOOD HAZARD: A PORTION (APPROXIMATELY 0.18 AC), AT THE EAST SIDE OF THE PROPERTY, LIES WITHIN A F.E.M.A. 100-YEAR FLOOD BOUNDARY DETERMINED BY PANEL NO. 350002-0033 OF THE OCTOBER 14, 1983 EDITION OF THE F.E.M.A. MAPS.

LOCATION & DESCRIPTION: THE SITE IS CURRENTLY 100% UNDEVELOPED WITH GROUND COVER THAT IS TYPICAL OF THE WEST SIDE. CORRIZ ROAD AND SAPPHIRE STREET ARE DEVELOPED ALONG AND UP TO THE WEST SIDE OF THE PROPERTY. THE ONLY AREAS ADJACENT TO THE PROPERTY THAT ARE DEVELOPED ARE TO THE WEST AND SOUTH.

EXISTING CONDITIONS: A MASTER DRAINAGE REPORT WAS RECENTLY COMPLETED BY OUR OFFICE THAT DEFINES AND ANALYZES THE CURRENT DRAINAGE SITUATION FOR THIS SITE AS WELL AS THE ENTIRE DRAINAGE BASIN THAT LIES UPSTREAM. THIS REPORT IDENTIFIES A DISCHARGE OF 447 CFS AT THE EXISTING EAST TERMINUS OF SAPPHIRE STREET. THIS FLOW CURRENTLY PROCEEDS EAST IN DEFINED GULLIES THAT ARE DEDICATED BLANKET DRAINAGE EASEMENTS. THESE EASEMENTS EXTEND ALL THE WAY TO THE AMOLE DEL NORTE CHANNEL. AS MENTIONED ABOVE, THE TREMENDOUS FLOWS COMING OFF SAPPHIRE STREET ACTUALLY CREATE A 100-YEAR FLOOD PLAIN APPROXIMATELY 700' FROM THE EXISTING END OF SAPPHIRE STREET.

**PROPOSED IMPROVEMENTS:** SAPPHIRE STREET IS TO BE EXTENDED

ALONG ITS CURRENT ALIGNMENT TO THE EAST END OF THE SITE. A MODIFIED SECTION, AS SHOWN ON SHEET NO. 2 OF THE GRADING PLAN, WILL INCREASE THE STREET CAPACITY OF SAPPHIRE STREET TO 195 CFS WITH THE FLOW NOT EXCEEDING THE TOP OF THE CURB. THE REMAINDER OF THE FLOW, WILL BE INTERCEPTED BY A BATTERY OF INLETS AT THE CURRENT END OF SAPPHIRE STREET AND DISCHARGE IT TO A 48" RCP UNDER THE STREET. THIS PIPE HAS A CAPACITY OF 250 CFS AT S = 0.04 FT/FT. INLETS WILL BE PLACED ALONG THE EXTENDED SAPPHIRE STREET TO PICK UP DEVELOPED FLOWS FROM SUNRISE ESTATES. THE GRADING PLAN ILLUSTRATES THE NUMBER AND TYPE OF INLETS TO BE INSTALLED. THE RCP WILL INCREASE IN SIZE AT 82ND STREET TO 60" TO ACCOMMODATE THESE ADDED FLOWS AND THE REDUCED SLOPE OF SAPPHIRE STREET. THE 60" RCP HAS A CAPACITY OF 340 CFS AT S = 0.022 FT/FT. AN OUTLET STRUCTURE WILL BE PLACED PAST THE EAST END OF THE EXTENDED SAPPHIRE STREET. THE PIPE AND STREET FLOWS WILL DISCHARGE INTO THIS STRUCTURE AND THE TOTAL FLOW WILL PROCEED, AS IT DOES NOW, IN THE EXISTING DRAINAGE EASEMENTS TO THE AMOLE DEL NORTE CHANNEL. A CONCEPTUAL SKETCH OF THIS OUTLET STRUCTURE IS DETAILED ON SHEET 2 OF THE GRADING PLAN. A MORE COMPLETE DESIGN WILL BE COMPLETED FOR DRC.

**HYDROLOGY:** THE PROPOSED SUBDIVISION IS WITHIN AN AREA WITH THE FOLLOWING PRECIPITATION VALUES.

P60 = 1.90 IN  
P360 = 2.20 IN  
P1440 = 2.68 IN

THE TOTAL RUNOFF GENERATED BY THE 100-YEAR STORM IS 80.2 CFS FOR THE 20.49 AC AREA. THIS CORRESPONDS TO 0.85 CFS/LOT. THE AREA IS DIVIDED INTO 7 SUBBASINS THAT ALL DRAIN DIRECTLY OR INDIRECTLY TO SAPPHIRE STREET. THE FOLLOWING TABLE SUMMARIZES THE FLOWS GENERATED BY THE DEVELOPMENT.

| <u>AREA</u> | <u># OF LOTS</u> | <u>Q (CFS)</u> |
|-------------|------------------|----------------|
| 1           | 3                | 2.6            |
| 2           | 18               | 15.4           |
| 3           | 12               | 10.2           |
| 4           | 14               | 11.9           |
| 5           | 23               | 19.6           |
| 6           | 15               | 12.8           |
| 7           | 9                | 7.7            |

150?

THE FLOWS GENERATED BY SUBBASINS 1, 2, AND 3 CAN BE CARRIED IN SAPPHIRE STREET TO 82ND STREET. A GROUP OF INLETS PLACED AT THE EAST CURB RETURNS WILL TAKE 45 CFS FROM THE STREET. THE NUMBER AND TYPE OF INLETS IS SHOWN ON THE GRADING PLAN. THE PIPE WILL THEN INCREASE TO A 60" RCP FOR THE REMAINDER OF THE REACH. SUBBASIN NO. 5 DRAINS SOUTH ON 82ND STREET BEFORE TURNING NORTH ONTO QUARTZ DRIVE AND ULTIMATELY TO SAPPHIRE STREET. A RUNDOWN AT THE END OF QUARTZ DRIVE WILL CONVEY THE 20 CFS FROM SUBBASIN 5 TO THE OUTLET STRUCTURE.

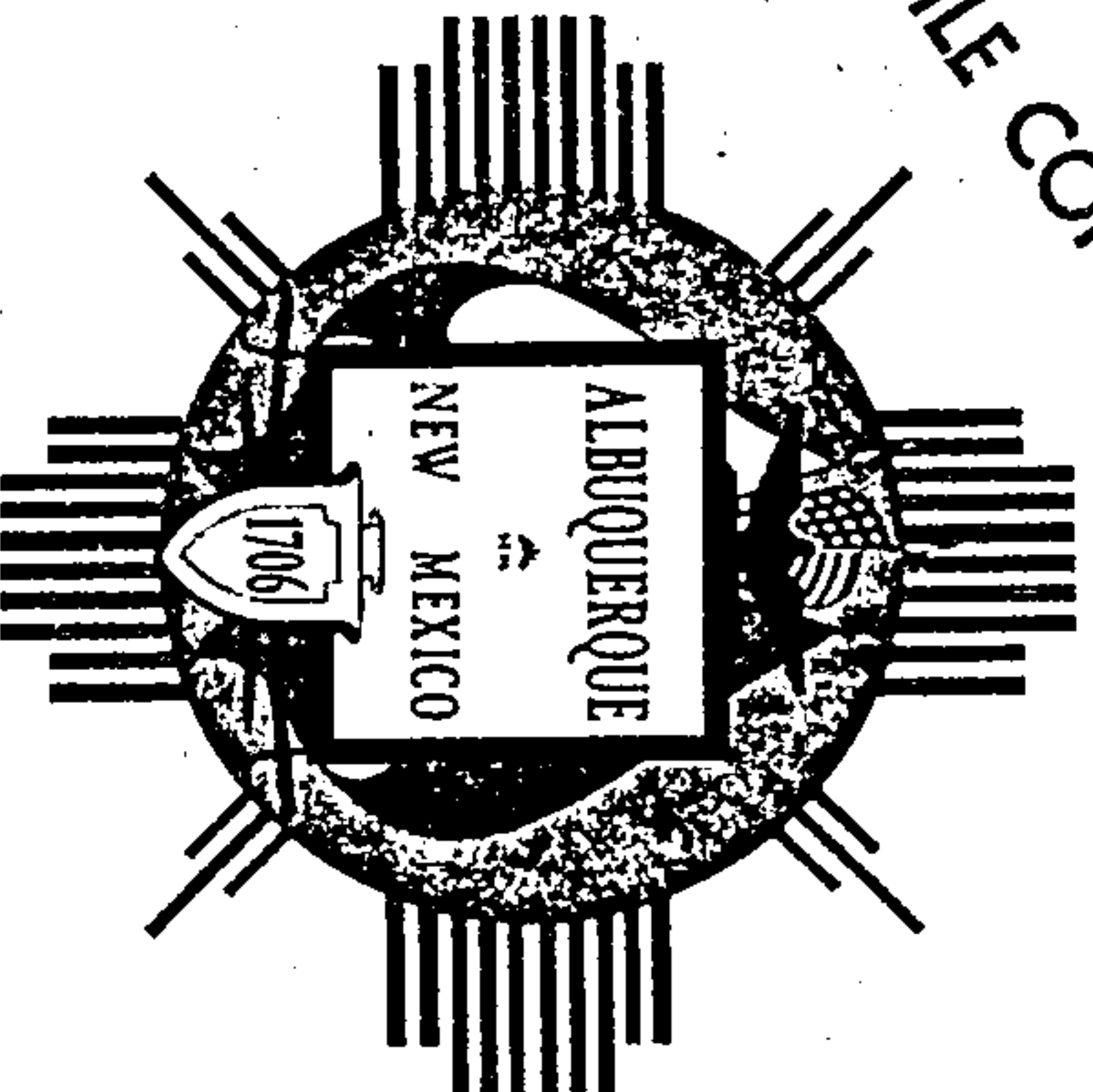
THE FOLLOWING TABLE SUMMARIZES THE STREET FLOW HYDRAULICS FOR THE SUBDIVISION.

| STREET NAME  | WIDTH  | SLOPE(FT/FT) | Q(CFS)* | VEL(FPS) | DEPTH(FT) | FROUDE# | EGL(FT) |
|--------------|--------|--------------|---------|----------|-----------|---------|---------|
| SAPPHIRE ST. | 40'    | 0.040        | 195.0   | 10.37    | 0.67      |         |         |
| SAPPHIRE ST. | 40'    | 0.008        | 150.0   | 5.51     | 0.87      |         |         |
| DIAMOND PL.  | 28'    | 0.035        | 15.4    | 4.36     | 0.28'     | 2.05    | 0.58'   |
| 82ND ST.     | 30'    | 0.008        | 19.6    | 2.90     | 0.37'     | 1.06    | 0.50'   |
| ZIRCON PL.   | 30'    | 0.033        | 12.8    | 3.83     | 0.26'     | 1.95    | 0.49'   |
| QUARTZ DR.   | 16'*** | 0.005        | 19.6    | 3.12     | 0.52'     | 0.89    | 0.67'   |

\* STREET CAPACITIES ARE CALCD BASED ON CONTAINING THE EGL WITHIN THE STREET ITSELF FOR ALL STREETS BUT SAPPHIRE STREET. DUE TO THE TREMENDOUS AMOUNT OF OFFSITE FLOW, THE CAPACITY OF SAPPHIRE WILL ASSUME THE FLOW DOES NOT EXCEED TOP OF CURB UP TO 82ND STREET AND THEN 0.2' ABOVE TOP OF CURB THE REST OF THE WAY.

\*\* QUARTZ DRIVE IS ONLY 1/2 SECTION FOR THIS PROJECT.

FILE COPY



# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 16, 1990

Jake Bordenave, P.E.  
Bordenave Designs  
7100 Louisiana Boulevard, NE #A106  
Albuquerque, NM 87109

RE: REVISED GRADING & DRAINAGE REPORT FOR VISTA NUEVA  
SUBDIVISION, SUBMITTED JUNE 16, 1990, FOR PRELIMINARY PLAT  
APPROVAL (M-10/D5A)

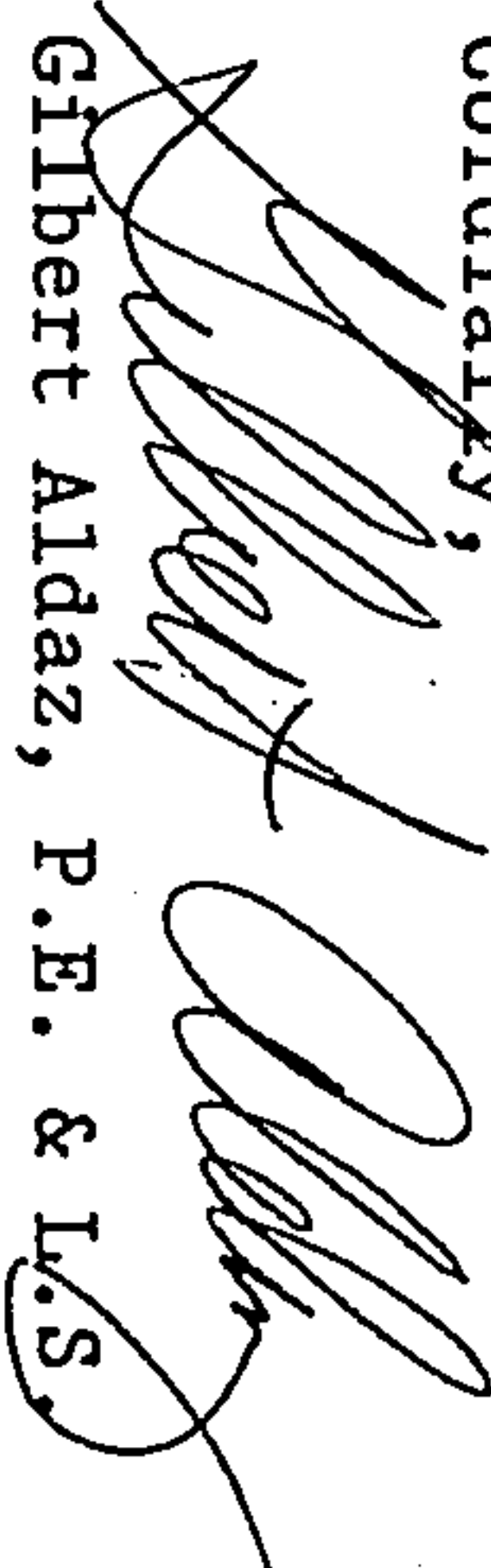
Dear Mr. Bordenave,

I have reviewed your submittal, referred to above, and have the following comments:

1. You have not addressed comment number 2 from our previous letter of March 15, 1990. A grading plan is required per the DPM checklist. Just by reviewing your random spot elevations, it appears that you are proposing retaining walls in excess of 10 feet in height; therefore making this plan unacceptable. Your calculations size the inlets based on a sump condition, but your grading plan does not reflect the sump condition.
2. Your calculations for street depths must include analysis for hydraulic jumps where flows are expected to turn 90 degrees, such as at Rushmore Avenue and Grand Teton Drive intersection. Please review other potential areas for hydraulic jumps.
3. Your offsite runoff coefficient must be determined for future development or existing development and not to be treated as a undeveloped basin. Your values of C=0.4 are not acceptable for existing R-1 developed conditions.

Attached are additional comments regarding the downstream diversions, please respond to these comments prior to requesting approval.

Cordially,

  
Gilbert Aldaz, P.E. & L.S.  
Civil Engineer/ Hydrology

xc: Rick Semones, Presley Homes  
Enclosure

GA  
WP+652

CITY OF ALBUQUERQUE  
PUBLIC WORKS DEPARTMENT



INTER-OFFICE CORRESPONDENCE

July 9, 1990

ENGINEERING GROUP

TO: Fred Aguirre, Development Section Manager, PWD/Hydrology

FROM: *Steve Bobere* Design Section Manager, PWD/Hydrology

SUBJECT: COMMENTS ON THE VISTA NUEVA/AMOLE DRAINAGE PLAN SUBMITTED 6/18/90

General Comments - Vista Nueva/Amole Drainage Plan

1. Please provide north arrow and scale on all drawings.
2. The City has agreed to contribute up to \$60,000.00 on this project for the work generally shown between Unser Blvd. and the Amole Del Norte Channel including the pipes under Unser Blvd. However, if this project cannot be constructed by change order into the Amole Del Norte Channel construction contract currently ongoing, it will make coordinating the construction more difficult, construction costs will likely be higher since they will include mobilization costs, and the City's contribution probably won't build as many of the improvements as originally envisioned. Therefore, it is important that this design be completed as soon as possible.

3. A blanket easement will still be required through the R. J. Schaefer property in order to begin the construction between Unser Blvd. and the Amole Del Norte Channel. This easement must allow for both construction and future maintenance.

Comments on sheet 1 of 2 - Vista Nueva/Amole Drainage Plan associated with the culvert crossing at Unser Blvd. and Kimela Drive:

1. One 54" RCP is proposed to cross Unser Blvd. at Kimela Drive. This pipe will carry 167 cfs on a slope of 0.005 with an exit velocity of 10 fps. The rip rap apron proposed at the downstream end of this pipe seems too light (9" thick, D50=6"). A minimum thickness of 12" with a D50 of 9" should be considered.
2. Since the soils downstream of this rip rap apron are highly erosive the rip rap apron should be designed such that 100 year flows are released at a velocity not exceeding 5 fps.
3. An earthen channel is proposed downstream of the rip rap apron which runs at a slope of 0.005, has a 10 to 20 foot bottom width, and 3:1 side slopes. This earthen channel will tend to concentrate flows when it would be more desirable to spread these flows as much as possible. Perhaps just a berm should be placed on the south side to help contain flows while allowing them to spread to the north.

Comments on sheet 1 of 2 - Vista Nueva/Amole Drainage Plan associated with the culvert crossing at Unser Blvd. and Sapphire Road:

1. Two 54" RCP's are proposed to cross Unser Blvd. at Sapphire Road. These pipes combined will carry 300 cfs on a slope of 0.005 with an exit velocity of 10 fps. The rip rap apron proposed at the downstream end of these pipes seems too light (9" thick, D50=6"). A minimum thickness of 12" with a D50 of 9" should be considered.
2. Since the soils downstream of this rip rap apron are highly erosive the rip rap apron should be designed such that 100 year flows are released at a velocity not exceeding 5 fps.
3. An earthen channel is proposed downstream of the rip rap apron which runs at a slope of 0.005, has a 15 to 35 foot bottom width, and 3:1 side slopes. This earthen channel will tend to concentrate flows when it would be more desirable to spread these flows as much as possible. Perhaps just a berm should be placed on the north side to help contain flows while allowing them to spread to the south.

