

FILE COPY


## MEMORANDUM:

April 30, 1987



ENGINEERING GROUP

TO: John Kelly, Storm Drain Maintenance Section

FROM: Roger A. Green, Utility Development Division; Hydrology Section 

SUBJECT: PUBLIC DETENTION POND, NE CORNER OF SAGE ROAD AND WEST SKY STREET,  
WESTVIEW TOWNHOUSES (M-9/D1)

---

Attached is a copy of the Drainage and Maintenance Agreement for Westview Townhouses. This agreement makes the developer responsible for maintenance, not the City. Construction of Phase II is proceeding and I felt that you need to be aware of this detention pond.

Attachment

RAG/bsj

FILE COPY



## City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Ken Schultz  
Mayor

UTILITY DEVELOPMENT DIVISION  
HYDROLOGY SECTION  
(505) 768-2650

April 30, 1987

Lee Bell  
DMJM  
5700 Harper Drive, NE Suite 280  
Albuquerque, New Mexico 87109

RE: GRADING PLAN SUBMITTAL OF WESTVIEW TOWNHOMES RECEIVED APRIL 17,  
1987 FOR PAVING AND WORK ORDER APPROVAL (M-9/D1)

Dear Lee:

The above referenced submittal dated April 17, 1987, is approved for  
Hydrology sign-off of the Work Order construction drawings.

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

Cordially,

*Roger A. Green, P.E.*

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

cc: Andre Houle, DRC

RAG/bsj

PUBLIC WORKS DEPARTMENT

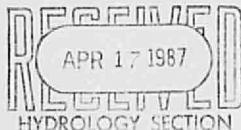
Walter Nickerson, P.E., City Engineer

ENGINEERING GROUP

Telephone (505) 768-2500

AN EQUAL OPPORTUNITY EMPLOYER

**DMJM**



April 17, 1987

Mr. Roger Green  
Design Hydrology Section  
City of Albuquerque  
P. O. Box 1293  
Albuquerque, New Mexico 87102

Dear Mr. Green:

The attached grading plan reflects a change of (.71') in the bench mark for this subdivision. This change keeps the elevations shown at Albuquerque datum. Some adjustments were made to the profile grades to match Phase one construction. No change is being made to the drainage concept. The storm water detention pond at the intersection of West Sky Street and Sage Road will remain as constructed with Phase one. The pad elevations shown on this grading plan are from a field survey by D.M.J.M. in February, 1987. No site grading will be necessary to build this subdivision.

If you have any questions, please call.

Thanks,

Lee Bell

LB:cs

Attachments

Daniel, Mann, Johnson, & Mendenhall  
Suite 280, 5700 Harper Drive, N.E.  
Albuquerque, New Mexico 87109  
Telephone: 505/822-7955

Planning  
Engineering  
Systems  
Economics

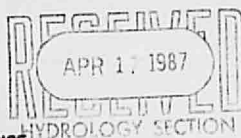
# DRAINAGE INFORMATION SHEET

PROJECT TITLE: Westview Townhomes ZONE ATLAS/DRAINAGE FILE # M9-D1  
 LEGAL DESCRIPTION: WESTVIEW TOWNHOMES ADDITION VOL. C-17 FOLIO 6-1-2  
 CITY ADDRESS: N/A  
 ENGINEERING FIRM: DMJM CONTACT: Lee Bell  
 ADDRESS: 5700 Harper Dr., N. E., Suite 280 PHONE: 822-7955  
 OWNER: Suncor Enterprises, Inc. CONTACT: Griff Pickard  
 ADDRESS: 3811 Atrisco Dr., N. W. PHONE: 884-3300  
 ARCHITECT: N/A CONTACT: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_  
 SURVEYOR: N/A CONTACT: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_  
 CONTRACTOR: N/A CONTACT: \_\_\_\_\_  
 ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

## PRE-DESIGN MEETING:

\_\_\_\_ YES  
X NO

\_\_\_\_ COPY OF CONFERENCE  
 RECAP SHEET PROVIDED



DRB NO. \_\_\_\_\_  
 EPC NO. \_\_\_\_\_  
 PROJECT NO. \_\_\_\_\_

## TYPE OF SUBMITTAL:

\_\_\_\_ DRAINAGE REPORT  
 \_\_\_\_ DRAINAGE PLAN  
 \_\_\_\_ CONCEPTUAL GRADING & DRAIN PLAN  
X GRADING PLAN  
 \_\_\_\_ EROSION CONTROL PLAN  
 \_\_\_\_ ENGINEER'S CERTIFICATION