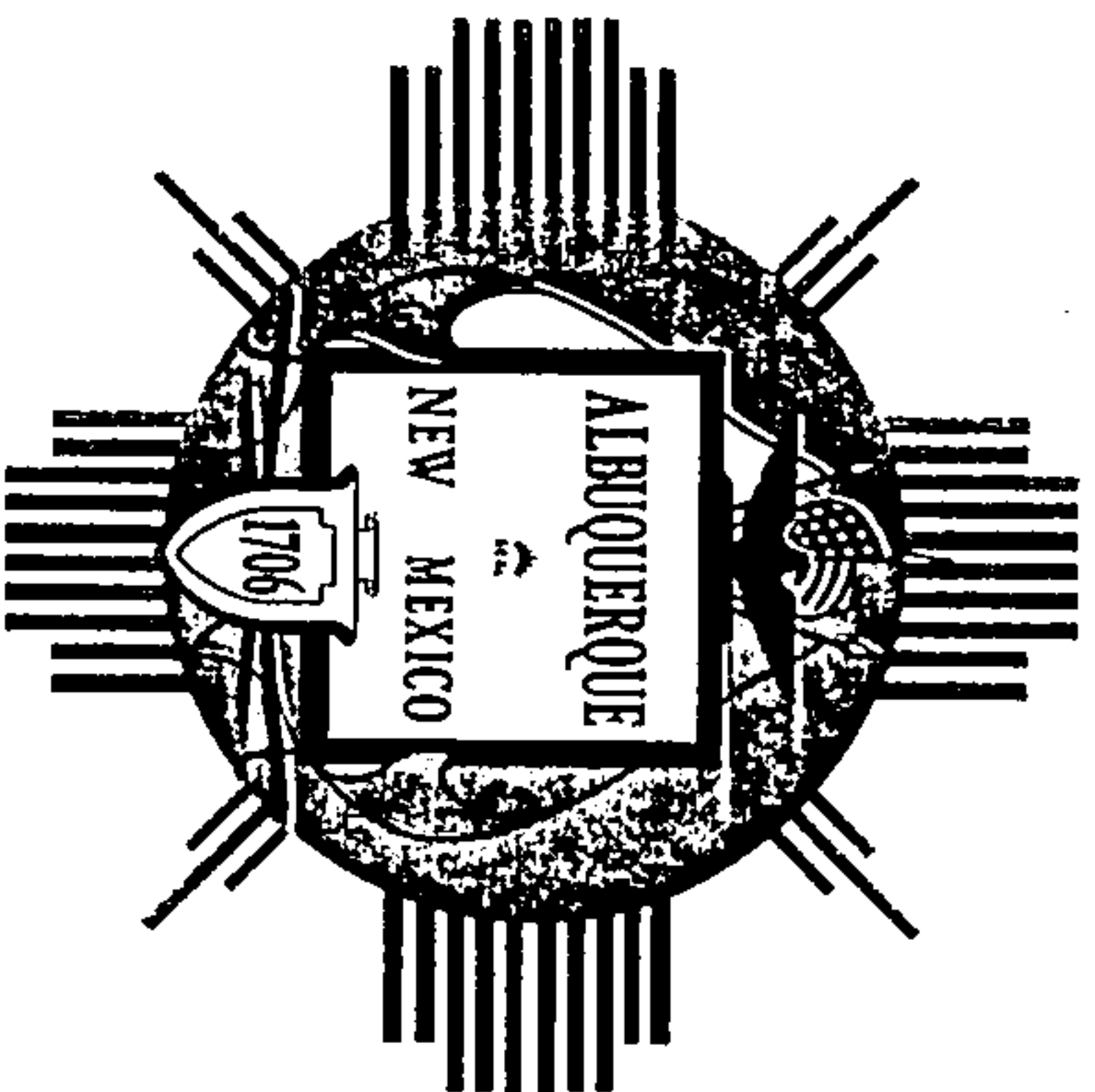
Comments on sheet 1 of 2 - Vista Nueva/Amole Drainage Plan associated with the south training dike/ditch and sedimentation basin:

1. The earthen dike/ditch may tend to concentrate flows when it would be more desirable to spread these flows as much as possible. Perhaps just the berm should be placed on the south side to help contain flows while allowing them to spread to the north.
2. The configuration of the entrance into the sedimentation basin on the north end will tend to concentrate flows and requires that much of the flow turn through an angle of almost 130 degrees in a very short distance (less than 80 feet). My concern is that not all this flow will be able to make this turn resulting in some stormwater spilling directly into the side of the Amole Del Norte Channel in a non controlled manner. This would probably cause unacceptable erosion along the edge of the channel.
3. Why concentrate these flows prior to introducing them into the sedimentation basin? If the flows are introduced into the sedimentation basin through a wider entrance the velocities could be kept lower. This would probably require enlarging the basin but may reduce the amount of concrete needed.
4. The calculations regarding the sedimentation basin assume the flows being routed through the basin travel at a velocity of 2 fps. Given the configuration shown I would expect the flows to travel at a faster velocity (the velocity could be 4.5 fps or more). In order to insure the velocity of 2 fps used in the calculations some enlarging of the basin may be required.

Comments on sheet 2 of 2 - Vista Nueva/Amole Drainage Plan associated with the drain line from the sedimentation basin to the Amole Del Norte Channel:

- 1 A 6" PVC drain line is shown in profile on the east-west section. For maintenance purposes it would be preferable to use an 18" RCP with orifice control at the entrance. Also provide invert elevations at the pipe entrance and exit.

xc: Dan Hogan  
Gilbert Aldez

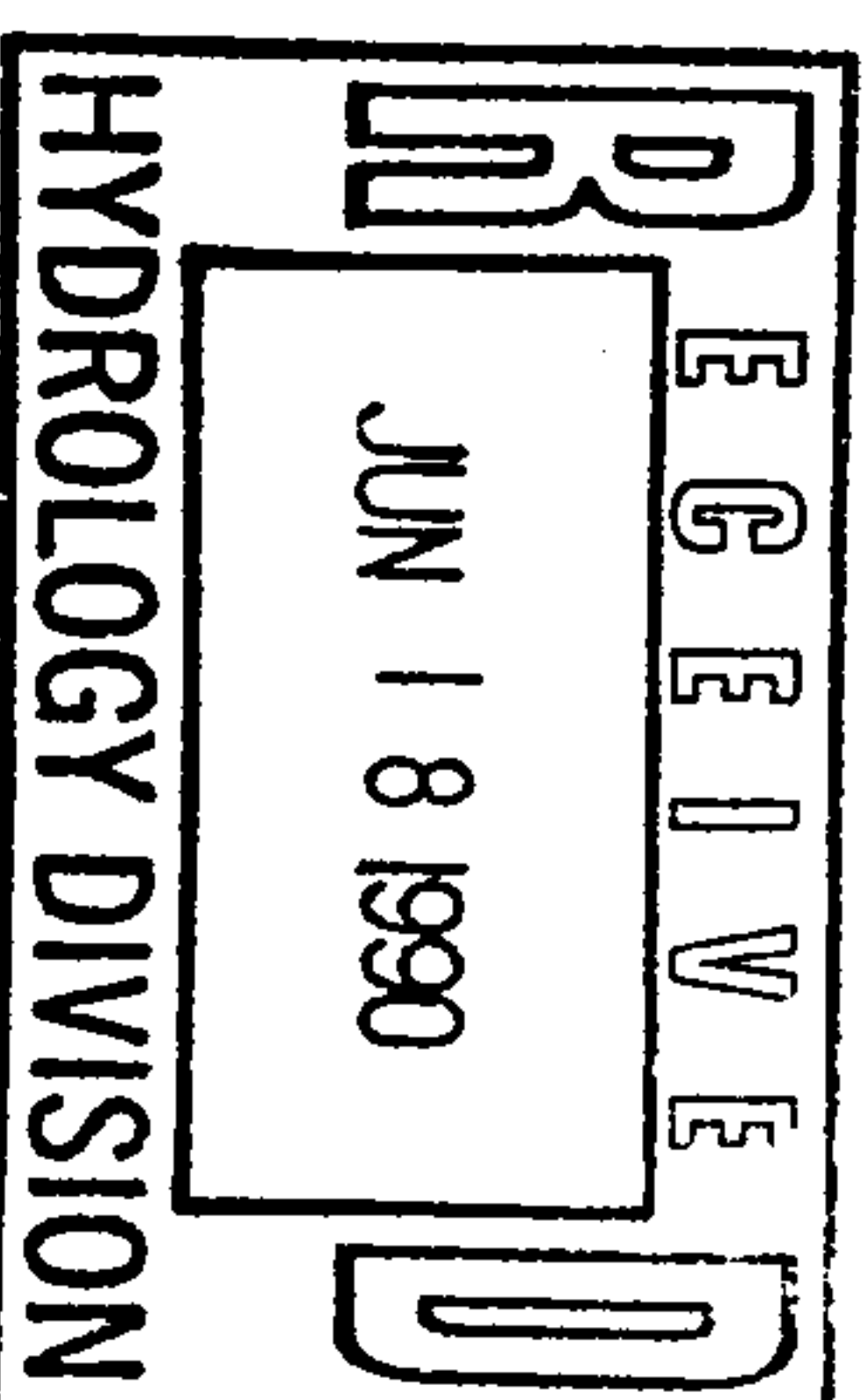


# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 15, 1990

Jake Bordenave, P.E.  
7100 Louisiana NE, #A106  
Albuquerque, NM 87109



RE: REVISED GRADING AND DRAINAGE REPORT FOR VISTA NUEVA  
SUBDIVISION, SUBMITTED MARCH 15, 1990, FOR PRELIMINARY  
PLAT APPROVAL (M-10/D5A)

Dear Mr. Bordenave,

I have reviewed your submittal, referred to above, and have the following comments:

1. On page seven, in item seven of the conclusions, you state that "All offsite areas are assumed to be in a totally developed condition." which is correct. Note two, page 14, however, states that offsite area five has been assigned a runoff coefficient of 0.4, undeveloped, and that controlled discharge from the area will be required upon development, or that a 'realigned outfall to the Amole del Norte' will be required.

If you are not the owner of the parcel labelled offsite area five, or the agent for that parcel, then your statement is presumptuous. As for the 'realigned outfall', please be reminded that the two Unser Boulevard storm drain crossings are to serve the entire basin in a fully developed condition.

2. Your submittal lacks a grading plan. Please consult the DPM checklist before resubmitting.

3. The drainage system proposed for the Sapphire Road basin is unacceptable. At analysis point 9, the peak flow is estimated at 186 cfs, with a depth of 0.9 feet and a velocity of 7.3 feet/second. If the flow is not going to be confined to the street, it must flow at a non-erosive velocity so that the area between the back of curb and the sidewalk does not require city maintenance after major storms. The maximum depth allowed is 0.2' over the top of curb, which you have exceeded. At

Jake Bordenave, P.E.  
March 15, 1990  
page 2

analysis point D, just downstream on the same street, the peak flow is 300 cfs, and the depth is 0.98 feet. Please read Chapter 22 of the DPM before resubmitting.

If you have any questions, please call me at 768-2650.

Cordially,

A handwritten signature in cursive script that reads "Stuart Reeder".

G. Stuart Reeder, P.E.  
C.E./Hydrology Section

GSR  
WP+652

xc: Rick Semones, Presley Homes

RESPONSE TO CITY COMMENTS DATED MARCH 15, 1990 FOR M10/D5A

1. Please observe the contour lines on the Offsite Drainage Map supplied with the Drainage Report. The map indicates the north half of Basin 5 flows easterly across Unser Blvd. and a major portion of the south half flows southerly in what appears to have been an old dirt road.

Grading and paving of Unser Blvd by governmental agencies has diverted this flow southerly to different private property on which this project is planned. Additional grading by governmental agencies, to divert public water to private property can be seen along the south side of Arenal Road at Unser Blvd. in the form of an earth dike.

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*Not Adequate*

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Attachments: Master Grading and Drainage Plan  
Construction Plans for Sedimentation Pond  
Construction Plans for Unser Crossings and Channels  
Revised computation sheets 14, 23 & 24

SEDIMENTATION BASIN CHARACTERISTICS (cont.)OUTLET PIPE

Orifice under falling head

$$\frac{dt}{dy} = \frac{A dy}{C a \sqrt{2gy}}$$

where

A = area of free surface  
 C = orifice coefficient = 0.6  
 a = orifice area  
 y = orifice head

$$A = 350 (81.54 - 6y)$$

$$t = \frac{32.68}{a} \int_0^1 \frac{(81.54 - 6y) dy}{y^{1/2}}$$

$$= \frac{32.68}{a} \left[ 163.08 y^{1/2} - 4y^{3/2} \right]$$

$$= \frac{11562}{a} \text{ sec}$$

For 6" pipe,  $t = 16.4$  hours < 24 hrsNOTES:

1. Provide sediment storage in addition to pond  
 2. Set weir of pond 1.5 feet above channel  
 well, weir elevation = 5005.65

3. Water surface

$$\frac{5007.91}{1.1}$$

4. Berm elevation

$$5009.01$$

weir elevation

$$5005.65$$

5. Orifice inlet invert

$$\frac{5002.06}{1.43}$$

6. Bottom of Sediment  
Storage

$$5000.58$$

7. Length to Top of Storage = 330'

8. Width to Top of Storage = 60'

9. Use 10' wide barge,

EXTERNAL DRAINAGE

SEDIMENTATION BASIN GEOMETRICS

Max. Horiz. Velocity

2 fps is nonerosive per SCS TR#25 Chap 6

Basin Geometry

Cross Section =  $508/2 = 254 \text{ ft}^2$  min.

Side Slope 3:1

Use 60 ft. bottom

Min. depth

$$254 = \frac{60 + 60 + 6d}{2} d$$

$$6d^2 + 120d = 508$$

$$d = 3.59 \text{ ft}$$

Force depth w/ weir outlet

$$Q = CLH^{3/2}$$

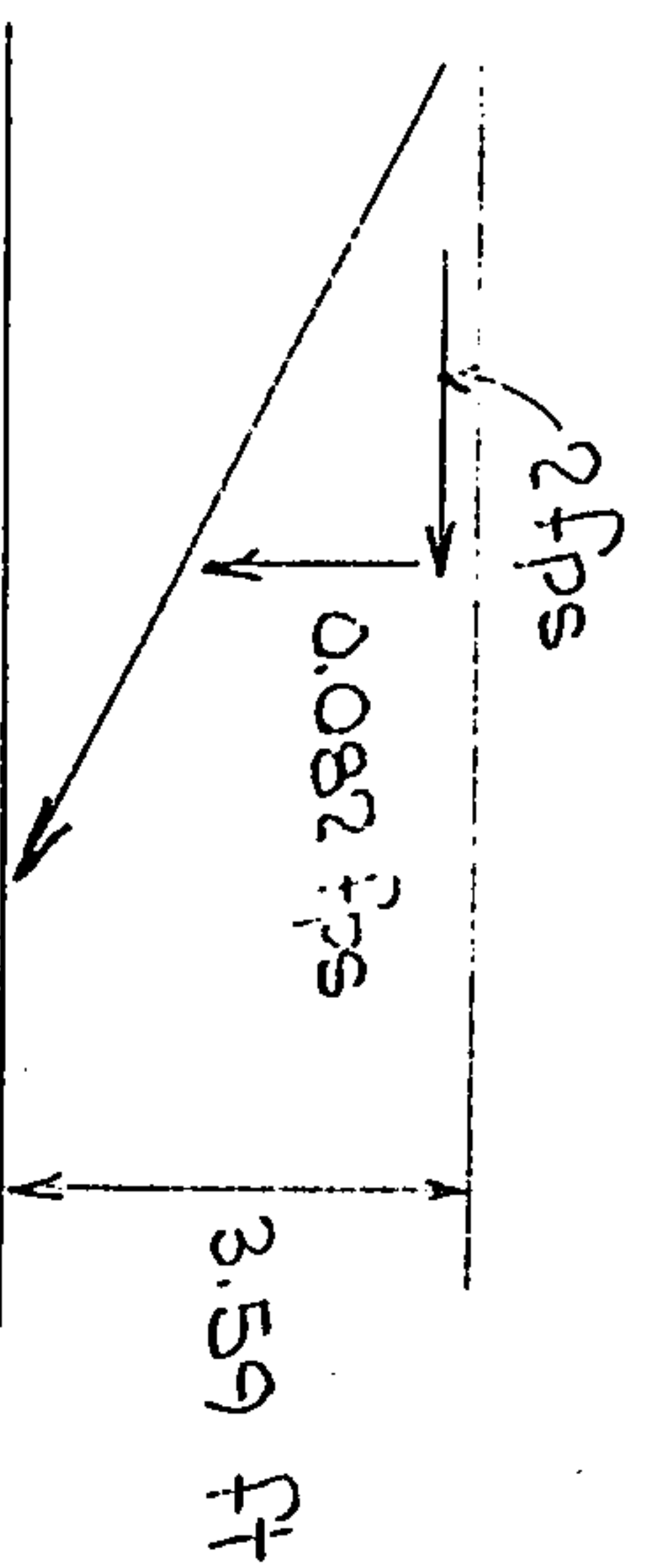
$$\text{use } C = 3.0$$

$$\text{use } L = 50'$$

$$508 = (3)(50) H^{3/2}$$

$$H = 2.26 \text{ ft}$$

Min. Length



$$L = (3.59 / 0.082)(2) = 88 \text{ ft.}$$

SEDIMENT STORAGE

0.66 acre ft (previous page)

$$(0.66)(43560) / (33)(60) = 5.4 \text{ ft. deep.}$$

try 350 ft length

$$\frac{(0.66)(43560)}{350} = \frac{60 + 60 + 6d}{2} d$$

$$6d^2 - 120d + 164.28 = 0$$

$$d = 1.18 \text{ ft}$$

## INTERNAL FLOW RATES

Basin Flow Rates (cont.)

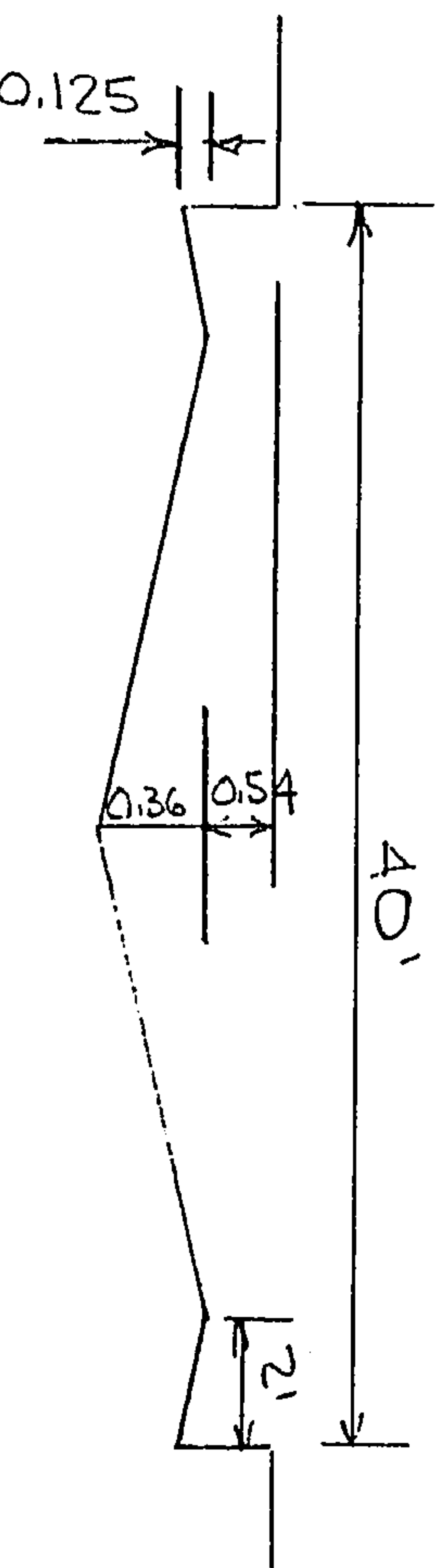
| ANAL. POINT | CONTRIBUTING BASIN       | SEGMENT SLOPE (VELOCITY) | SEGMENT LENGTH | L <sub>c</sub> | I    | C    | A    | Q <sub>100</sub> | Q <sub>10</sub> | d <sub>100</sub> | V <sub>100</sub> | REMARKS                    |
|-------------|--------------------------|--------------------------|----------------|----------------|------|------|------|------------------|-----------------|------------------|------------------|----------------------------|
|             |                          | ft/ft (fps)              | ft             |                |      |      |      |                  |                 |                  |                  |                            |
| C           | OFF 3                    | (5)                      | 5000           | 17             | 3.55 | 0.40 | 116  | 165              | 108             | 0.71             | 9.0              | 40' Street                 |
| C           | C1                       | .050                     | 250            | 10             | 4.65 | 0.55 | 25   | 6.4              | 4.2             | 0.26             | 4.0              | 32' Street                 |
| C           | C1+CFF3                  | .034                     | -              | 17             | 3.55 | 6.40 | 119  | 169              | 111             | 0.29             | 9.3              | 40' Inv. Cr. Street        |
| E           | CFF4                     | (2.5)                    | 950            | 10             | 4.65 | 0.55 | 7.3  | 13.7             | 12.3            | 0.34             | 5.1              | -                          |
| 8           | C3+OFF4                  | .050                     | -              | 10             | 4.65 | 0.55 | 10.4 | 26.6             | 17.5            | 0.37             | 5.4              | 32' Street                 |
| 8           | C1+C3+OFF                | .033                     | 400            | 18             | 3.45 | 0.42 | 129  | 187              | 123             | 0.32             | 9.7              | 40' Inv. Cr. Street        |
| 9           | C4                       | .035                     | 400            | 10             | 4.65 | 0.55 | 2.9  | 7.4              | 4.9             | 0.28             | 3.5              | 32' Street                 |
| 9           | C1-C5+OFF                | .020                     | 300            | 19             | 3.35 | 0.42 | 132  | 186              | 122             | 0.53             | 8.3              | 40' Inv. Cr. Street        |
| 10          | C1-C6+OFF                | .020                     | 300            | 19             | 3.35 | 0.42 | 134  | 189              | 124             | 0.53             | 8.4              | 40' Inv. Cr. Street        |
| D           | C1-C9 +<br>E-E3 +<br>OFF | .020                     | 350            | 20             | 3.27 | 0.45 | 204  | 300              | 197             | NA               | NA               | 40' Inv. Cr. Street (sump) |