## CHECK TYPE OF APPROVAL SOUGHT:

\_\_\_\_ SECTOR PLAN APPROVAL  
 \_\_\_\_ SKETCH PLAT APPROVAL  
 \_\_\_\_ PRELIMINARY PLAT APPROVAL  
 \_\_\_\_ SITE DEVELOPMENT PLAN APPROVAL  
 \_\_\_\_ FINAL PLAT APPROVAL  
 \_\_\_\_ BUILDING PERMIT APPROVAL  
 \_\_\_\_ FOUNDATION PERMIT APPROVAL  
 \_\_\_\_ CERTIFICATE OF OCCUPANCY APPROVAL  
 \_\_\_\_ ROUGH GRADING PERMIT APPROVAL  
X GRADING/PAVING PERMIT APPROVAL  
 \_\_\_\_ OTHER \_\_\_\_\_ (SPECIFY)

DATE SUBMITTED: April 12, 1987

BY: Lee Bell



85 64666

AGREEMENT AND GRANT OF  
TEMPORARY  
DRAINAGE EASEMENT

#1222

M9/01

501

This Agreement and Grant of Drainage Easement is made and executed this 6<sup>th</sup> day of August, 1985, by and between SUNCOR ENTERPRISES, INC. (hereinafter referred to as "Grantors"), and the City of Albuquerque, New Mexico, a municipal corporation (hereinafter referred to as "Grantee").

WHEREAS, Grantors are the owners and lawfully seized of certain real property located within the Westview Townhomes Addition, a Sub-division within BERNALILLO COUNTY, NEW MEXICO, and more particularly described as follows:

Tract 'X' WESTVIEW TOWNHOMES ADDITION as designated on the PLAT of said addition filed in the Office of County Clerk, BERNALILLO COUNTY, NEW MEXICO, on July 3, 1980 in VOL: C17, FOLIO: 6-1-2;

and

WHEREAS, Grantee wishes to use said property for the detention of public drainage waters; and

WHEREAS, Grantors are agreeable to the contemplated use of the property;

NOW, THEREFORE, IN CONSIDERATION of the above and for other good and valuable consideration, receipt of which is acknowledged, the parties hereby agree as follows:

1. Grantors hereby give, grant, and convey to Grantee an easement upon and across the above-described property for the purpose of the detention of public surface drainage waters, together with the right to enter said property to inspect the easement property as necessary and the further right to remove, at Grantors' expense, any obstacles which interfere with the use and operation of the property as a public drainage water detention reservoir. The maintenance responsibility is solely that of the grantor.

2. Grantors have constructed drainage reservoir and facilities in accordance with standards, plans, and specifications as prescribed and approved by the City and the construction has been approved by the City. Grantors shall at all times maintain a ponding volume of not less than FIFTY THOUSAND (50,000) cubic feet, and comply with all drainage conditions depicted on the attached Exhibit A.

3. The Grantors agree to defend, indemnify, and hold harmless, the Grantee, its officials, agents, and employees from and against any and all claims, actions, suits, or proceedings of any kind brought against said parties for or on account of any matter arising from the drainage facility provided for herein or the Grantors' failure to construct, maintain, or modify the drainage facility under this Agreement and including but not limited to the storm drain system draining the detention pond. Grantee shall not be liable for any damages accruing to Grantors resulting from the construction, maintenance or modification of said public drainage reservoir.

4. This Agreement and the property rights granted herein shall remain in full force and effect until released in writing by Grantee. It is understood and agreed that the maintenance of said drainage facility is contemplated only so long as conditions require it, it being contemplated that the facility will be replaced by permanent storm sewer facilities included in the City's Master Plan for drainage for that area. When the facility is so replaced, this Agreement and the property rights granted herein will be released by an instrument in writing. If prior to the installation of such permanent facilities as contemplated by the Master Plan or any substitute therefor, the Grantors demonstrate to the reasonable satisfaction of the Grantee that downstream conditions warrant the release of this Agreement and the property rights granted herein, Grantee agrees to release this Agreement and all property rights granted herein by separate instrument.

5. The terms "Grantor" and "Grantee" include their respective successors in interest to their rights in the easement property. All provisions of this easement, including the benefits and burdens, run with the land and are binding upon and inure to the benefit of the successors in interest of the parties hereto.

EXECUTED this 6<sup>th</sup> day of August, 1985.

504

GRANTORS:

SUNCOR ENTERPRISES, INC.