NOTES: 1. OFFSITE AREAS 143 HAVE BEEN ASSIGNED RUNOFF COEFFICIENT OF 0.40 IN CONFORMANCE WITH THE REPORTS PREPARED BY THE DESIGNER OF THOSE SUBDIVISIONS. (NEAR ROAD FRONT)

2. OFFSITE AREA 5 HAS BEEN ASSIGNED A RUNOFF COEFFICIENT OF 0.4. THE AREA IS PRESENTLY UNDEVELOPED. UPON DEVELOPMENT EITHER A REALIGNED OUTFALL TO THE ADJACENT NOOTE OR CONTROLLED DISCHARGE WILL BE REQUIRED IN THIS AREA. (43 ACRES)

3. OFFSITE AREA C9 HAS BEEN ASSIGNED A RUNOFF COEFFICIENT OF 0.85. IT IS ANTICIPATED THAT THIS PARCEL WILL BE DEVELOPED AS A COMMERCIAL TRACT (9.4 ACRES)

4. INVERTED CROWN STREET



# IMAGING INFORMATION SHEET

PROJECT TITLE: Vista Nueva ZONE ATLAS/DRAINAGE FILE # M10/D5A

LEGAL DESCRIPTION: Tracts A,B & C Vista Nueva

CITY ADDRESS: N/A

ENGINEERING FIRM: BODDENEAVE DESIGNS CONTACT: J. Boddeneave

ADDRESS: P.O. Box 91194 87192 PHONE: 823-1344

OWNER: Presley Company CONTACT: R. Sammons

ADDRESS: 1909 Carlisle Blvd 87110 PHONE: 265-5811

ARCHITECT: - CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

SURVEYOR: DMJM CONTACT: J. Boddeneave

ADDRESS: PO Box 91194 87192 PHONE: 823-1344

CONTRACTOR: - CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

PRE-DESIGN MEETING:

X YES DRB NO. 89-397

       NO EPC NO. \_\_\_\_\_

No COPY OF CONFERENCE PROJECT NO. -

RECAP SHEET PROVIDED

TYPE OF SUBMITTAL: CHECK TYPE OF APPROVAL SOUGHT:

X DRAINAGE REPORT (ADDENDUM)        SECTOR PLAN APPROVAL

       DRAINAGE PLAN        SKETCH PLAT APPROVAL

       CONCEPTUAL GRADE & DRAIN PLAN X PRELIMINARY PLAT APPROVAL

       GRADING PLAN        SITE DEVELOPMENT PLAN APP.

       EROSION CONTROL PLAN        FINAL PLAT APPROVAL

       ENGINEER'S CERTIFICATION        BUILDING PERMIT APPROVAL

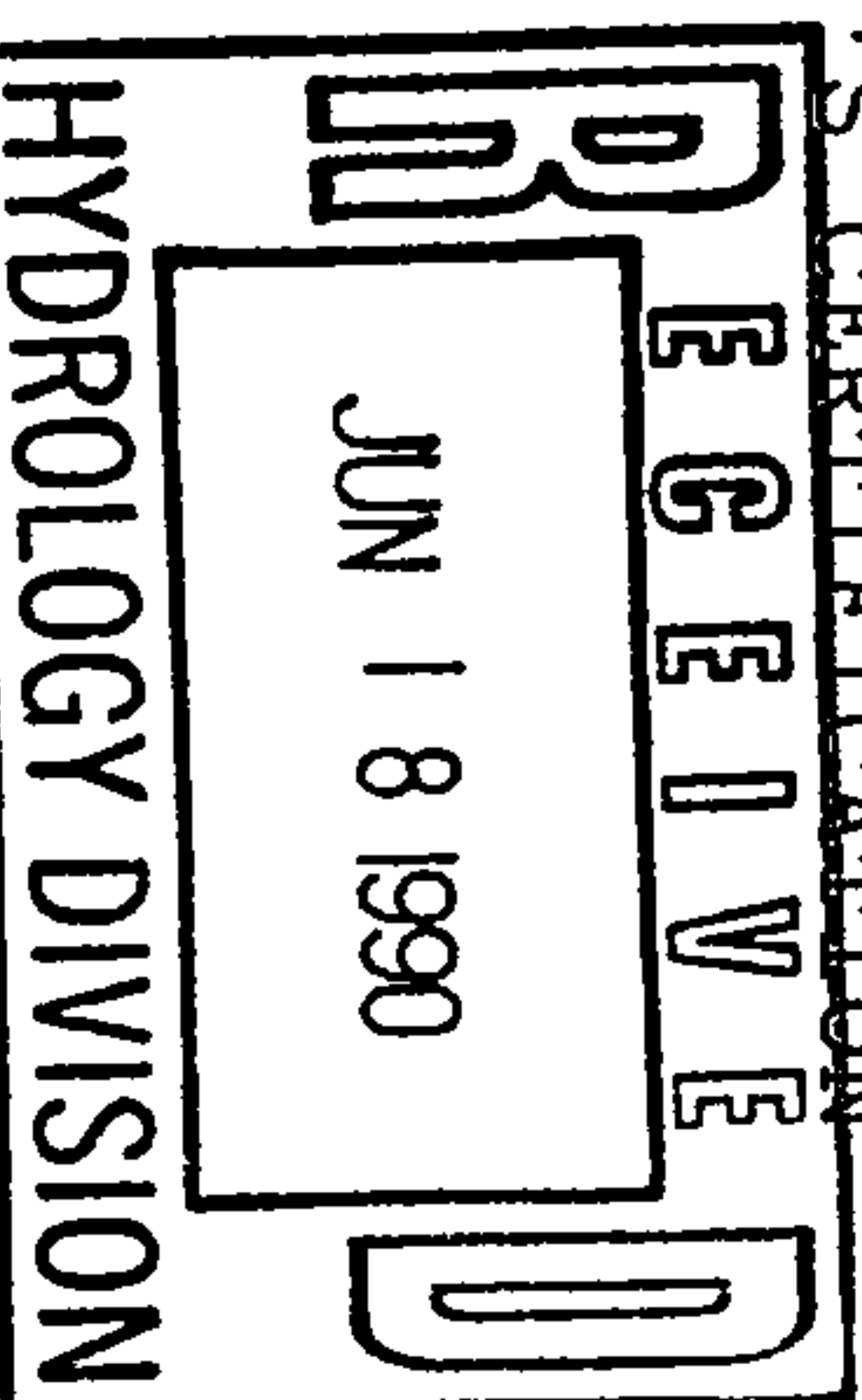
FOUDATION PERMIT APPROVAL

CERT. OF OCCUPANCY APPROVAL

ROUGH GRADE PERMIT APPROVAL

DATE SUBMITTED: 06/18/90 GRADING/PAVING PERMIT APP.

BY: J. Boddeneave OTHER \_\_\_\_\_ (SPECIFY)



**BORDEN AVE DESIGNS**  
P.O. BOX 91194  
ALBUQUERQUE, NEW MEXICO 87199-1194  
(505) 823-1344

**letter of transmittal**

TO: City of Albuquerque

|          |                     |             |      |
|----------|---------------------|-------------|------|
| DATE:    | 06/25/90            | PROJECT NO: | 8705 |
| PROJECT: | VISTA NUEVA - AMOLE |             |      |

ATTN: STEVE ROBERG

TRANSMITTED: ☒ herewith ☐ under separate cover via \_\_\_\_\_  
☐ in accordance with your request \_\_\_\_\_

FOR YOUR:

|                                           |                                                  |                                      |
|-------------------------------------------|--------------------------------------------------|--------------------------------------|
| <input type="checkbox"/> approval         | <input type="checkbox"/> distribution to parties | <input type="checkbox"/> information |
| <input type="checkbox"/> review & comment | <input type="checkbox"/> record                  |                                      |
| <input checked="" type="checkbox"/> use   |                                                  |                                      |

THE FOLLOWING:

|                                        |                                         |                                                  |
|----------------------------------------|-----------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> prints        | <input type="checkbox"/> copy of letter | <input type="checkbox"/> change order            |
| <input type="checkbox"/> originals     | <input type="checkbox"/> specifications | <input checked="" type="checkbox"/> calculations |
| <input type="checkbox"/> shop drawings |                                         |                                                  |

| Copies | Dwg. No. | Description     | Action Code |
|--------|----------|-----------------|-------------|
| 2      | -        | QUANTITY CALCS. | E           |
|        |          |                 |             |
|        |          |                 |             |
|        |          |                 |             |
|        |          |                 |             |
|        |          |                 |             |

Action Code      A. REVIEWED      D. REJECTED  
                         B. REVIEWED AS NOTED      E. See REMARKS below  
                         C. REVISE & RESUBMIT

REMARKS: PER YOUR REQUEST

If enclosures are not as noted, please inform us immediately.

COPIES TO: D. SEMONES - PRESLEY Co      SENT: [Signature]

RECEIVED: \_\_\_\_\_

OFFSITE DRAINAGE

QUANT'S

SETPHWORK

KIMELA OUTLET

8' to 0' deep w/ 3:1 S.S. 10' W @ 3' Deep

20' W @ 0' Deep

Length = 490'

$$Exc \left[ \frac{[(8)(3) + 15] \frac{490}{2}}{2} \right] / 27 = 2831 \text{ cy}$$

KIMELA DITCH & DIKE

1' deep x 20' bottom w/ 3:1 S.S. x 1400' long

$$Exc. (20 + ((2)(1)(3)/2))(1400)/27 = 1193 \text{ cy}$$

$$Emb = 1193 \text{ cy}$$

SAPPHIRE OUTLET

6' to 0' deep w/ 3:1 S.S. 15' W @ 6' Deep

35' W @ 0' Deep

Length = 350'

$$Exc \left[ \frac{[(6)(3) + 25] \frac{350}{2}}{2} \right] / 27 = 1672 \text{ cy}$$

SAPPHIRE DIKE

2' high x 20' top w/ 3:1 S.S. x 600' long

$$Emb (2)(20 + ((2)(2)(3)/2))(600)/27 = 1156 \text{ cy}$$

SEDIMENTATION BASIN

3' Deep x 43' bottom w/ 3:1 S.S. x 350' long

$$Exc. (3)(43 + ((2)(3)(3)/2))(350)/27 = 2022 \text{ cy}$$

# SEDIMENTATION BASIN

1' high x 10' deep w/ 3:1 SS x 470'

$$\text{Emb. } (1)(10 + (12)(1)(3/2))((470)/27) = 226 \text{ cu}$$

$$3' \text{ high} \times 10' \text{ deep w/ 3:1 SS} \times (410 + 730)/2 = 530$$

$$\text{Em'g } (3)(10 + (2)(3)(3/2))((570)/27) = 1203 \text{ cu}$$

## EARTHWORK SUMMARY

EMB w/ 15% shrink

KIMELA 4704 1372

Sapphire 1672 1329

SED. BASIN 2022 1644

7898 4345

3553 WASTE

## RIDRAP

KIMELA

4.5' deep x 10.5' bottom w/ 3:1 SS x 50' long

$$(10.5 + 2(\sqrt{4.5^2 + (3(4.5))^2})) 50/9 = 216 \text{ SY}$$

## SAPPHIRE

4.5' deep x 16.5' bottom w/ 3:1 SS x 50' long

$$(16.5 + 2(\sqrt{4.5^2 + (3(4.5))^2})) 50/9 = 250 \text{ SY}$$

## 6" CHANNEL LINING

$$(50)(53.55) + (2)(\sqrt{336^2 + (2)(336)^2})(53.65) + (\sqrt{1.33^2 + (3)(1.33)^2})$$

3348 SF

6" PVC Pipe - 54 LF

# Quantity Summary

|            |         |
|------------|---------|
| EXCAVATION | 7898 CY |
| EMBANKMENT | 4345 CY |
| WASTE      | 3553 CY |

|      |         |
|------|---------|
| PIPE | 1600 SY |
|------|---------|

|                  |         |
|------------------|---------|
| 6" CRACKED LINDG | 3343 SF |
|------------------|---------|

|             |       |
|-------------|-------|
| 6" PVC PIPE | 54 LF |
|-------------|-------|

|                      |        |
|----------------------|--------|
| INSTALL 24" DE. PIPE | 444 LF |
|----------------------|--------|

|                  |        |
|------------------|--------|
| TRUCK & BACKFILL | 444 LF |
|------------------|--------|

OFFSITE DRAINAGE

QUANT'S

RETAINWORK

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8' to 0' deep w/ 3:1 S.S. 10' W @ 8' Deep

20' W @ 0' Deep

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1' deep x 20' bottom w/ 3:1 S.S. x 1400' long

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2' high x 20' top w/ 3:1 S.S. x 600' long

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## SEDIMENTATION BASIN

1' high x 10' top w/ 3:1 SS x 470'

Emb.  $(1)(10 + (12)(1)(3/2))(470)/27 = 226 \text{ cu}$ 3' high x 10' top w/ 3:1 SS x  $(410 + 730)/2 = 570$ Embo  $(3)(10 + (12)(3)(3/2))(570)/27 = 1203 \text{ cu}$ 

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EMB w/ 15% Shrink

KIMELA

4204

1372

SAPPHIRE

1672

1329

SED. BASIN

2022

1644

7898

4345

3553 WASTE

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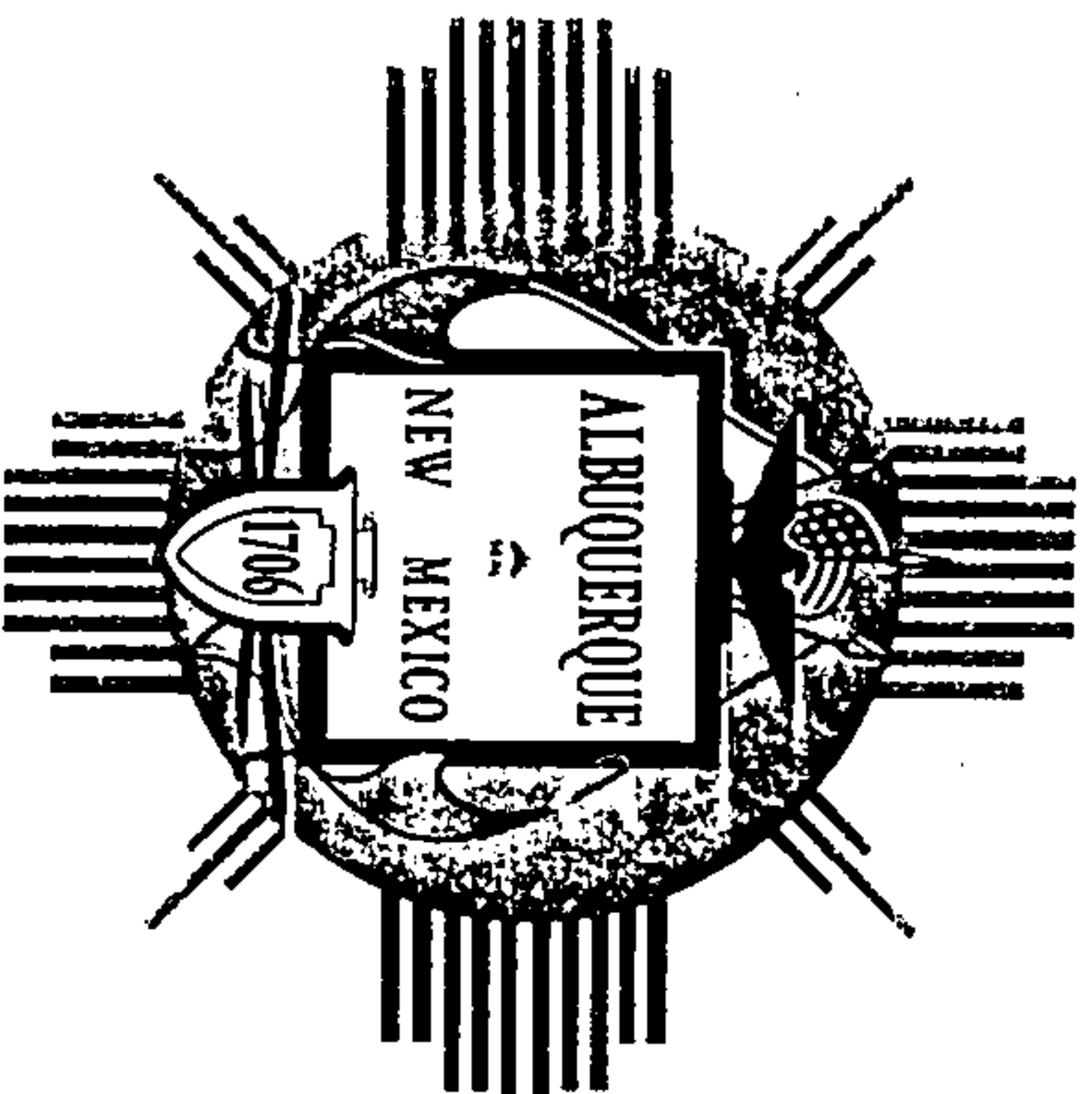
 $(50)(53.55) + ((2)\sqrt{3.36^2 + (2)(33.4)^2})(53.65) + ((1.33^2\sqrt{3(1.33)^2}))$ 