BY: [Signature]  
H. Griffin Pickard, Jr.  
President

GRANTEE:

CITY OF ALBUQUERQUE

BY: [Signature] 8-2-85  
Bob V. Stover  
Chief Administrative  
Officer

RECOMMENDED:

[Signature] 7/26/85  
C. Dwayne Sheppard  
City Engineer

APPROVED AS TO FORM:

[Signature]  
Assistant City Attorney

ATTEST:

[Signature]  
City Clerk

Approved As To Form  
[Signature]  
City Attorney  
Date: 7/31/85

ACKNOWLEDGEMENTS

505

STATE OF NEW MEXICO )  
COUNTY OF BERNALILLO ) ss.

The foregoing instrument was acknowledged before me this  
16th day of July, 1985, by H. Griffin Pickard Jr.,  
President of SUNCOR ENTERPRISES, INC.

John Tatman  
Notary Public



OFFICIAL SEAL  
JOHN TATMAN  
NOTARY PUBLIC STATE OF NEW MEXICO  
Notary Bond Filed with Secretary of State  
My Commission Expires: 5/3/87

MY COMMISSION EXPIRES:

5/3/87

STATE OF NEW MEXICO )  
COUNTY OF BERNALILLO ) ss.

The foregoing instrument was acknowledged before me this  
2nd day of August, 1985, Bob V. Stover, Chief Admini-  
strative Officer of the City of Albuquerque.

John P. Stant  
Notary Public

MY COMMISSION EXPIRES:

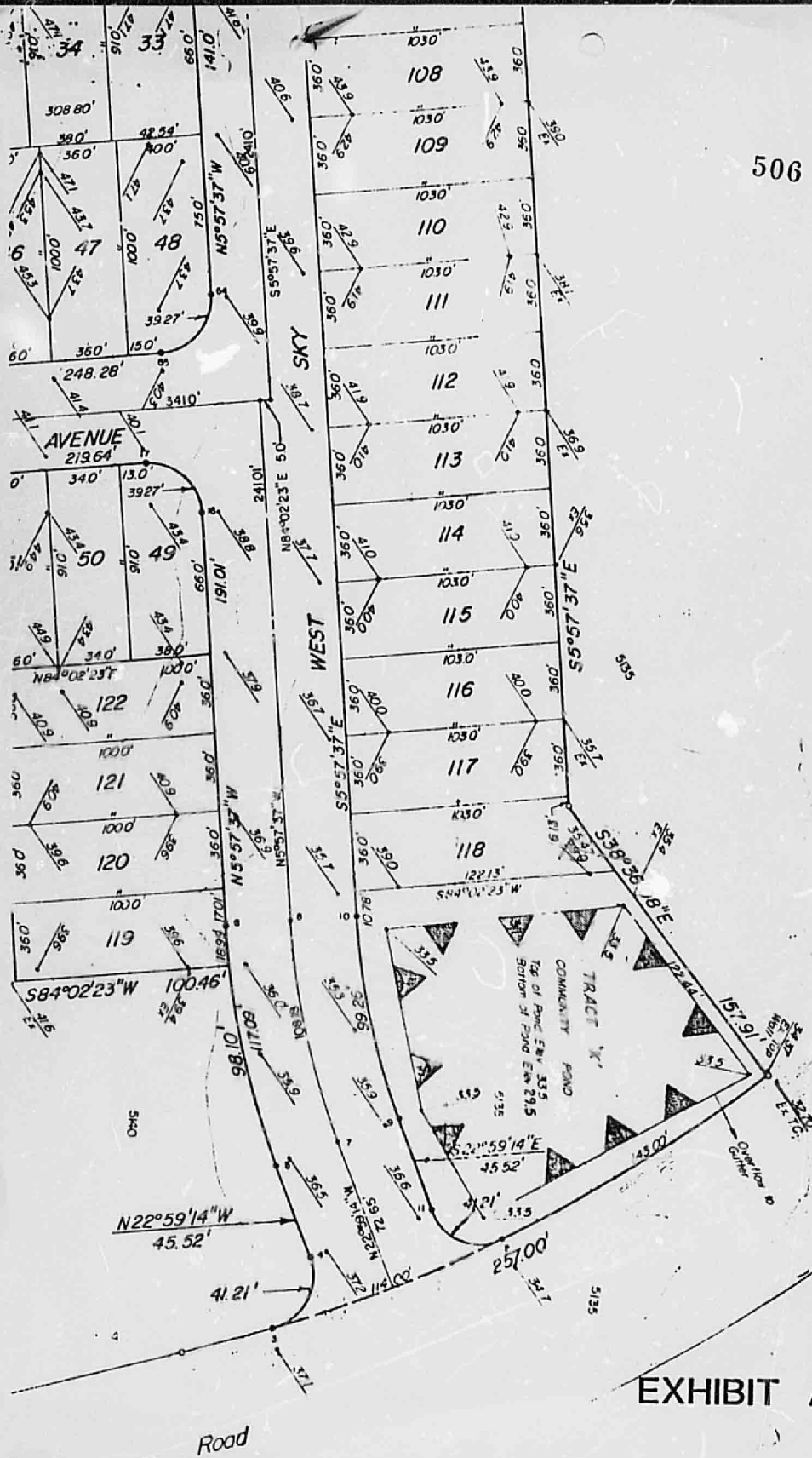
12-18-88

STATE OF NEW MEXICO  
COUNTY OF BERNALILLO  
FILED FOR RECORD

1985 AUG -6 AM 10:32

011-357A-500-505

CHIEF S. C. WALLER  
RECORDED  
(5) DEPUTY





## City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

DESIGN HYDROLOGY SECTION  
123 Central NW, Albuquerque, NM 87102  
(505) 766-7644

June 13, 1985

Mr. Charles Burm  
DMJM/Adam, Hamlyn, Anderson  
5700 Harper Drive NE, Suite 280  
Albuquerque, NM 87109

REF: REVISED DRAINAGE PLAN AND DETAILS FOR WESTVIEW TOWNHOMES (M9-D1)  
RECEIVED MAY 17 & JUNE 11, 1985

Dear Mr. Burm:

I have reviewed the above referenced submittals and do hereby give approval for drainage.

Please attach the appropriate copies to the construction set for Hydrology sign-off.

It is understood that the appropriate language is included in the required Subdivision Improvements Agreement for the detention pond maintenance responsibility (developers).

Should you have any questions or comments, please call me at 766-7644.

Cordially,

Billy J. Goolsby, PE  
Civil Engineer/Hydrology

BJG:mrk

### MUNICIPAL DEVELOPMENT DEPARTMENT

C. Dwayne Sheppard, P.E., City Engineer

ENGINEERING DIVISION

Telephone (505) 766-7467

AN EQUAL OPPORTUNITY EMPLOYER

## DRAINAGE INFORMATION SHEET

PROJECT TITLE: WESTVIEW TOWNHOMES ZONE ATLAS/DRNG. FILE #: M-9 D-1

LEGAL DESCRIPTION: WESTVIEW TOWNHOMES ADDITION VOL. C-17 FOLIO: 6-1-2

CITY ADDRESS: \_\_\_\_\_

ENGINEERING FIRM: DMJM CONTACT: CHARLES BURM

ADDRESS: 5700 HARPER DRIVE, N.E., SUITE 280 PHONE: 822-7955

OWNER: GRIFF PICKARD & ASSOCIATES CONTACT: \_\_\_\_\_

ADDRESS: 2701 SAN PEDRO, N. E. PHONE: \_\_\_\_\_

ARCHITECT: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

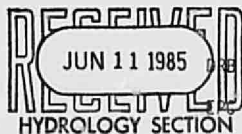
SURVEYOR: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

PRE-DESIGN MEETING:

☒ YES☐ NO

PRE NO. \_\_\_\_\_

REV NO. \_\_\_\_\_

☐ COPY OF CONFERENCE RECAP  
SHEET PROVIDED

PROJ. NO. \_\_\_\_\_

## TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
- ☒ DRAINAGE PLAN *As-built Details*
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☐ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION

## CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SKETCH PLAT APPROVAL
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ SITE DEVELOPMENT PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY APPROVAL
- ☐ ROUGH GRADING PERMIT APPROVAL
- ☐ GRADING/PAVING PERMIT APPROVAL
- ☒ OTHER *Work Order* (SPECIFY)

DATE SUBMITTED: 6-11-85BY: Charles Burm



# DMJM/ Adam, Hamlyn, Anderson

Reply To: ☐ Phoenix, Arizona 85014  
☒ Albuquerque, NM 87109

4751 North Fifteenth Street  
5700 Harper Dr. N.E., Suite 280

602-264-1397  
505-822-7955

## LETTER OF TRANSMITTAL

TO: City of Alb.  
Design Hydrology

ATTN: Mr. Billy Goolsby

DATE: <u>6-11-85</u>	PROJECT NO. <u>4690-02-01</u>
PROJECT: <u>Westview Townhomes</u>	
<u>M-9 D-1</u>	