3348 SF

6" PVC Pipe - 54 LF

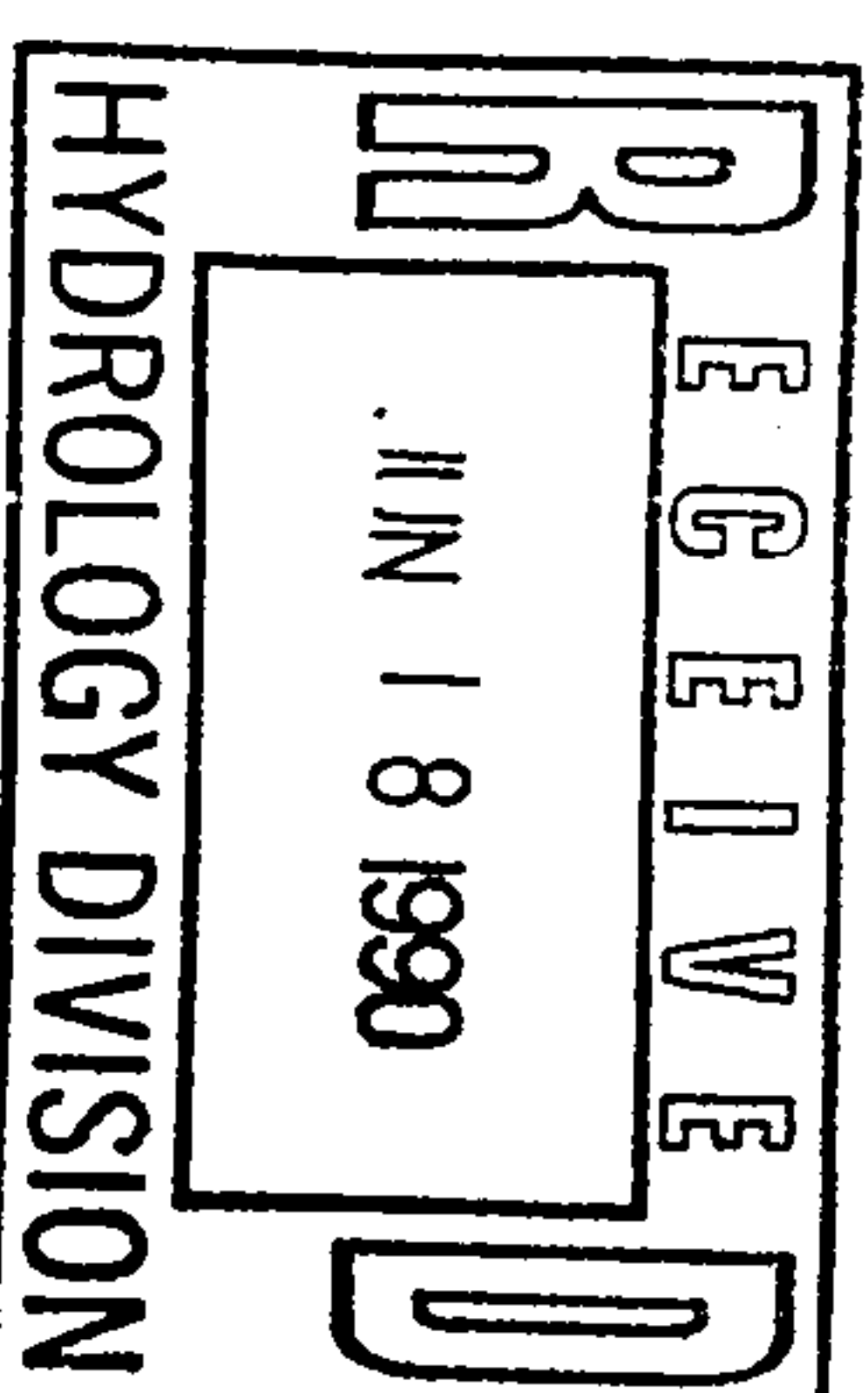
## Quantity Summary

|                       |           |
|-----------------------|-----------|
| EXCAVATION            | 395 CY    |
| EMBANKMENT            | 4345 CY   |
| WASTE                 | 3553 CY   |
| REPAIR                | 1616 S.Y. |
| 6" Channel Including  | 3348 S.F. |
| 6" PVC Pipe           | 54 L.F.   |
| Install 24" D.E. Pipe | 444 L.F.  |
| Trench & Backfill     | 444 L.F.  |



*City of Albuquerque*  
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 15, 1990



Jake Bordenave, P.E.  
7100 Louisiana NE, #A106  
Albuquerque, NM 87109

RE: REVISED GRADING AND DRAINAGE REPORT FOR VISTA NUEVA  
SUBDIVISION, SUBMITTED MARCH 15, 1990, FOR PRELIMINARY  
PLAT APPROVAL (M-10/D5A)

Dear Mr. Bordenave,

I have reviewed your submittal, referred to above, and have the following comments:

1. On page seven, in item seven of the conclusions, you state that "All offsite areas are assumed to be in a totally developed condition." which is correct. Note two, page 14, however, states that offsite area five has been assigned a runoff coefficient of 0.4, undeveloped, and that controlled discharge from the area will be required upon development, or that a 'realigned outfall to the Amole del Norte' will be required.

If you are not the owner of the parcel labelled offsite area five, or the agent for that parcel, then your statement is presumptuous. As for the 'realigned outfall', please be reminded that the two Unser Boulevard storm drain crossings are to serve the entire basin in a fully developed condition.

2. Your submittal lacks a grading plan. Please consult the DPM checklist before resubmitting.

3. The drainage system proposed for the Sapphire Road basin is unacceptable. At analysis point 9, the peak flow is estimated at 186 cfs, with a depth of 0.9 feet and a velocity of 7.3 feet/second. If the flow is not going to be confined to the street, it must flow at a non-erosive velocity so that the area between the back of curb and the sidewalk does not require city maintenance after major storms. The maximum depth allowed is 0.2' over the top of curb, which you have exceeded. At

Jake Bordenave, P.E.  
March 15, 1990  
page 2

analysis point D, just downstream on the same street, the peak flow is 300 cfs, and the depth is 0.98 feet. Please read Chapter 22 of the DPM before resubmitting.

If you have any questions, please call me at 768-2650.

Cordially,

A handwritten signature in cursive script that reads "Stuart Reeder".

G. Stuart Reeder, P.E.  
C.E./Hydrology Section

GSR  
WP+652

xc: Rick Semones, Presley Homes

RESPONSE TO CITY COMMENTS DATED MARCH 15, 1990 FOR M10/D5A

1. Please observe the contour lines on the Offsite Drainage Map supplied with the Drainage Report. The map indicates the north half of Basin 5 flows easterly across Unser Blvd. and a major portion of the south half flows southerly in what appears to have been an old dirt road.

Grading and paving of Unser Blvd by governmental agencies has diverted this flow southerly to different private property on which this project is planned. Additional grading by governmental agencies, to divert public water to private property can be seen along the south side of Arenal Road at Unser Blvd. in the form of an earth dike.

These conditions are recognized as fact in the report and the facilities have been designed to accomodate these flows. It was deemed unreasonable to expect the Owner(s) of Basin 5 to return the flows to their natural courses since they are not developing their property. It should be recognized, however, that as Basin 5 is developed it is even more unreasonable to expect this Developer to bear even more cost to accomodate the additional flows.

Our answer ot this problem was to accept the undeveloped flows and be responsible for their treatment. And, as the property in Basin 5 is developed it must either return the flow to its natural course, seek a new course, or control flow rates to the amounts shown in this report and remain as a contributor to this facility.

2. Per our discussion at meetings on March 21, 1990 and June 15, 1990 it was decided that the attached Master Grading and Drainage Plan will adequately address the concerns of this comment.

3. Per our discussion of March 21, 1990 (which included Mr. Dave Harmon) an inverted crown will be constructed in Sapphire Road. The street shall be constructed with a 2% inverted crown and with an alley gutter at the centerline of street.

Attachments: Master Grading and Drainage Plan  
Construction Plans for Sedimentation Pond  
Construction Plans for Unser Crossings and Channels  
Revised computation sheets 14, 23 & 24

# SEDIMENTATION BASIN CHARACTERISTICS (cont.)

## OUTLET PIPE

Orifice under falling head

$$dt = \frac{A dy}{C a \sqrt{2gy}}$$

where

A = area of free surface  
C = orifice coefficient = 0.6  
a = orifice area  
y = orifice head

$$A = 350 (81.54 - 6y)$$

$$t = \frac{32.68}{a} \int_0^1 \frac{(81.54 - 6y) dy}{y^{1/2}}$$

$$= \frac{32.68}{a} \int_0^1 163.08 y^{1/2} - 4y^{3/2}$$

$$= \frac{11562}{a} \text{ sec}$$

For 6" pipe,  $t = 16.4 \text{ hours} < 24 \text{ hrs}$

## NOTES:

1. Provide sediment storage in addition to pond
2. Set weir of pond 1.5 feet above channel wall. Weir elevation = 5005.63
3. Water surface  $\frac{5007.91}{1.1}$
4. Berm elevation 5009.01

Weir elevation

5005.63

5. Orifice inlet invert

$\frac{5002.06}{1.43}$

6. Bottom of Sediment Storage

5000.58

7. Length to Top of Storage = 330'

8. Width to Top of Storage = 60'

9. Use 10' wide barge,

EXTERNAL DRAINAGE

SEDIMENTATION BASIN GEOMETRICS

Max. Horiz. Velocity

2 fps is nonerosive per SCS TR#25 Chap 6

BASIN GEOMETRY

Cross Section = 508/2 = 254 ft<sup>2</sup> min.

Side Slope 3:1

Use 60 ft. bottom

Min. depth

$$254 = \frac{60 + 60 + 6d}{2} d$$

$$6d^2 + 120d = 508$$

$$d = 3.59 \text{ ft}$$

Force depth w/ weir outlet

$$Q = CLH^{3/2}$$

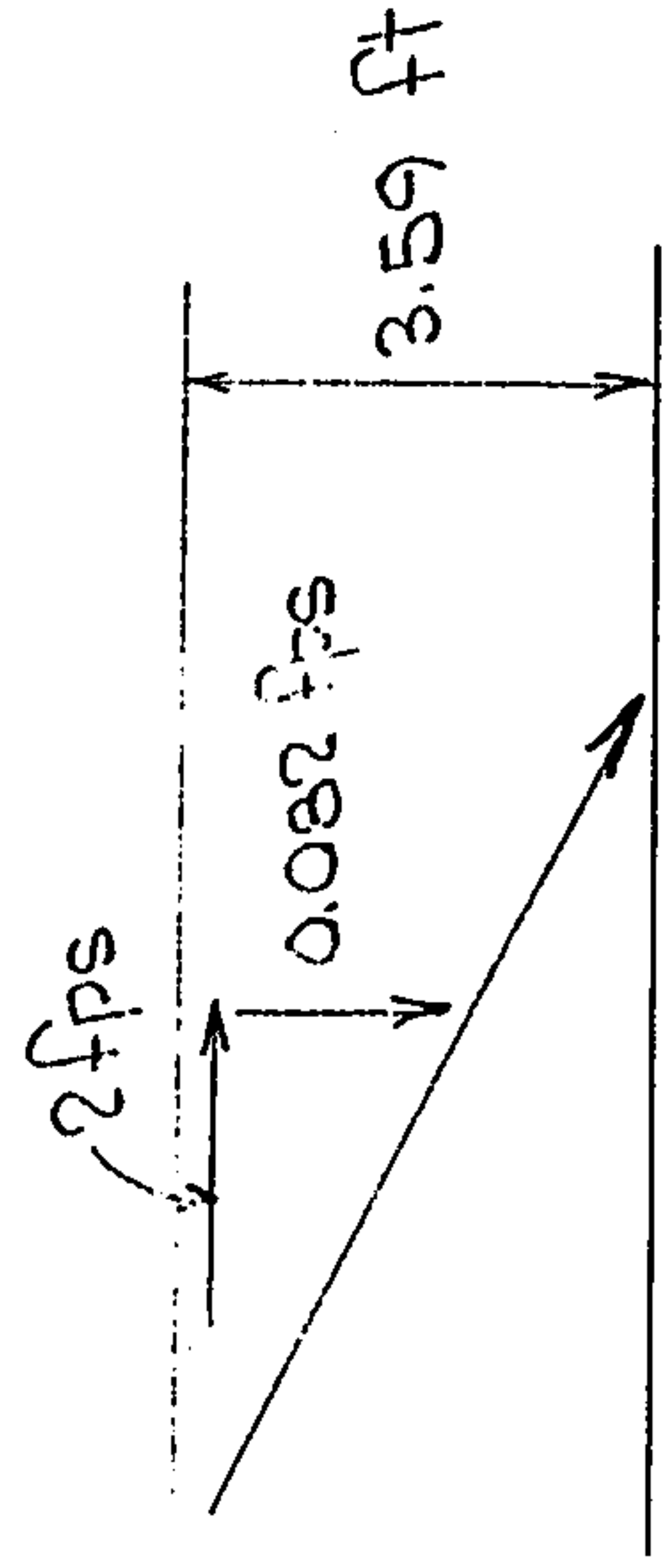
$$\text{use } C = 3.0$$

$$\text{use } L = 50'$$

$$508 = (3)(50) H^{3/2}$$

$$H = 2.26 \text{ ft}$$

Min. Length



$$L = (3.59 / 0.082)(2) = 88 \text{ ft.}$$

SEDIMENT STORAGE

0.66 acre ft (previous page)

$$(0.66)(43560) / (88)(60) = 5.4 \text{ ft. deep.}$$

try 350 ft length

$$\frac{(0.66)(43560)}{350} = \frac{60 + 60 + 6d}{2} d$$

$$6d^2 - 120d + 164.28 = 0$$

$$d = 1.18 \text{ ft}$$

## INTERNAL FLOW RATES

Basin Flow Rates (cont.)

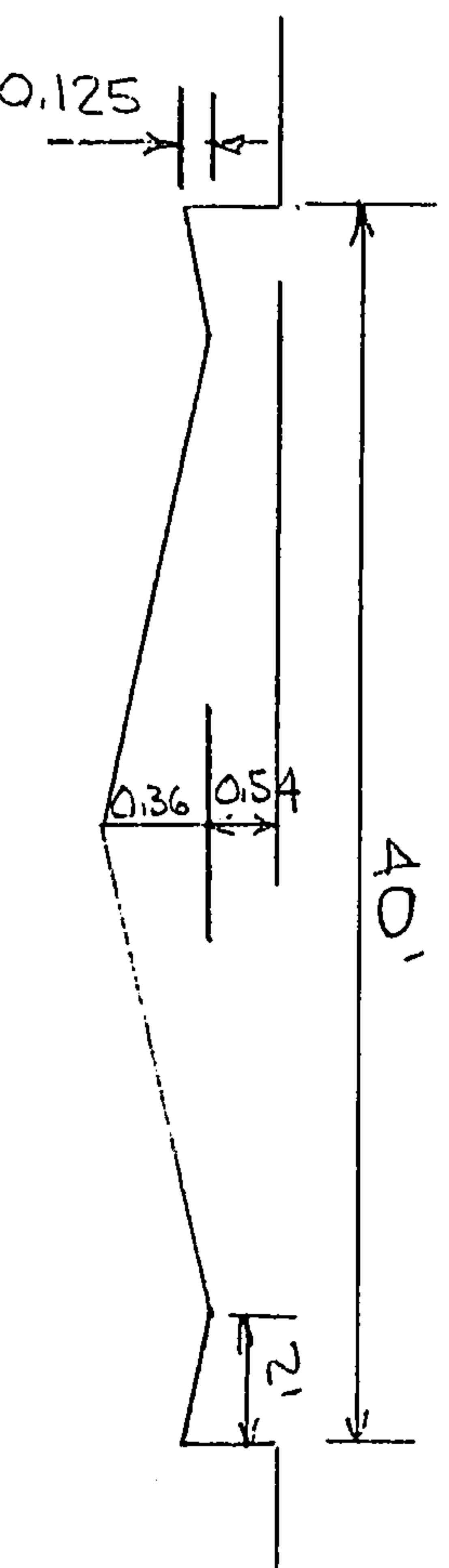
| ANAL. POINT | CONTRIBUTING<br>BASIN    | SEGMENT<br>SLOPE<br>(VELOCITY) | SEGMENT<br>LENGTH | $t_c$ | I    | C    | A    | $Q_{100}$ | $Q_{10}$ | $d_{100}$ | $V_{100}$ | REMARKS                       |
|-------------|--------------------------|--------------------------------|-------------------|-------|------|------|------|-----------|----------|-----------|-----------|-------------------------------|
|             |                          | $\frac{ft}{ft}$<br>(fps)       |                   |       |      |      |      |           |          |           |           |                               |
| C           | OFF 3                    | (5)                            | 5000              | 17    | 3.55 | 0.40 | 116  | 165       | 108      | 0.71      | 9.0       | 40' Street                    |
| C           | C1                       | .050                           | 250               | 10    | 4.65 | 0.55 | 2.5  | 6.4       | 4.2      | 0.26      | 4.0       | 32' Street                    |
| C           | C1+OFF3                  | .034                           | -                 | 17    | 3.55 | 0.40 | 119  | 169       | 111      | 0.29      | 9.3       | 40' Inv. Cr. Street           |
| E           | OFF4                     | (2.5)                          | 950               | 10    | 4.65 | 0.55 | 7.3  | 13.7      | 12.3     | 0.34      | 5.1       | -                             |
| 8           | C3+OFF4                  | .050                           | -                 | 10    | 4.65 | 0.55 | 10.4 | 26.6      | 17.5     | 0.37      | 5.4       | 32' Street                    |
| 8           | C1+C3+OFF                | .032                           | 400               | 18    | 3.45 | 0.42 | 129  | 187       | 123      | 0.32      | 9.7       | 40' Inv. Cr. Street           |
| 9           | C4                       | .035                           | 400               | 10    | 4.65 | 0.55 | 2.9  | 7.4       | 4.9      | 0.28      | 3.5       | 32' Street                    |
| 9           | C1-C5+OFF                | .020                           | 300               | 19    | 3.35 | 0.42 | 132  | 186       | 122      | 0.53      | 8.3       | 40' Inv. Cr. Street           |
| 10          | C1-C6+OFF                | .020                           | 300               | 19    | 3.35 | 0.42 | 134  | 189       | 124      | 0.53      | 8.4       | 40' Inv. Cr. Street           |
| D           | C1-C9 +<br>3-33 +<br>OFF | .020                           | 350               | 20    | 3.27 | 0.45 | 204  | 300       | 197      | NA        | NA        | 40' Inv. Cr. Street<br>(sump) |

NOTES: 1. OFFSITE AREAS 143 HAVE BEEN ASSIGNED RUNOFF COEFFICIENT OF 0.40 IN CONFORMANCE WITH THE REPORTS PREPARED BY THE DESIGNERS OF THOSE SUBDIVISIONS. (NEAR ROAD POINT)

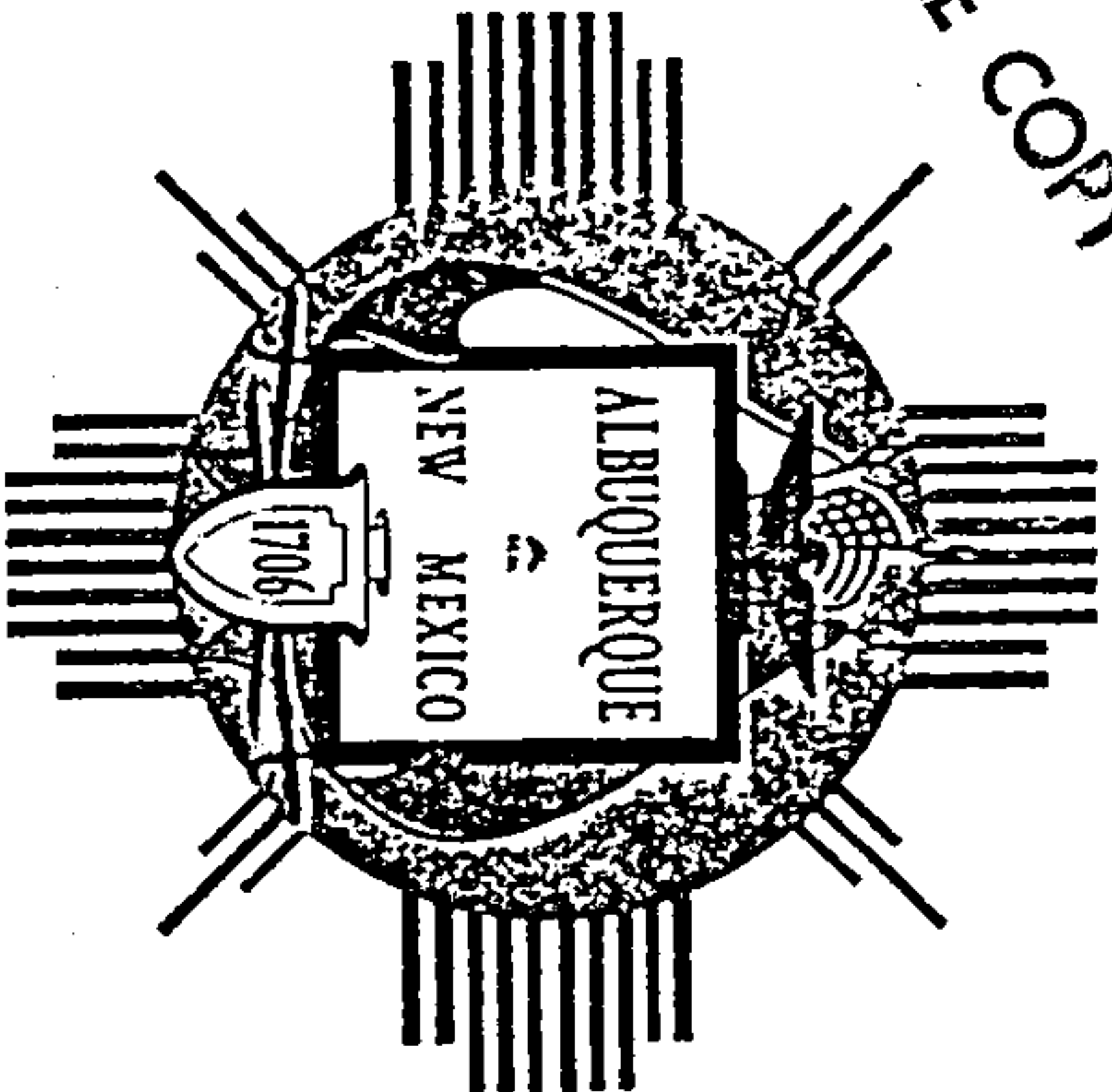
2. OFFSITE AREA 5 HAS BEEN ASSIGNED A RUNOFF COEFFICIENT OF 0.4. THE AREA IS PRESENTLY UNDEVELOPED. UPON DEVELOPMENT EITHER A REALIGNED OUTFALL TO THE AMO DEL NORTE OR CONTROLLED DISCHARGE WILL BE REQUIRED IN THIS AREA. (43 ACRES)

3. OFFSITE AREA C9 HAS BEEN ASSIGNED A RUNOFF COEFFICIENT OF 0.85. IT IS ANTICIPATED THAT THIS PARCEL WILL BE DEVELOPED AS A COMMERCIAL TRACT (9.4

4. INVERTED CROWN STREET



FILE COPY



**City of Albuquerque**  
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 15, 1990

Jake Bordenave, P.E.  
7100 Louisiana NE, #A106  
Albuquerque, NM 87109

RE: REVISED GRADING AND DRAINAGE REPORT FOR VISTA NUEVA  
SUBDIVISION, SUBMITTED MARCH 15, 1990, FOR PRELIMINARY  
PLAT APPROVAL (M-10/D5A)

Dear Mr. Bordenave,

I have reviewed your submittal, referred to above, and have the following comments:

1. On page seven, in item seven of the conclusions, you state that "All offsite areas are assumed to be in a totally developed condition." which is correct. Note two, page 14, however, states that offsite area five has been assigned a runoff coefficient of 0.4, undeveloped, and that controlled discharge from the area will be required upon development, or that a 'realigned outfall to the Amole del Norte' will be required.

If you are not the owner of the parcel labelled offsite area five, or the agent for that parcel, then your statement is presumptuous. As for the 'realigned outfall', please be reminded that the two Unser Boulevard storm drain crossings are to serve the entire basin in a fully developed condition.

2. Your submittal lacks a grading plan. Please consult the DPM checklist before resubmitting.

3. The drainage system proposed for the Sapphire Road basin is unacceptable. At analysis point 9, the peak flow is estimated at 186 cfs, with a depth of 0.9 feet and a velocity of 7.3 feet/second. If the flow is not going to be confined to the street, it must flow at a non-erosive velocity so that the area between the back of curb and the sidewalk does not require city maintenance after major storms. The maximum depth allowed is 0.2' over the top of curb, which you have exceeded. At

Jake Bordenave, P.E.  
March 15, 1990  
page 2

analysis point D, just downstream on the same street, the peak flow is 300 cfs, and the depth is 0.98 feet. Please read Chapter 22 of the DPM before resubmitting.

If you have any questions, please call me at 768-2650.

Cordially,

A handwritten signature in cursive script that reads "Stuart Reeder".

G. Stuart Reeder, P.E.  
C.E./Hydrology Section

GSR  
WP+652

xc: Rick Semones, Presley Homes

# IMAGE INFORMATION SHEET

PROJECT TITLE: VISTA NUEVA ZONE ATLAS/DRAINAGE FILE # MD/DSA

LEGAL DESCRIPTION: TRACT A-1 VISTA NUEVA & TRACT C SUB-SECTION 1

CITY ADDRESS: N/A

ENGINEERING FIRM: BORDENAVE DESIGNS CONTACT: J. BORDENAVE

ADDRESS: P.O. Box 91194, 83199-1194 PHONE: 883-1344

OWNER: Presley Co CONTACT: R. Semones

ADDRESS: 1909 CARLSLE NE 83110 PHONE: 265-581

ARCHITECT: - CONTACT: -

ADDRESS: - PHONE: -

SURVEYOR: BORDENAVE DESIGNS CONTACT: J. BORDENAVE

ADDRESS: P.O. Box 91194, 83199-1194 PHONE: 823-1344

CONTRACTOR: - CONTACT: -

ADDRESS: - PHONE: -

PRE-DESIGN MEETING:

☒ YES DRB NO. 89-397

☐ NO EPC NO. 89-76

☒ COPY OF CONFERENCE PROJECT NO. \_\_\_\_\_

RECAP SHEET PROVIDED

TYPE OF SUBMITTAL: CHECK TYPE OF APPROVAL SOUGHT:

☒ DRAINAGE REPORT (REVISED) \_\_\_\_\_ SECTOR PLAN APPROVAL

☐ DRAINAGE PLAN \_\_\_\_\_ SKETCH PLAT APPROVAL

☐ CONCEPTUAL GRADE & DRAIN PLAN ☒ PRELIMINARY PLAT APPROVAL

☐ GRADING PLAN ☒ SITE DEVELOPMENT PLAN APP.

☐ EROSION CONTROL PLAN \_\_\_\_\_ FINAL PLAT APPROVAL

☐ ENGINEER'S CERTIFICATION \_\_\_\_\_ BUILDING PERMIT APPROVAL

FOUDATION PERMIT APPROVAL

CERT. OF OCCUPANCY APPROVAL

ROUGH GRADE PERMIT APPROVAL

GRADING/PAVING PERMIT APP.

OTHER \_\_\_\_\_ (SPECIFY)

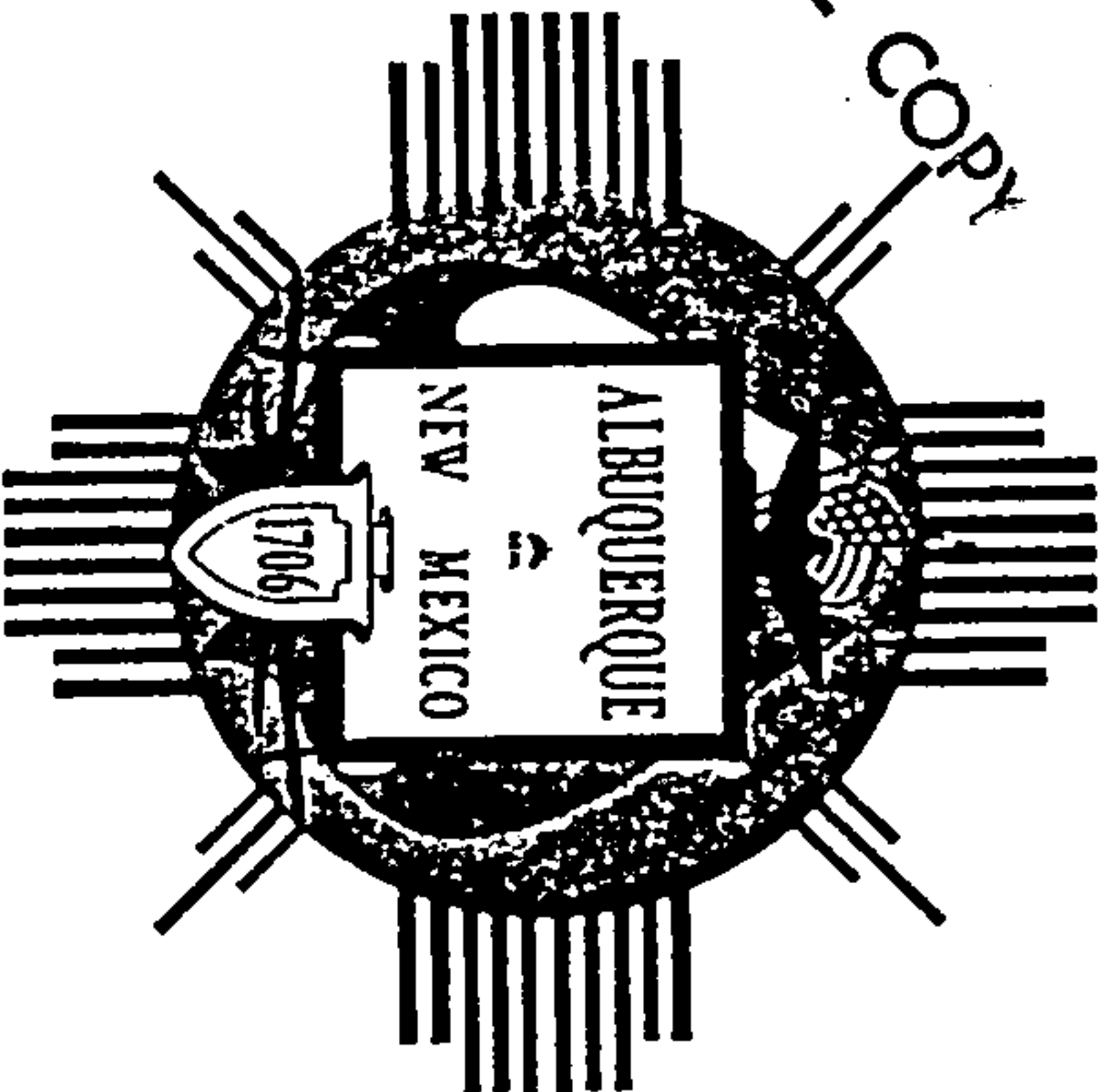
NOTE: Please insert previously submitted maps of these reports

MAR 07 1990

DATE SUBMITTED: 03/14/1990 HYDROLOGY SECTION

BY: Paul Bonfante

FILE COPY



*City of Albuquerque*  
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 2, 1990

J. Bordenave, P.E.  
7100 Louisiana NE, #A106  
Albuquerque, NM 87109

RE: REVISED GRADING AND DRAINAGE REPORT FOR VISTA NUEVA  
SUBDIVISION, SUBMITTED FEBRUARY 21, 1990, FOR PRELIMINARY  
PLAT APPROVAL (M-10/D5A)

Dear Mr. Bordenave,

I have reviewed your submittal, referred to above, and have the following  
comments:

1. Please provide some justification for adding five minutes to the Tc which has the effect of lowering the rainfall intensity and reducing the estimated runoff.
2. To calculate the Tc, please use the SCS Upland Velocity Method per the DPM.
3. For the offsite drainage areas, use a runoff coefficient of 55-60%, not 0.40.
4. What are the magnitude of the offsite flows down Unser from the north and up from the south?
5. Where do you plan for area C9 to drain?
6. Is the platted subdivision to the west of the proposed Vista Nueva Subdivision graded, with streets installed, so that all flows to blocks 12 and 1 are blocked?
7. The special storm drain inlet design scheme will need the approval of the Transportation Section. The 0.03 ft./ft. inverted crown must be acceptable to them.
8. Provide the pipe lengths and slopes which cross under Unser Boulevard.
9. On page three of the report, under the EXISTING DRAINAGE CONDITIONS section, the flood plain is identified as being in the northwest corner of the site. I think you mean the northeast corner.

Jake Bordenave, P.E.,  
March 2, 1990  
page 2

10. On page eight of the report, comment 10 is not correct. The City will be contribute a dollar amount to assist in the development of the site but has not assumed responsibility for all of the drainage infrastructure from the Unser crossing to the Amole.

11. As you note in your report, the flood plain removal must be approved by FEMA, and is a condition of development. We will require the pertinent data (in duplicate) to submit to FEMA for a Conditional Letter of Map Revision (LOMR) as a condition of DRC Work Order drawing sign-off, and the certified as-builts for the final LOMR as a condition of the City's final acceptance of the project. Please see Gilbert Aldaz for the criteria for LOMR and a checklist.

12. Please add your engineer's certification to the title page of your next report submittal.

If you have any questions, please call me at 768-2650.

Cordially,



G. Stuart Reeder, P.E.  
C.E./Hydrology Section

GSR  
WP+652

xc: Rick Semones, Presley Homes  
Roger Green, DRC Chairman

# RAINAGE INFORMATION SHEET

PROJECT TITLE: Vista Nueva ZONE ATLAS/DRAINAGE FILE # M10/D5A

LEGAL DESCRIPTION: Vista Nueva Addition

CITY ADDRESS: N/A

ENGINEERING FIRM: BORDENAVE Designs CONTACT: J. Bordenave

ADDRESS: P.O. Box 91194, 87189 PHONE: 823-1344

OWNER: Presley Co CONTACT: R. Sammons

ADDRESS: 1009 Carlisle NE 87110 PHONE: 265-5811

ARCHITECT: — CONTACT: —

ADDRESS: — PHONE: —

SURVEYOR: BORDENAVE Designs CONTACT: J. Bordenave

ADDRESS: P.O. Box 91194, 87189 PHONE: 823-1344

CONTRACTOR: — CONTACT: —

ADDRESS: — PHONE: —

PRE-DESIGN MEETING:

☒ YES DRB NO. 89-397

☐ NO EPC NO. 289-76

☒ COPY OF CONFERENCE PROJECT NO. —

RECAP SHEET PROVIDED

TYPE OF SUBMITTAL: CHECK TYPE OF APPROVAL SOUGHT:

☒ DRAINAGE REPORT ☐ SECTOR PLAN APPROVAL

☐ DRAINAGE PLAN ☐ SKETCH PLAT APPROVAL

☐ CONCEPTUAL GRADE & DRAIN PLAN ☒ PRELIMINARY PLAT APPROVAL

☐ GRADING PLAN ☐ SITE DEVELOPMENT PLAN APP.

☐ EROSION CONTROL PLAN ☐ FINAL PLAT APPROVAL

☐ ENGINEER'S CERTIFICATION ☐ BUILDING PERMIT APPROVAL

☐ FOUNDATION PERMIT APPROVAL

☐ CERT. OF OCCUPANCY APPROVAL

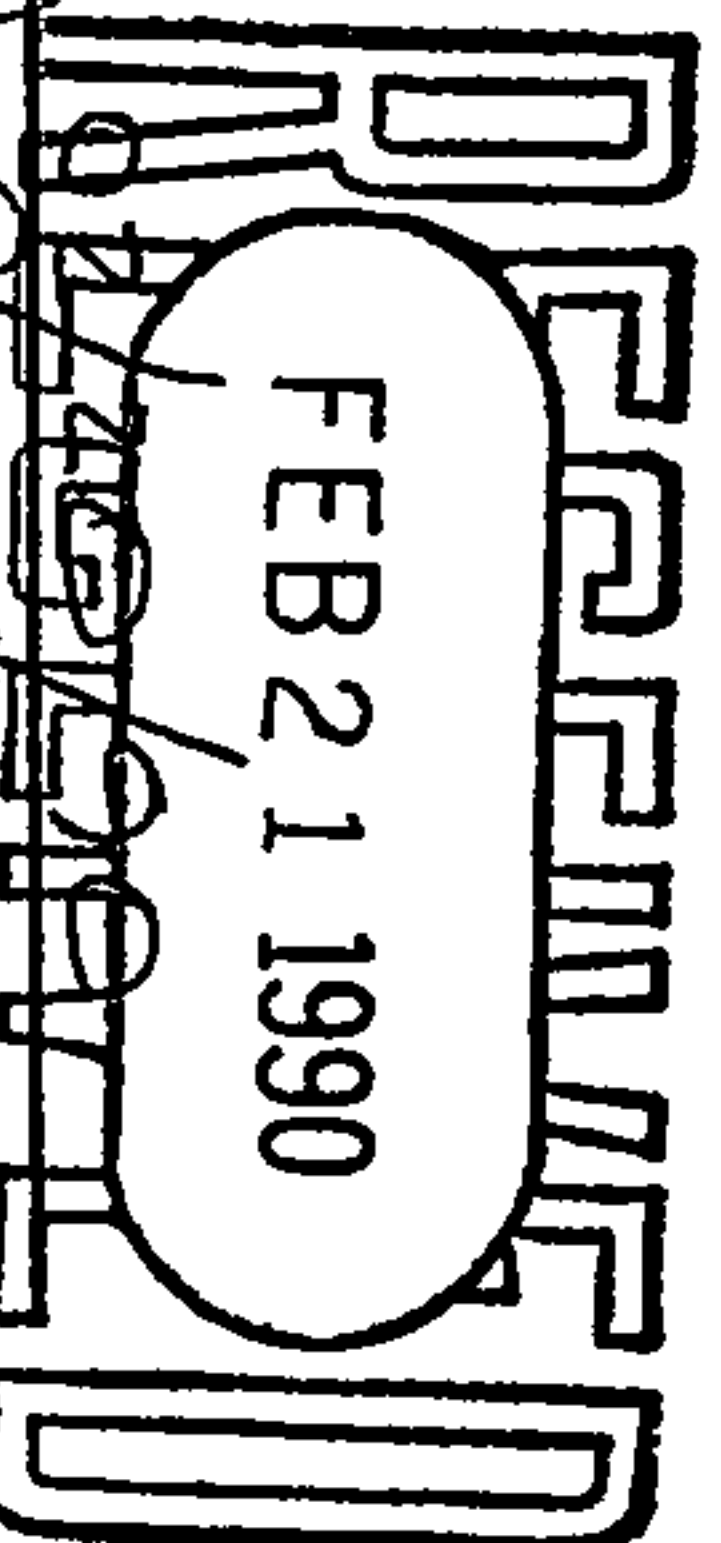
☐ ROUGH GRADE PERMIT APPROVAL

☐ GRADING/PAVING PERMIT APP.

☐ OTHER — (SPECIFY)

DATE SUBMITTED: 02/21/90

BY: J. Bordenave HYDROLOGY SECTION



October 12, 1989

J. Bordenave, P.E.  
7100 Louisiana NE, #A106  
Albuquerque, NM 87109

RE: REVISED GRADING AND DRAINAGE REPORT FOR VISTA NUEVA  
SUBDIVISION, SUBMITTED SEPTEMBER 25, 1989, FOR PRELIMINARY  
PLAT APPROVAL (M-10/D5A)

Dear Mr. Bordenave,

Regarding your grading and drainage report, the following comments pertain to the technical hydrologic and hydraulic review:

1. Page 7, item 7: using the SCS method for determining the peak flow from an urban watershed is not a practice which is accepted by the City of Albuquerque. Please use the Rational Method per the Mayor's Emergency Rule dated February 19, 1986, for both the offsite fully developed conditions as well as the onsite fully developed conditions. Using the Rational Method for offsite measurement will increase your estimated values by 50%.
2. For volume calculations I suggest you consult Table 2-2a.-"Runoff curve numbers for urban areas" which is part of the June, 1986, TR-55, for the Curve Number. They suggest a value of 85 for this density housing. The runoff from a CN of 85 is nearly 30% greater than from a CN of 81 which will adversely affect your volume calculations.
3. Please explain why you have added five minutes to the Kirpich equation thus lowering the rainfall intensity.  
  