### WE TRANSMIT:

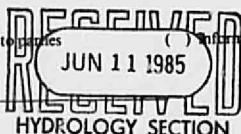
- ☒ herewith ( ) under separate cover via \_\_\_\_\_  
( ) in accordance with your request \_\_\_\_\_

### FOR YOUR:

- ☒ approval ( ) distribution to parties ( ) information  
( ) review & comment ( ) record  
( ) use ( ) \_\_\_\_\_

### THE FOLLOWING:

- ☒ prints ( ) copy of letter ( ) change order  
( ) originals ( ) specifications ( ) calculations  
( ) shop drawings ( ) \_\_\_\_\_



Copies	Dwg. No.	DESCRIPTION	Action Code
1		Sheet 8 of 14	E
1		Sheet 9 of 14	E

Action Code

- A. REVIEWED  
B. REVIEWED AS NOTED  
C. REVISE & RESUBMIT

- D. REJECTED  
E. See REMARKS below

REMARKS: These are the Cast Details for the inlet & outlet  
to the pond.  
Water Resources signed off on the plans 6-10-85 and Hydrology  
is the only department required now for work order

COPIES TO: \_\_\_\_\_

If enclosures are not as noted,  
please inform us immediately.

SIGNED: Charles Hamlyn

# CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE

June 6, 1985

REF. NO. \_\_\_\_\_

TO: Adelia Kearny; City Attorney

FROM: Fred J. Aguirre, P.E., Design Hydrologist; Design Hydrology Section

SUBJECT: TEMPORARY EASEMENT - WESTVIEW TOWNHOMES (M-9/D1)

Attached herewith for your review and comments is temporary easement that was requested by this office for approval of a work order. The following is some history for your information:

1. The proposed development has been subdivided.
2. Upon drainage improvements downstream, the easements can be vacated.
3. The grantor will be responsible for the maintenance of the easement until easement has been vacated.

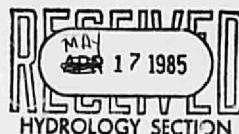
If you have any questions, please call me at 766-7644.

FJA/bsj

**DMJM/Adam, Hamlyn, Anderson**

May 17, 1985

City of Albuquerque  
MDD/Engineering  
Design Hydrology Section  
P. O. Box 1293  
Albuquerque, NM 87103



ATTN: Mr. Fred Aquirre

RE: Westview Townhomes - Revised Drainage Calculations  
M9-01  
DMJM No. 4690-02-01

Dear Mr. Aquirre:

Transmitted herewith are the following:

1. One (1) copy of the Drainage Design Calculations to update the Approved Drainage Report for the referenced project.
2. One (1) copy of the Grading Plan.
3. One (1) copy of the Drainage Sub-basins with the Analysis Points shown.
4. One (1) copy of April 3, 1985 conference recap.

The drainage calculations are per the criteria established in the April conference. The pond was sized to handle the 100 year 6 hr. storm with the discharge rate not to exceed the five (5) year undeveloped flow.

The power line channel has been extended to I-40 thus reducing the drainage areas to the west. FHA criteria will require a solid wall along the subdivision boundry providing additional protection along 98th Street and San Ygnacio Road.

The drainage design provides adequate protection for the subdivision and the detention pond provides for a substantial reduction in the peak developed discharge from the site.

If there are any questions, please call.

Sincerely,

Charles Burm

Attachments

A Division of  
Daniel, Mann, Johnson, & Mendenhall

Suite 280  
5700 Harper Drive, N.E.  
Albuquerque, New Mexico 87109  
Telephone: 505/822-7955

Planning  
Engineering  
Systems  
Economics

# DRAINAGE INFORMATION SHEET

PROJECT TITLE: WESTVIEW TOWNHOMES ZONE ATLAS/DRNG. FILE #: M-9 D-1

LEGAL DESCRIPTION: WESTVIEW TOWNHOMES ADDITION VOL. C-17 FOLIO: 6-1-2

CITY ADDRESS: \_\_\_\_\_

ENGINEERING FIRM: DMJM CONTACT: CHARLES BURM

ADDRESS: 5700 HARPER DRIVE, N.E., SUITE 280 PHONE: 822-7955

OWNER: GRIFF PICKARD & ASSOCIATES CONTACT: \_\_\_\_\_

ADDRESS: 2701 SAN PEDRO, N. E. PHONE: \_\_\_\_\_

ARCHITECT: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

SURVEYOR: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_ CONTACT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_

## PRE-DESIGN MEETING:

☒ YES DRB NO.       

☐ NO EPC NO.       