For urban times of concentration, within paved subdivisions having known street grades, kindly use the SCS Upland Method which was made a part of the DPM in June, 1987. This velocity determined Tc is more accurate.

4. Section 22.3 F.5.a. of the DPM states that bank protection must be provided when design velocities exceed eight feet per second. It does not state the converse that when velocities are less than eight feet per second, bank protection is not required. This subdivision will be discharging relatively clean, highly erosive, so-called "hungry" water into a dirt arroyo. Please provide the sediment transport analysis that indicates that the arroyo will remain stable under these conditions. Your design should assure that only minor armoring will be required in this downstream reach.

5. In our copy of your report, one hydrograph line is the same as another according to the legend. Please correct this.

The following comments pertain to the downstream drainage easement requirements:

As outlined in your conclusion on page #8 item #10, "The City of Albuquerque will be responsible for construction of the pipes crossing Unser Blvd. and all facilities downstream therefrom." This downstream work as defined in your report is much more substantial than was expected or originally agreed to by the City. The temporary drainage easements required downstream from the Vista Nueva Subdivision Development to the Amole Del Norte Channel should generally correspond to the existing flood plain. This will require temporary drainage easement widths of 300 feet as previously discussed.

The City was of the understanding that only minor armoring within the temporary drainage easement (existing flood plain) would be required in and around bends and downstream of the pipes crossing Unser Blvd. Also, it was the City's intent that this facility would be designed in such a way that a minimum of maintenance would be required until a permanent facility is installed.

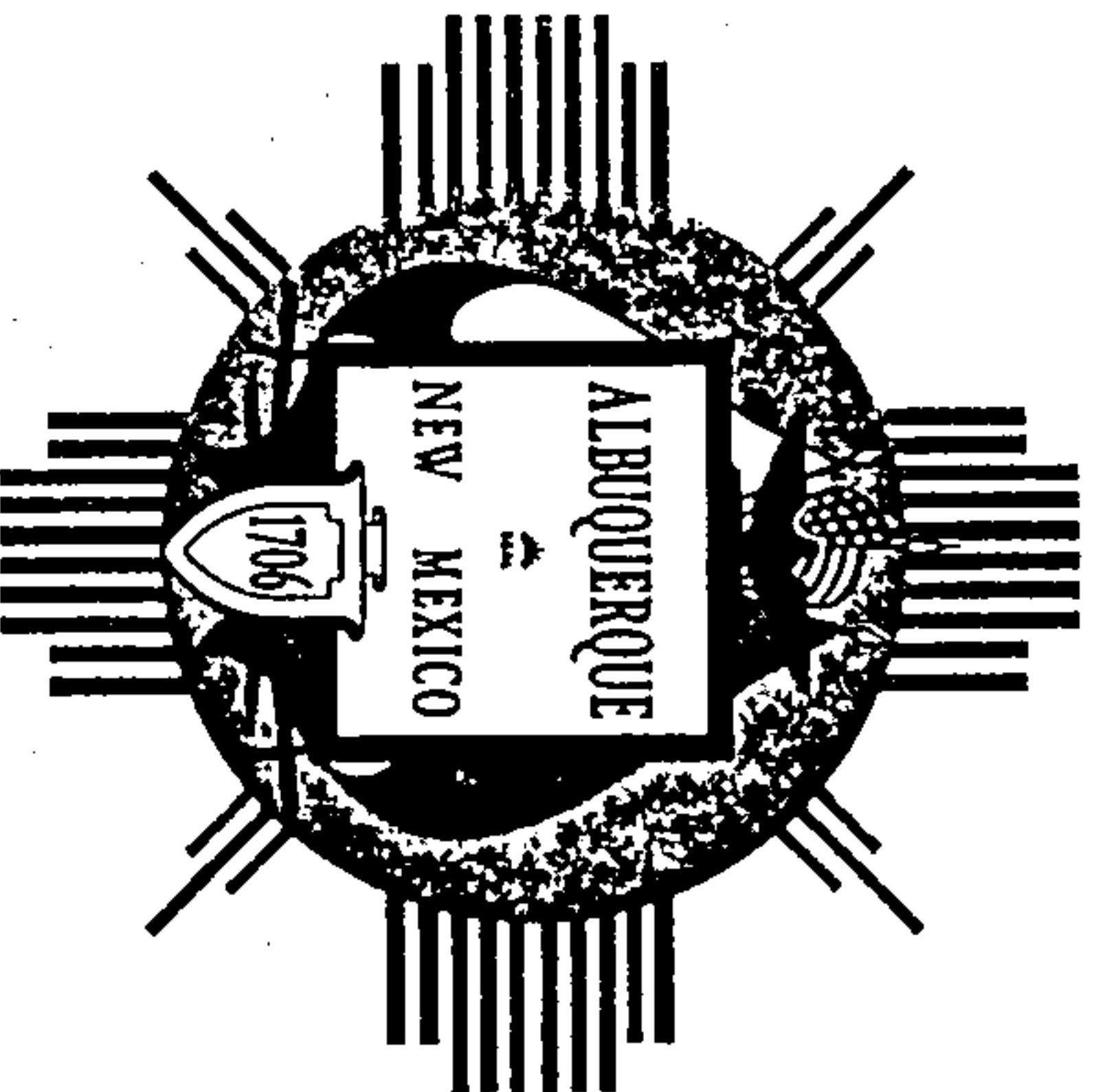
The drainage report indicates a design which would be restricted to a 50 foot drainage easement and a profile grade of from .5% to 1.65%. The profile also indicates cuts of up to 15 feet. Certainly this design would require a high initial cost and would be followed by high maintenance costs. With the profile shown it is doubtful that even a concrete lined channel could be constructed within the 50 foot easement.

Perhaps a meeting is in order to discuss these comments and clarify any misunderstandings which may exist. Please contact me at 768-2650 if you would like to discuss this matter further.

Very truly yours,

Fred Aguirre, P.E.  
City Hydrologist  
Hydrology Division/PWD

xc: Walter Nickerson, Assistant Director Public Works  
Dan Hogan, Hydrology Division Manager  
Rick Semones, Presley Co. of New Mexico



# *City of Albuquerque*

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

October 12, 1989

KEN SCHULTZ  
MAYOR

J. Bordenave, P.E.)  
7100 Louisiana NE, #A106  
Albuquerque, NM 87109

RE: REVISED GRADING AND DRAINAGE REPORT FOR VISTA NUEVA  
SUBDIVISION, SUBMITTED SEPTEMBER 25, 1989, FOR PRELIMINARY  
PLAT APPROVAL (M-10/D5A)

Dear Mr. Bordenave,

Regarding your grading and drainage report, the following comments pertain to the technical hydrologic and hydraulic review:

1. Page 7, item 7: using the SCS method for determining the peak flow from an urban watershed is not a practice which is accepted by the City of Albuquerque. Please use the Rational Method per the Mayor's Emergency Rule dated February 19, 1986, for both the offsite fully developed conditions as well as the onsite fully developed conditions. Using the Rational Method for offsite measurement will increase your estimated values by 50%.
2. For volume calculations I suggest you consult Table 2-2a.-"Runoff curve numbers for urban areas" which is part of the June, 1986, TR-55, for the Curve Number. They suggest a value of 85 for this density housing. The runoff from a CN of 85 is nearly 30% greater than from a CN of 81 which will adversely affect your volume calculations.
3. Please explain why you have added five minutes to the Kirpich equation thus lowering the rainfall intensity.  
  
For urban times of concentration, within paved subdivisions having known street grades, kindly use the SCS Upland Method which was made a part of the DPM in June, 1987. This velocity determined Tc is more accurate.

PUBLIC WORKS DEPARTMENT

Walter H. Nickerson, Jr., P.E.  
Assistant Director Public Works

ENGINEERING GROUP

Telephone (505) 768-2500

AN EQUAL OPPORTUNITY EMPLOYER

4. Section 22.3 F.5.a. of the DPM states that bank protection must be provided when design velocities exceed eight feet per second. It does not state the converse that when velocities are less than eight feet per second, bank protection is not required. This subdivision will be discharging relatively clean, highly erosive, so-called "hungry" water into a dirt arroyo. Please provide the sediment transport analysis that indicates that the arroyo will remain stable under these conditions. Your design should assure that only minor armoring will be required in this downstream reach.

5. In our copy of your report, one hydrograph line is the same as another according to the legend. Please correct this.

The following comments pertain to the downstream drainage easement requirements:

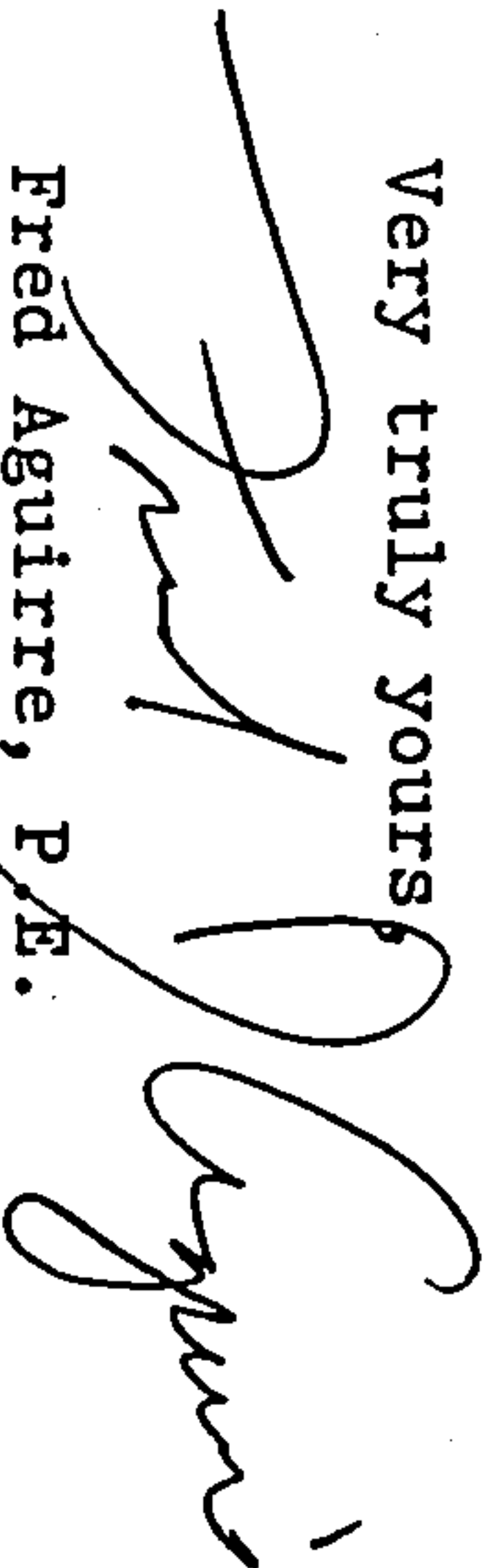
As outlined in your conclusion on page #8 item #10, "The City of Albuquerque will be responsible for construction of the pipes crossing Unser Blvd. and all facilities downstream therefrom." This downstream work as defined in your report is much more substantial than was expected or originally agreed to by the City. The temporary drainage easements required downstream from the Vista Nueva Subdivision Development to the Amole Del Norte Channel should generally correspond to the existing flood plain. This will require temporary drainage easement widths of 300 feet as previously discussed.

The City was of the understanding that only minor armoring within the temporary drainage easement (existing flood plain) would be required in and around bends and downstream of the pipes crossing Unser Blvd. Also, it was the City's intent that this facility would be designed in such a way that a minimum of maintenance would be required until a permanent facility is installed.

The drainage report indicates a design which would be restricted to a 50 foot drainage easement and a profile grade of from .5% to 1.65%. The profile also indicates cuts of up to 15 feet. Certainly this design would require a high initial cost and would be followed by high maintenance costs. With the profile shown it is doubtful that even a concrete lined channel could be constructed within the 50 foot easement.

Perhaps a meeting is in order to discuss these comments and clarify any misunderstandings which may exist. Please contact me at 768-2650 if you would like to discuss this matter further.

Very truly yours,



Fred Aguirre, P.E.  
City Hydrologist  
Hydrology Division/PWD

xc: Walter Nickerson, Assistant Director Public Works  
Dan Hogan, Hydrology Division Manager  
Rick Semones, Presley Co. of New Mexico

RECEIVED

SEP 27  
CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO  
HYDROLOGY

INTER-OFFICE CORRESPONDENCE

REF. NO.: WPHYD652

September 27, 1989

TO: Steve Boberg

FROM: Fred Aguirre *FJA*

SUBJECT: DRAINAGE REPORT FOR VISTA NUEVA SUBDIVISION (M-10/D5A)

---

Here is the report that Dan was expecting for the Affordable Housing Project prepared by Jake Bordenave of Bordenave Designs. The part that Dan was planning to review was the outfall from the Unser Roadway to the future Amole project scheduled for construction if the Storm Bond passes this October. Additionally, it is presently scheduled for D.R.B. (i.e., preliminary plat approval) October 3, 1989.

If you have any questions, contact Dan or myself.

Attachment  
FJA/bsj

DRAINAGE INFORMATION SHEET

PROJECT TITLE: VISTA NUEVA ZONE ATLAS/DRAINAGE FILE # M10/D5A

LEGAL DESCRIPTION: TRACT A1 VISTA NUEVA & TRACT C ALB. SOUTH UNIT 1

CITY ADDRESS: N/A

ENGINEERING FIRM: BORDENAVE DESIGNS CONTACT: J. Bordenave

ADDRESS: 7100 Louisiana NE # A106, 87109 PHONE: 823-1344

OWNER: Presley Co. CONTACT: R. Sammons

ADDRESS: 1909 Carlisle NE 87110 PHONE: 265-5811

ARCHITECT: - CONTACT: -

ADDRESS: - PHONE: -

SURVEYOR: BORDENAVE DESIGNS CONTACT: J. Bordenave

ADDRESS: 7100 Louisiana NE # A106, 87109 PHONE: 823-1344

CONTRACTOR: - CONTACT: -

ADDRESS: - PHONE: -

PRE-DESIGN MEETING:

☒ YES DRB NO. 89-397

☐ NO EPC NO. 89-76

☐ COPY OF CONFERENCE HYDROLOGY SECTION PROJECT NO. -

TYPE OF SUBMITTAL: CHECK TYPE OF APPROVAL SOUGHT:

☒ DRAINAGE REPORT REVISION ☐ SECTOR PLAN APPROVAL

☐ DRAINAGE PLAN ☐ SKETCH PLAT APPROVAL

☐ CONCEPTUAL GRADING & DRAIN PLAN ☒ PRELIMINARY PLAT APPROVAL

☐ GRADING PLAN ☐ SITE DEVELOPMENT PLAN APPROVAL

☐ EROSION CONTROL PLAN ☐ FINAL PLAT APPROVAL

☐ ENGINEER'S CERTIFICATION ☐ BUILDING PERMIT APPROVAL

☐ ☐ FOUNDATION PERMIT APPROVAL

☐ ☐ CERTIFICATE OF OCCUPANCY APPROVAL

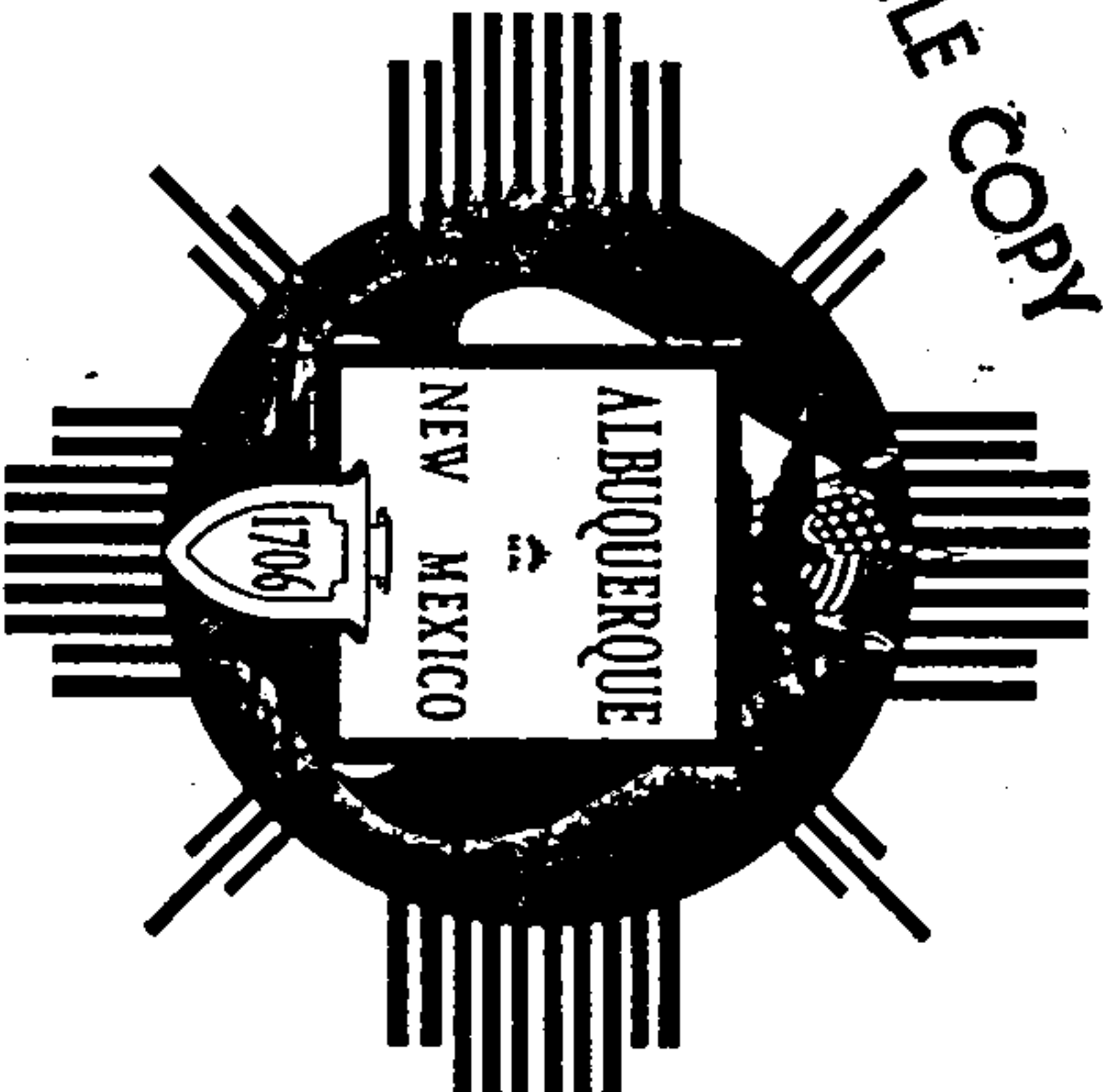
☐ ☐ ROUGH GRADING PERMIT APPROVAL

☐ ☐ GRADING/PAVING PERMIT APPROVAL

☐ ☐ OTHER (SPECIFY).

DATE SUBMITTED: 09/14/89 BY: J. Bordenave

FILE COPY



# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR

CHIEF  
ADMINISTRATIVE OFFICER

DEPUTY CAO  
PUBLIC SERVICES

DEPUTY CAO  
PLANNING/DEVELOPMENT

KEN SCHULTZ

GENE ROMO

FRANK MARTINEZ

BILL MUELLER

April 11, 1988

Mike Kibbee  
DMJM  
6501 Americas Parkway, NE Suite 690  
Albuquerque, New Mexico 87112

RE: REVISED DRAINAGE REPORT SUBMITTAL OF VISTA NUEVA SUBDIVISION  
RECEIVED MARCH 31, 1988 FOR PRELIMINARY PLAT APPROVAL (M-10/DSA)

Dear Mr. Kibbee:

The above referenced submittal dated March 31, 1988 is approved for Preliminary Plat approval and infrastructure list sign-off at the D.R.B.