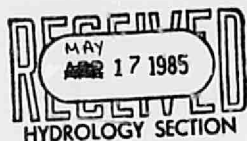
☒ COPY OF CONFERENCE RECAP SHEET PROVIDED PROJ. NO.       

## TYPE OF SUBMITTAL:

- ☒ DRAINAGE REPORT
- ☐ DRAINAGE PLAN
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☐ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION

## CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SKETCH PLAT APPROVAL
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ SITE DEVELOPMENT PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY APPROVAL
- ☐ ROUGH GRADING PERMIT APPROVAL
- ☐ GRADING/PAVING PERMIT APPROVAL
- ☒ OTHER Subdivision Improvement (SPECIFY)



DATE SUBMITTED: 5-17-85

BY: Charles Burm

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

HYDROLOGY SECTION PROJECT NO.: M9-D1 DATE: 4/3/85  
PLANNING DIVISION NOS. EPC: \_\_\_\_\_ DRB: \_\_\_\_\_

CONFERENCE RECAP

SUBJECT: M9-D1 WESTVIEW TOWNHOMES

APPROVAL REQUESTED:

\_\_\_\_ PRELIMINARY PLAT \_\_\_\_\_ FINAL PLAT  
\_\_\_\_ SITE DEVELOPMENT PLAN \_\_\_\_\_ BUILDING PERMIT  
☒ REENTRY WORK/DRAINAGE REPORT \_\_\_\_\_ ROUGH GRADING

WHO

REPRESENTING

ATTENDANCE: JOSE BORRERO \_\_\_\_\_  
FRED J. AGUIRRE \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

FINDINGS: (1) POND MUST BE DESIGNED FOR THE 100YR 6HR STORM WITH AN ALLOWABLE DISCHARGE RATE NOT TO EXCEED A 5YR UNDEVELOPED RATE. (2) POND TREATMENT REQUIRED TO ELIMINATE STAGNANT WATER WITHIN THE POND. (3) POND MAINTENANCE WILL BE THE RESPONSIBILITY OF THE DEVELOPER UNTIL SUCH TIME THAT IMPROVEMENTS DOWNSTREAM ELIMINATE THE NEED FOR THE POND. UPON IMPROVEMENTS DOWNSTREAM THE CITY WILL ALLOW VACATION OF THE EASEMENT/R/W. HOWEVER CONNECTION TO THE SYSTEM WILL BE THE ~~RESPONSIBILITY~~ RESPONSIBILITY OF THE DEVELOPER. (4) FENCING REQUIRED FOR POND DEPTHS EXCEEDING 18". (5) AN AGREEMENT WILL BE REQUIRED TO ESTABLISH MAINTENANCE AND LIABILITY ~~FOR~~ RESPONSIBILITY FOR THE POND'S MAINTENANCE.

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: Fred Aguirre SIGNED: J. Borrero  
TITLE: \_\_\_\_\_ TITLE: \_\_\_\_\_  
DATE: 4/3/85 DATE: 4/3/85

\*\*NOTE\*\* PLEASE PROVIDE A COPY OF THIS RECAP WITH THE DRAINAGE SUBMITTAL



GORDON HERKENHOFF & ASSOCIATES, INC.

302 Eighth Street, N.W.  
Albuquerque, New Mexico 87102

(505) 247-0294

June 4, 1980

m 9-01

Mr. Quentin R. Keilich  
Assistant City Engineer-Design  
Engineering Division  
Municipal Development Department  
City Hall  
400 Marquette Avenue N.W.  
Albuquerque, New Mexico 87102

RE: ENGINEERING DRAWINGS  
WESTVIEW TOWNHOMES SUBDIVISION

Dear Bob:

Transmitted herewith please find one (1) set of the partially completed referenced drawings as the preliminary set to initiate our request for processing this subdivision.

As was agreed in the meeting on May 20th in the Traffic Engineer's Conference Room with Messrs. Walker, Heller, Fosnaugh, Conegliano, Mann, Whitman, Campbell, yourself, and myself present, Mr. Walker of Buttrum Construction Co. will finance the survey and a proposed street profile design for 98th Street (Snow Vista Blvd.) from the north boundary of the Mobile Home Park to the existing curb and gutter at the northwest corner of Westgate Heights Unit No. 2, so that the street design for 98th St. adjacent to the referenced subdivision can be incorporated into the final set of drawings for the subdivision. Survey information will also be furnished on Sage Road between the intersection with 98th Street and the southwest corner of Westview Townhomes to provide information for the final design of Sage Road in this reach together with the temporary Sage - 98th intersection modification agreed upon to ensure turning surface flows south along the existing flood control dike following the westerly right of way of Snow Vista Blvd. south of Sage Road to outfall in the Amole Arroyo.

In our meeting on the site on May 21st you and I agreed to the aforementioned required extent of the survey together with some vertical positioning and alignments for 98th Street which will be incorporated into our profile design. Also, we agreed to the basic design criteria regarding the temporary design for rerouting surface flows to the south at the Sage - 98th intersection.

Mr. Quentin R. Keilich  
Page 2

June 4, 1980

The accompanying set of plans is complete excepting sheet 7 which includes the 98th Street Design and the pond drain design, and sheet 12 which included general and drainage appurtenance details. As we agreed, we are submitting this set of plans in order to expedite the processing while surveying and design work on 98th Street and Sage Road are proceeding.

If anything further is required, please advise us.

Very truly yours,



J. E. PINO

JEP:er

Encl. 1

cc: Richard Heller  
City Engineer

Bruno Conegliano  
Asst. City Engineer-Hydrology

Max Walker  
Buttrum Construction Co.



**GORDON HERKENHOFF & ASSOCIATES, INC.**  
302 Eighth Street, N.W.  
Albuquerque, New Mexico 87102  
(505) 247-0294

May 28, 1980

79-01  
**RECEIVED**  
MAY 28 1980  
CITY ENGINEER

Mr. Richard Heller  
City Engineer  
Municipal Development Department  
Public Works Division  
P.O. Box 1293  
Albuquerque, New Mexico 87103

RE: MAINTENANCE OF COMMUNITY POND, WESTVIEW TOWNHOMES

Dear Mr. Heller:

Pursuant to our brief discussion on May 27th, we are submitting this correspondence as our request, on behalf of Buttrum Construction Company, to the City of Albuquerque to provide Buttrum with a letter stating that the City does hereby agree to maintain the community pond, shown as Tract "X" on the plat of Westview Townhomes Addition. As you are aware, Buttrum will require this letter in order to assure FAA financing on Westview.

I appreciate your aid in this matter. Should you have any questions please feel free to contact myself or Mr. Max Walker of Buttrum.

Sincerely,

*Charles W. Campbell*

CHARLES W. CAMPBELL

CWC:pd

cc: Max Walker

ESH <i>PSA</i>	ADM _____
PRO <i>AKO</i>	SUR _____
CDS _____	COUN _____
DES _____	SEC _____
INSP _____	<b>FILE</b> _____
HYDRO _____	RETURN _____

*Coordinate  
the response*

*Response*  
by June 5, 1980





**GORDON HERKENHOFF & ASSOCIATES, INC.**

302 Eighth Street, N.W.  
Albuquerque, New Mexico 87102  
(505) 247-0294

May 5, 1980

RECEIVED

MAY 02 1980

CITY ENGINEER

109-D1

Mr. Bruno Conegliano  
Assistant City Engineer, Hydrology  
City Engineering Division  
Municipal Development Department  
City Hall  
400 Marquette Avenue, N.W.  
Albuquerque, New Mexico 87102

RE: DRAINAGE REPORT - WESTVIEW TOWNHOMES

Dear Mr. Conegliano:

Please refer to your letter dated April 25, 1980 (received in this office on May 1, 1980) regarding the referenced subject and the unofficial draft copy of the proposed City Engineer's Interim Drainage Guidelines obtained from your office on May 2, 1980.

In response to the four items of concern expressed in your letter, we comment as follows:

1. The approval of our preliminary plat through the Subdivision Review Board was given on March 11, 1980. We immediately arranged for a meeting with Mr. Fosnaugh, City Traffic Engineer, to discuss the requirements for the development of Snow Vista Blvd. (98th Street) and the intersection with Sage Road. This meeting was held on March 24, 1980, and it was resolved that the requirements for this street would require consultation among several City Divisions and Departments. This consultation has been in progress ever since that time, and we have actively pursued its resolution. The Right of Way requirements were determined, and a summary plat indicating the dedication has been filed for record. No other determination has been finalized.
2. The statement from our drainage report eluding to "Structural Treatment Equivalent to the Existing Curb" means specifically that if permanent requirements for the street can be ascertained and the obligation for their construction can be allocated to this project, then the existing curb will be extended or a new curb will be installed in accord with the determination; however, if this resolution cannot be made then a temporary ditch-dike provision will be constructed to protect the subdivision.
3. We have performed extensive field surveillance and have studied contour maps and aerial photographs of this area, and it is our considered opinion that even large flows from Areas 2 and 3 will be directed toward the intersection of Sage Road and 98th Street. Our reasoning for this conclusion is predicated principally upon two pertinent observations: namely  
1) The orientation of all natural major drainage swales in that area is in a southeasterly direction normal to contours, and the development of this