The final detailed Grading Plans of both phases will need to be submitted reviewed, and approved prior to Work Order Construction drawings and Final Plat approval.

Final Plat sign-off by the City Engineer will also require the following items:

1. An executed Drainage Covenant for the Developers maintenance responsibilities of the earth channels within the temporary downstream drainage easements and the desiltation pond.
2. An executed Subdivision Improvements Agreement.
3. The required infrastructures either built or financially guaranteed.
4. A private drainage easement must be provided on the plat between the school site and street "A". This easement shall be a minimum of 10 feet wide.

If you should have any questions, call me at 768-2650.

Cordially,

*Roger A. Green*

Roger A. Green, P.E.  
C.E./Hydrology Section

RAG/bsj

xc: Rick Semones, Presley Company

AN EQUAL OPPORTUNITY EMPLOYER

# DRAINAGE INFORMATION SHEET

PROJECT TITLE: Vista Nueces ZONE ATLAS/DRAINAGE FILE # M-10

LEGAL DESCRIPTION: Alboguesse South Unit 1, Tract A

CITY ADDRESS: \_\_\_\_\_

ENGINEERING FIRM: DMJM CONTACT: Mike Klabe

ADDRESS: 6501 America's Parkway NE #690 PHONE: 884-4031

OWNER: Presley Company 87110 CONTACT: Rick Sermones

ADDRESS: 1909 Carlisle NE 87110 PHONE: 265-5811

ARCHITECT: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

SURVEYOR: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_ CONTACT: \_\_\_\_\_

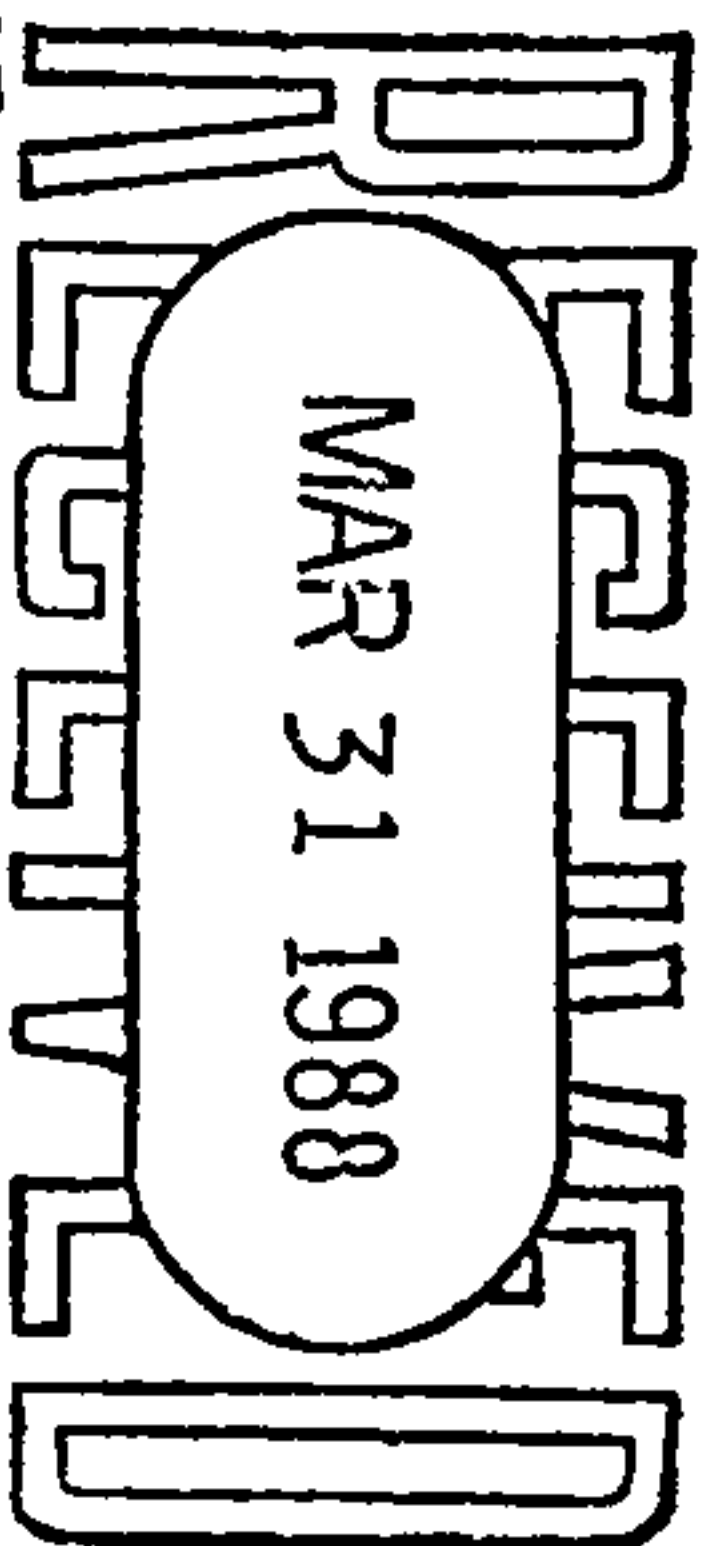
ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

## PRE-DESIGN MEETING:

☒ YES DRB NO. 87-781

☒ NO EPC NO. \_\_\_\_\_

\_\_\_\_\_  
COPY OF CONFERENCE HYDROLOGY SECTION  
RECAP SHEET PROVIDED PROJECT NO. \_\_\_\_\_



## TYPE OF SUBMITTAL:

## CHECK TYPE OF APPROVAL SOUGHT:

☒ DRAINAGE REPORT Revision \_\_\_\_\_ SECTOR PLAN APPROVAL

\_\_\_\_\_  
DRAINAGE PLAN \_\_\_\_\_ SKETCH PLAT APPROVAL

\_\_\_\_\_  
CONCEPTUAL GRADING & DRAIN PLAN ☒ PRELIMINARY PLAT APPROVAL

\_\_\_\_\_  
GRADING PLAN \_\_\_\_\_ SITE DEVELOPMENT PLAN APPROVAL

\_\_\_\_\_  
EROSION CONTROL PLAN \_\_\_\_\_ FINAL PLAT APPROVAL

\_\_\_\_\_  
ENGINEER'S CERTIFICATION \_\_\_\_\_ BUILDING PERMIT APPROVAL

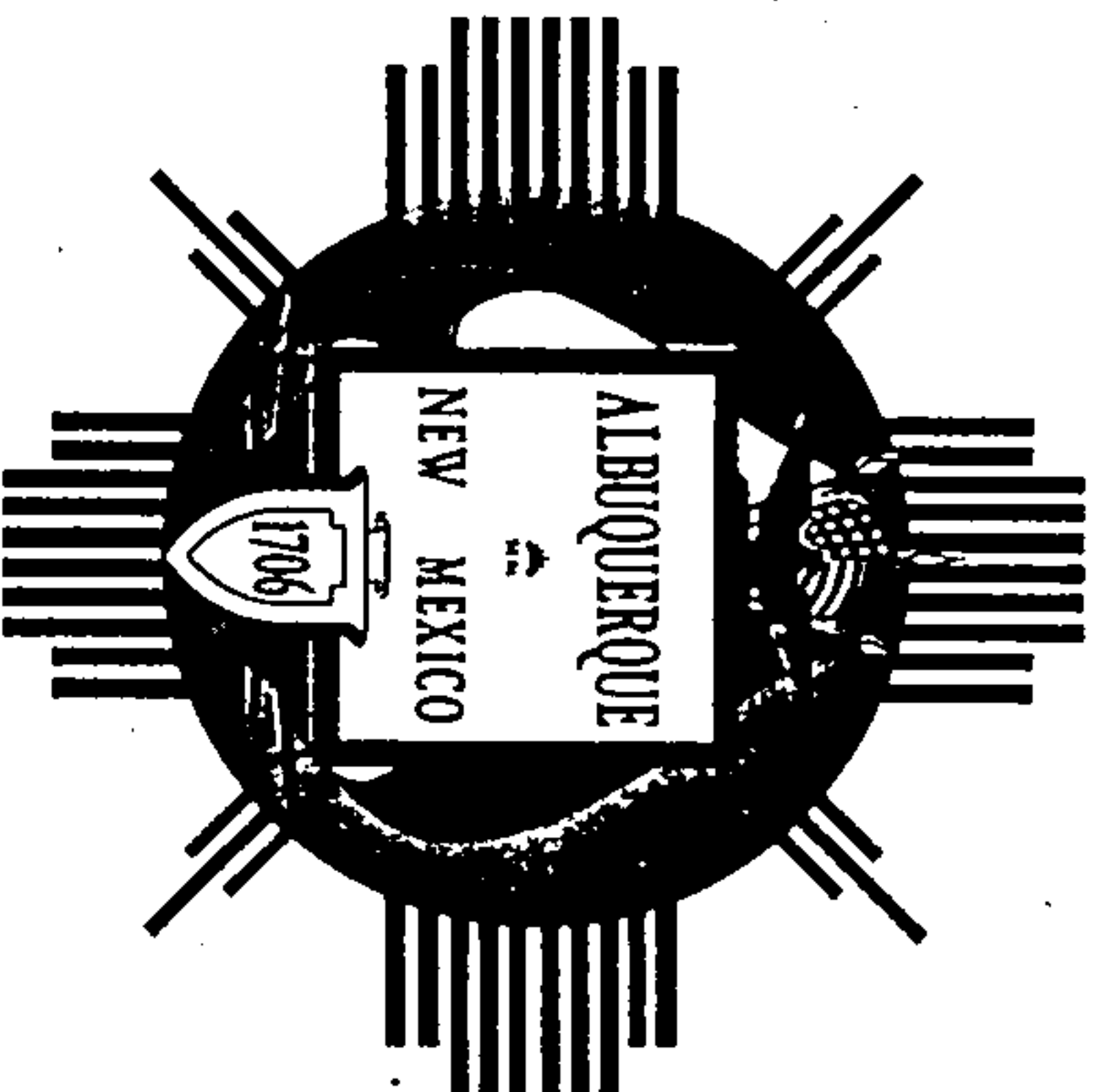
\_\_\_\_\_  
FOUNDATION PERMIT APPROVAL

\_\_\_\_\_  
CERTIFICATE OF OCCUPANCY APPROVAL

\_\_\_\_\_  
ROUGH GRADING PERMIT APPROVAL

DATE SUBMITTED: 3-31-88 \_\_\_\_\_ GRADING/PAVING PERMIT APPROVAL

BY: Mike Klabe \_\_\_\_\_ OTHER \_\_\_\_\_ (SPECIFY).



# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR

CHIEF  
ADMINISTRATIVE OFFICER

DEPUTY CAO  
PUBLIC SERVICES

DEPUTY CAO  
PLANNING/DEVELOPMENT

KEN SCHULTZ

GENE ROMO

FRANK MARTINEZ

BILL MUELLER

March 29, 1988

Mike Kibbee  
DMJM  
6501 Americas Parkway, NE Suite 690  
Albuquerque, New Mexico 87112

RE: DRAINAGE REPORT SUBMITTAL OF VISTA NUEVA SUBDIVISION  
RECEIVED MARCH 14, 1988 FOR PRELIMINARY PLAT APPROVAL (M-10/DSA)

Dear Mr. Kibbee:

I have reviewed the above referenced submittal and have the following comments to be addressed prior to Preliminary Plat approval:

1. Comments 1, 2 and 4 from my previous memo dated March 9, 1988 have been adequately addressed. Provide detail design calculations of the desiltation pond prior to Work Order Construction drawings submittal to the D.R.C.
2. All submittals must be stamped, signed, and dated by the Engineer.
3. Concerning the intersections of Kimela Drive and Street "A", the Drainage Ordinance allows flow 0.2' above the top of curb. Your calculations show that flows can be expected to be much higher than this. Your proposal of building a solid property line wall to contain flows is not acceptable, therefore, a storm drain will need to pick up enough flow upstream of the intersections to keep flow depths within 0.2' of the top of a standard curb.

If you have any questions, call me at 768-2650.

Cordially,

*Roger A. Green, Jr.*

Roger A. Green, P.E.  
C.E./Hydrology Section

xc: Rick Semones, Presley Co.

RAG/bsj

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Vista Nueva ZONE ATLAS/DRAINAGE FILE # M-10

LEGAL DESCRIPTION: Albuquerque South Unit, Tract 'A'

CITY ADDRESS: \_\_\_\_\_

ENGINEERING FIRM: DMJM CONTACT: Mike Kibbee

ADDRESS: 6501 Americas Parkway, suite 690 PHONE: 884-4031  
87110

OWNER: Presley Company CONTACT: Rick Semones

ADDRESS: 1909 Carlisle Blvd. NE PHONE: 265-5811  
87110

ARCHITECT: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

SURVEYOR: DMJM CONTACT: Walt Richards

ADDRESS: 6501 Americas Parkway, suite 690 PHONE: 884-4031  
87110

CONTRACTOR: \_\_\_\_\_ CONTACT: \_\_\_\_\_

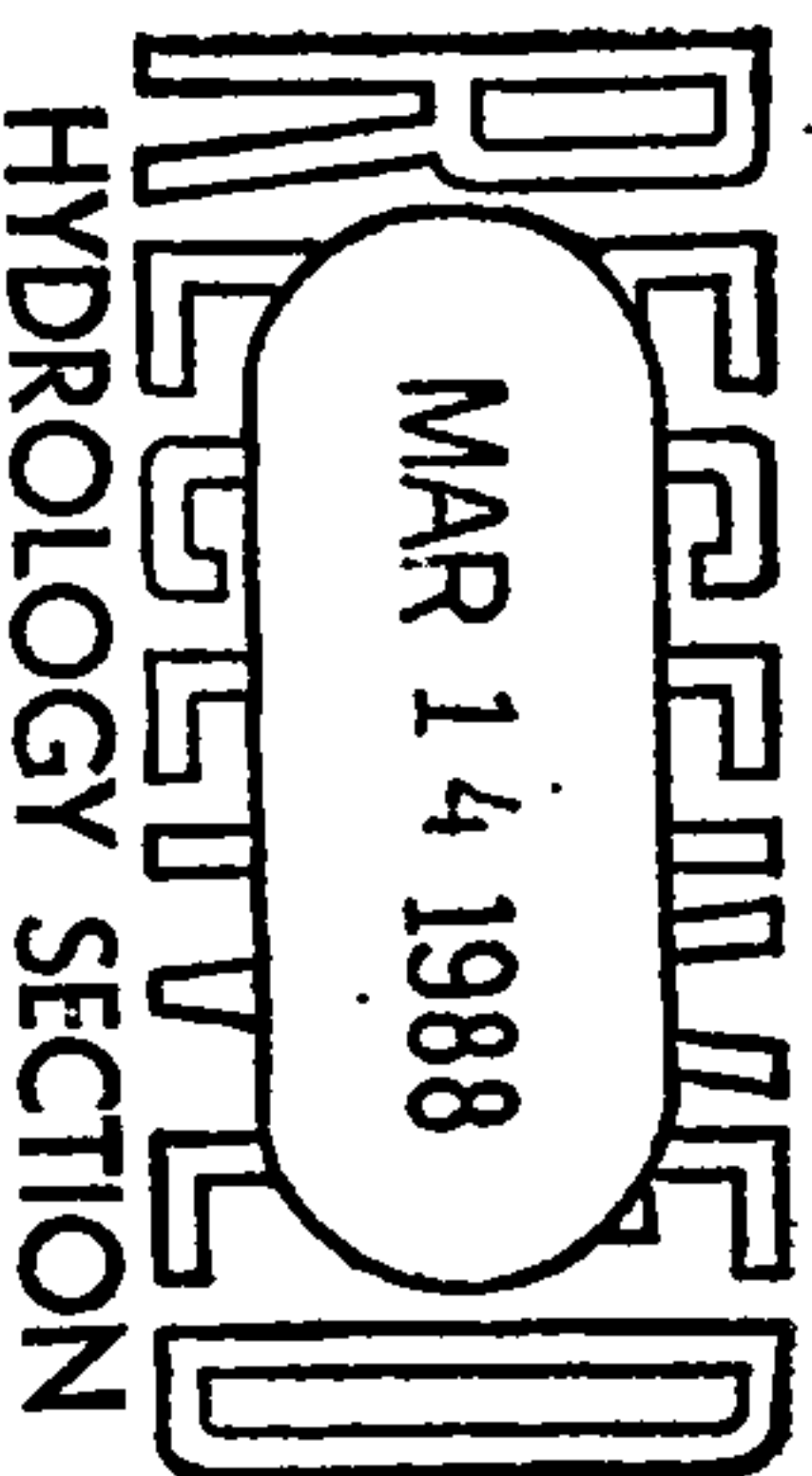
ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

PRE-DESIGN MEETING:

☒ YES DRB NO. 87-781

☐ NO EPC NO. \_\_\_\_\_

☒ COPY OF CONFERENCE PROJECT NO. \_\_\_\_\_  
RECAP SHEET PROVIDED



TYPE OF SUBMITTAL: CHECK TYPE OF APPROVAL SOUGHT:

☒ DRAINAGE REPORT \_\_\_\_\_ SECTOR PLAN APPROVAL

☐ DRAINAGE PLAN \_\_\_\_\_ SKETCH PLAT APPROVAL

☐ CONCEPTUAL GRADING & DRAIN PLAN ☒ PRELIMINARY PLAT APPROVAL

☐ GRADING PLAN \_\_\_\_\_ SITE DEVELOPMENT PLAN APPROVAL

☐ EROSION CONTROL PLAN \_\_\_\_\_ FINAL PLAT APPROVAL

☐ ENGINEER'S CERTIFICATION \_\_\_\_\_ BUILDING PERMIT APPROVAL

\_\_\_\_\_ FOUNDATION PERMIT APPROVAL

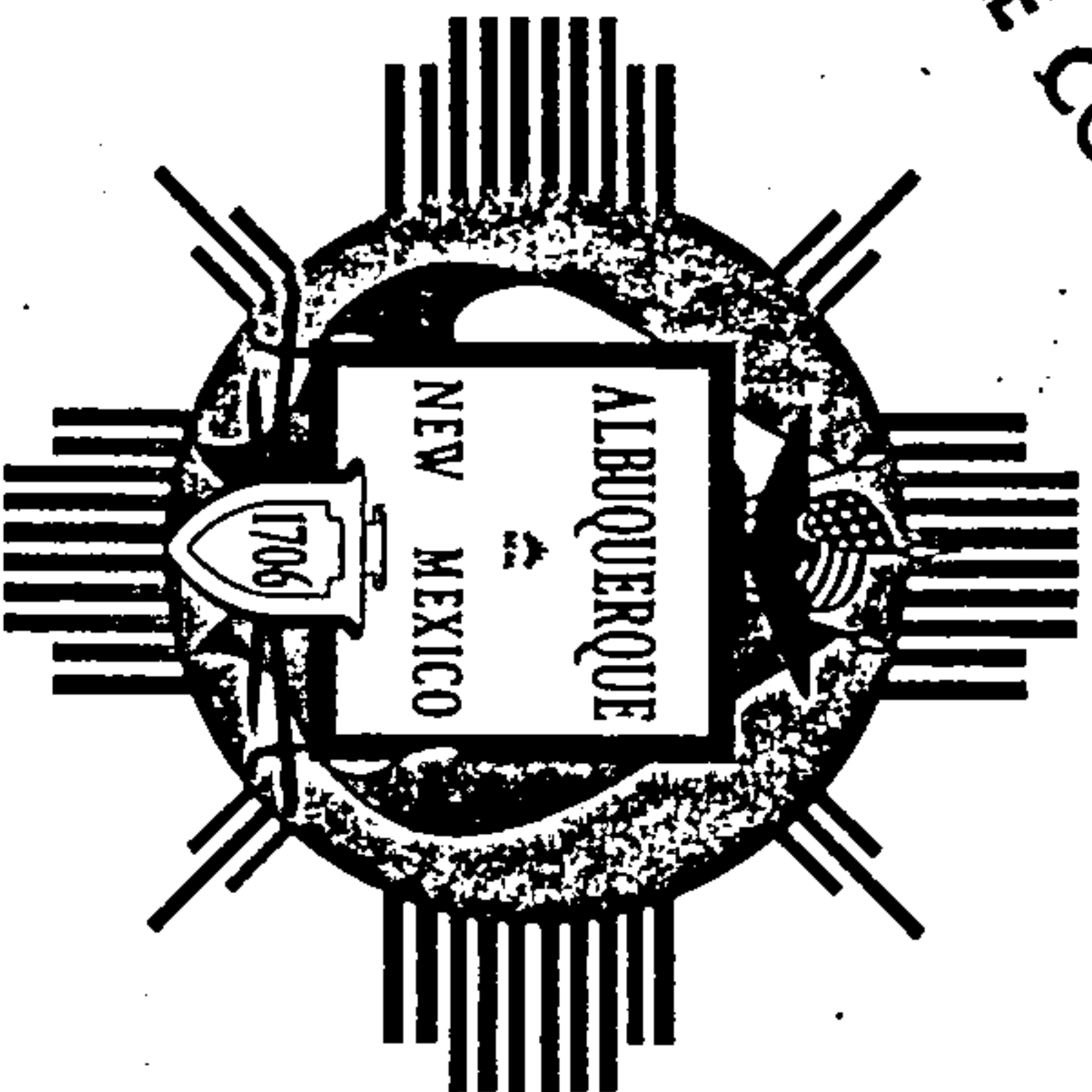
\_\_\_\_\_ CERTIFICATE OF OCCUPANCY  
APPROVAL

\_\_\_\_\_ ROUGH GRADING PERMIT APPROVAL

DATE SUBMITTED: 3-14-88 GRADING/PAVING PERMIT APPROVAL

BY: Mike Kibbee OTHER \_\_\_\_\_ (SPECIFY)

FILE COPY



# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

|             |                        |                      |
|-------------|------------------------|----------------------|
| MAYOR       | CHIEF                  | DEPUTY CAO           |
| KEN SCHULTZ | ADMINISTRATIVE OFFICER | PUBLIC SERVICES      |
| GENE ROMO   | FRANK MARTINEZ         | DEPUTY CAO           |
|             |                        | PLANNING/DEVELOPMENT |
|             |                        | BILL MUELLER         |

March 9, 1988

Mike Kibbee  
DMJM  
6501 Americas Parkway, NE Suite 690  
Albuquerque, New Mexico 87112

RE: DRAINAGE REPORT SUBMITTAL FOR VISTA NUEVA SUBDIVISION  
RECEIVED FEBRUARY 19, 1988 FOR PRELIMINARY PLAT APPROVAL  
(M-10/D5A)

Dear Mr. Kibbee:

I have reviewed the above referenced submittal dated February 9, 1988, and have the following comments to be addressed prior to Preliminary Plat approval:

1. The special storm drain inlet design scheme is approved contingent upon acceptance by Transportation Section. The 0.03 ft/ft cross slope toward the center must be acceptable to them.
2. The Drainage Plan needs to identify the drainage scheme of the school site, and allow for free discharge of the school site across the new subdivision to public right-of-way. The outfall provided for the school should be compatible with the existing drainage scheme and allow elimination of the retention ponds on the school site.
3. The two 90° intersections of Kimela Drive and Street 'A' must be analyzed for hydraulic jumps against the curbs and head water depth required to create normal flows depths downstream of the corners. A flow of 100 cfs in the street may require extra high curbs and restricted drive pad locations near the intersections.

Mike Kibbee

March 9, 1988

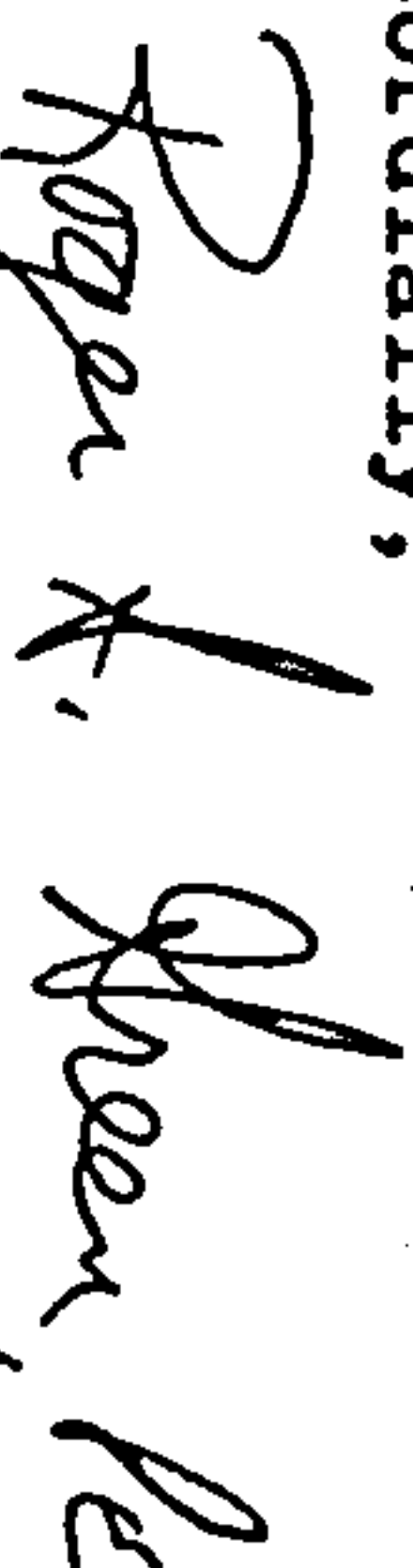
Page 2

4. The off-site Drainage Map is not clear on required temporary measures in the existing Amole Del Norte right-of-way. Provide information and sizing calculations for the desiltation pond at the upstream end of the existing concrete lined channel. If a desiltation facility already exists, then provide "as-built" information.

The final detailed Grading Plans will need to be reviewed and approved prior to Work Order construction drawings and Final Plat approvals. An infrastructure list and Preliminary Plat can be approved after the above comments are adequately addressed.

If you have any questions, call me at 768-2650.

Cordially,



Roger A. Green, P.E.  
C.E./Hydrology Section

xc: Rick Semones, Presley Company

RAG/bsj

# DRAINAGE INFORMATION SHEET

PROJECT TITLE: Vista Nueva ZONE ATLAS/DRAINAGE FILE # M-10 / DSA

LEGAL DESCRIPTION: Albuquerque South Unit, Tract 'A'

CITY ADDRESS: \_\_\_\_\_

ENGINEERING FIRM: DMJM CONTACT: Mike Kibbee

ADDRESS: 6501 Americas Parkway, suite 690 PHONE: 884-4031  
87110

OWNER: Presley Company CONTACT: Rick Semones

ADDRESS: 1909 Carlisle Blvd. NE PHONE: 265-5811  
87110

ARCHITECT: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

SURVEYOR: DMJM CONTACT: Walt Richards

ADDRESS: 6501 Americas Parkway, suite 690 PHONE: 884-4031  
87110

CONTRACTOR: \_\_\_\_\_ CONTACT: \_\_\_\_\_

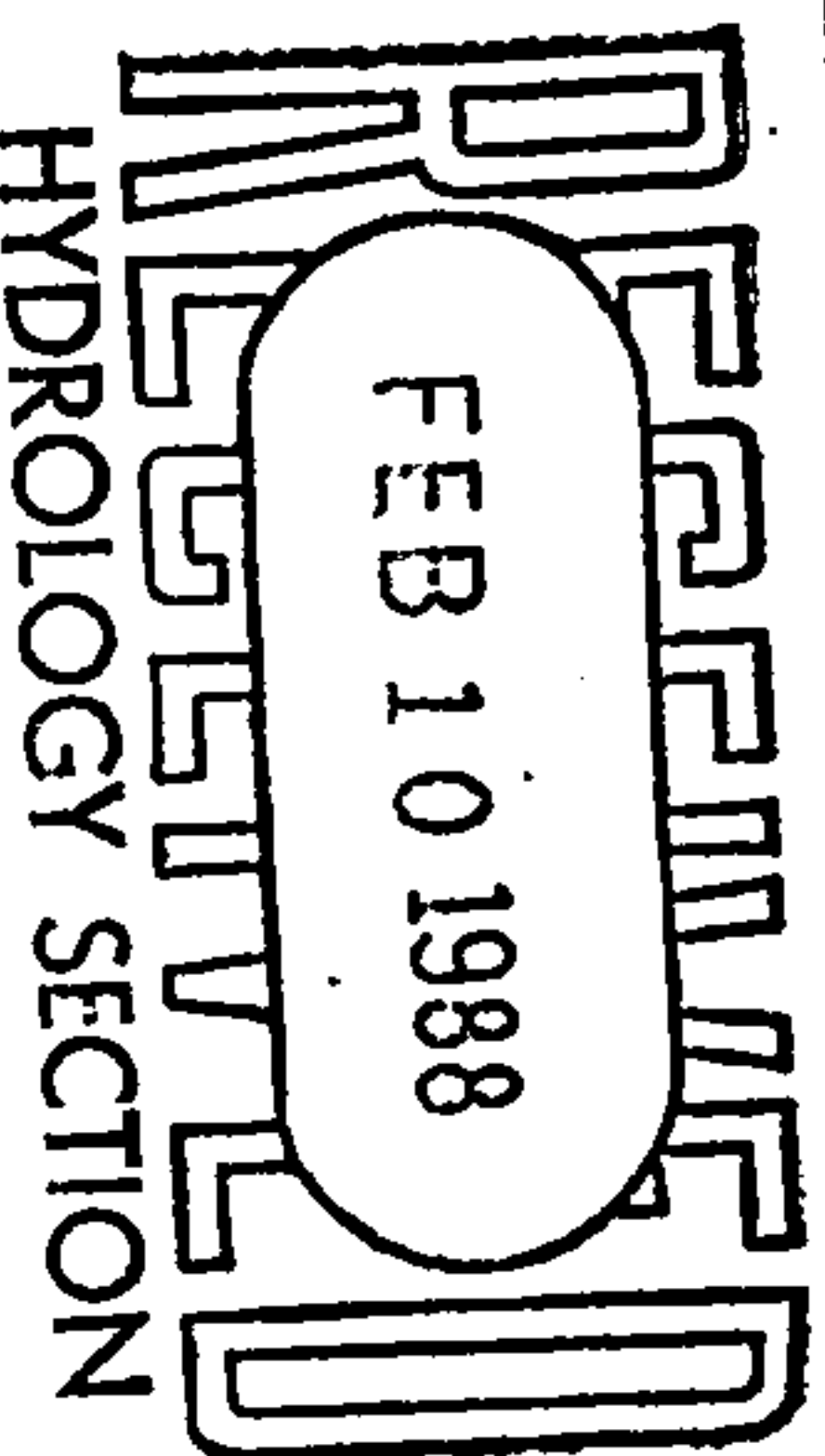
ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

PRE-DESIGN MEETING:

☒ YES

☐ NO

☒ COPY OF CONFERENCE  
 RECAP SHEET PROVIDED



DRB. NO. 87-781

EPC NO. \_\_\_\_\_

PROJECT NO. \_\_\_\_\_

TYPE OF SUBMITTAL: CHECK TYPE OF APPROVAL SOUGHT:

☒ DRAINAGE REPORT \_\_\_\_\_ SECTOR PLAN APPROVAL

☐ DRAINAGE PLAN \_\_\_\_\_ SKETCH PLAT APPROVAL

☐ CONCEPTUAL GRADING & DRAIN PLAN ☒ PRELIMINARY PLAT APPROVAL

☐ GRADING PLAN \_\_\_\_\_ SITE DEVELOPMENT PLAN APPROVAL

☐ EROSION CONTROL PLAN \_\_\_\_\_ FINAL PLAT APPROVAL

☐ ENGINEER'S CERTIFICATION \_\_\_\_\_ BUILDING PERMIT APPROVAL

\_\_\_\_\_ FOUNDATION PERMIT APPROVAL

\_\_\_\_\_ CERTIFICATE OF OCCUPANCY  
 APPROVAL

\_\_\_\_\_ ROUGH GRADING PERMIT APPROVAL

\_\_\_\_\_ GRADING/PAVING PERMIT APPROVAL

\_\_\_\_\_ OTHER \_\_\_\_\_ (SPECIFY)

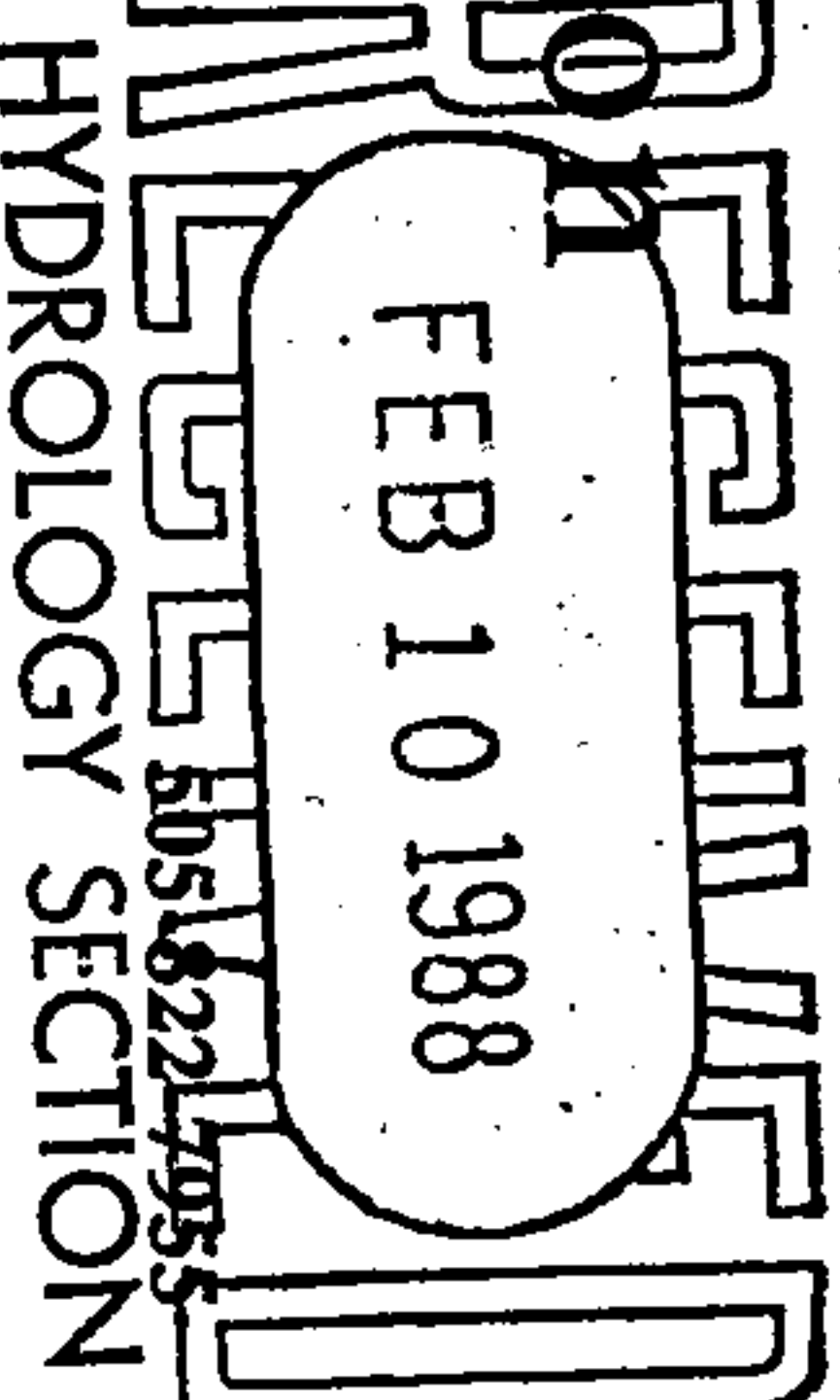
DATE SUBMITTED: 2-10-88

BY: Mike Kibbee

DMJM/ Adam, Hamlyn, Anderson

Reply To: ☐ Albuquerque, NM 87109

5700 Harper Dr., NE, Suite 280



## LETTER OF TRANSMITTAL

TO: City of Albuquerque

Hydrology

ATTN:

DATE:

2-9-88

PROJECT NO.

6376.00

PROJECT:

Vista Nueva Drainage Report

WE TRANSMIT:

(☒) herewith (☐) under separate cover via  
(☐) in accordance with your request

FOR YOUR:

(☒) approval  
(☒) review & comment  
(☒) use

(☐) distribution to parties  
(☐) record  
(☐) information

THE FOLLOWING:

(☐) prints  
(☐) originals  
(☐) shop drawings

(☐) copy of letter  
(☐) specifications  
(☐) change order  
(☐) calculations

| Copies | Dwg. No. | DESCRIPTION                | Action Code |
|--------|----------|----------------------------|-------------|
| 1      |          | Drainage Information Sheet |             |
| 1      |          | DRB Findings               |             |
| 1      |          | Drainage Report            |             |
|        |          |                            |             |
|        |          |                            |             |

Action Code    A. REVIEWED    D. REJECTED  
                  B. REVIEWED AS NOTED    E. See REMARKS below  
                  C. REVISE & RESUBMIT

REMARKS:

COPIES TO:

SIGNED:

Mike Kibbee

If enclosures are not as noted,  
please inform us immediately.

CITY OF ALBUQUERQUE  
MUNICIPAL DEVELOPMENT DEPARTMENT  
ENGINEERING DIVISION/DESIGN HYDROLOGY SECTION

CONFERENCE RECAP

DRAINAGE FILE/ZONE ATLAS PAGE NO.:

M-10/DSA

DATE:

11-4-87

PLANNING DIVISION NOS: EPC:

DRB:

S-87-36 U-87-75

SUBJECT:

Roseland - Albuquerque South

STREET ADDRESS (IF KNOWN):

Sapphire & Kinola

SUBDIVISION NAME:

Tract A & C of Albuquerque South Unit 1

APPROVAL REQUESTED:

☒ PRELIMINARY PLAT

☒ FINAL PLAT

☐ SITE DEVELOPMENT PLAN

☐ BUILDING PERMIT

☐ OTHER

☐ ROUGH GRADING

WHO

REPRESENTING

ATTENDANCE:

Rick Simmons

Proslav, Hines

Mike Kibbae

DMJM

Sake Baradaran

DMJM

Roger Green

City Hydrology

FINDINGS:

- (1) An approved Preliminary Drainage Plan is required with a final detail to identify all required infrastructure. A final Detail Grading and Drainage Plan is required prior to signing a Final Plat or waterline construction Plans. (2) Since Plat was a B. Deland Varner, there may be downstream infrastructure requirements which must be built or financed by owner too with this proposed subdivision. Temporary improvements to the maintenance easements may be used in accordance with the approved tentative Grading and Drainage Plan. File No. M-10/75. Refer to previous pre-design dated 5-4-87 for B. Deland Plat. (M-10) (3) Plat must be taken across Union to the Arido Del Norte Division Channel & O.U. with permanent improvements to the Channel and temporary to the Arido del Norte. (4) Final Drainage Plan & Report must be prepared detail for a Final Map Amendment. Submitted will be forwarded to FEMA by City Hydrology. The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

SIGNED:

Rick Simmons

SIGNED:

Mike Kibbae

TITLE:

Final Grading

TITLE:

Div. Man.

DATE:

11-4-87

DATE:

11/4/87