May 5, 1980

magnitude of flow will quickly develop the existing highly erosive soil material into channels oriented in this direction; and 2) The existing gradients along any walls or development in conjunction with the mobile home park will orient impinging flows in a southerly direction, and, even in the event of some structural failures in these facilities, resultant flows will still tend in that direction. While any estimate in this regard is speculative, we believe that lots within this subdivision would not be in the ultimate alignment of any resultant outflow. A recent examination of the interim and final drainage concepts proposed in conjunction with the development of the land within drainage areas 2 and 3 indicate that runoff generated will be accumulated at the southeast corner of the development which further indicates the natural tendency for drainage orientation toward that intersection.

4. We have perused the City Engineer's Interim Drainage Guidelines, and have applied the criteria set forth to this subdivision. As you are undoubtedly aware, the ponding requirements are more than doubled and permissible outflow is almost halved with respect to values previously derived utilizing acceptable hydrologic data in conjunction with the stipulations set forth in Drainage Resolution 1972-2. Utilizing these guidelines, a pond with a volume of approximately 73,700 cubic feet would be required, and a pond seven feet deep in the location and configuration indicated on the attached rough grading plan can fulfill that requirement. An 18-inch diameter outflow pipe terminated in a curb inlet 300 feet downstream in Sage Road with the inlet grate at the elevation of the bottom of the pond would discharge a maximum of 14 C.F.S. which is equivalent to the permissible 14.80 C.F.S. generated during the 10 minute, 5 year storm in the undeveloped area. Routing through the pond was not performed in order to facilitate this response.

Attached please find one (1) print each of the proposed Rough Grading Plan and the Subdivision Tract Map for your information in reviewing this presentation.

Please advise us regarding your position relative to approving the plat for this subdivision at your earliest possible convenience. If any additional information is required, please advise us.

Very truly yours,



J. E. PINO

JEP:pd  
Enclosures (2)

cc: Max Walker

## CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE

April 29, 1980

REF. NO. \_\_\_\_\_

TO: Richard S. Heller, City Engineer  
FROM: Bruno Conegliano, Assistant City Engineer/Hydrology *B.C.*  
SUBJECT: North Towne Office Park

I have made the approval of the drainage report for the referenced development contingent upon your approval of the treatment for the roadway of Cueblo Dr.

I have done so because I feel we have some problems with the requirements for the treatment of the streets that surround parcels coming in for development. The existing procedure to ask for one half street construction, oftentimes with only temporary pavement, is not a satisfactory method to control the runoff.

I'd like to recall the development of Sunset West and the treatment San Ygnacio Rd. The fact that the street cross section may be able to convey the local runoff, does not necessarily reflect the capabilities of the systems downstream: in this case, Academy Blvd., in the case of Sunset West, Sage Rd.

It is the position of the Consultants that their investigation of downstream City's facilities is out of order and an impossible burdened to bear. In a way, this question is related to my memo of April 24, 1980; a method needs to be devised to establish what is the minimum acceptable level of improvements for the downstream facilities. This question has bearing for instance, on the approval of the Country Squire Subdivision and on the treatment of Sage Rd. In the case of the captioned development, I wonder if it is not time to initiate some design for improvements of the conditions in Academy Blvd. given the development of Tanoan, of lands of Gary Swearingner and of Dr. Edwards.

Can you make this topic a subject of discussion at the next staff meeting?

BC/lc



## City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 25, 1980

Chuck Campbell  
Gordon Herkenhoff &  
Associates, Inc.  
302 Eight Street, N.W.  
Albuquerque, New Mexico 87102

M9-D1

Reference: Westview Townhomes Drainage Report

Dear Mr. Campbell:

I have reviewed the drainage report for the referenced development and my comments are as follows:

1. The drainage report does not discuss what will be the ultimate design of 98th St. and Sage Rd., nor who will build said ultimate roadway in the proximity of this parcel.
2. In the introduction on Page 1, the 4th sentence states "Structural treatment equivalent to the existing curb will be required to provide temporary protection for the remainder of the west side to the northwest corner of the tract." The extent and location of these provisions must be clarified.
3. In the event of a failure of the block walls around and along the Mobile Home Park adjacent to 98th St., in the absence also of the proposed AMAFCA diversion, wouldn't the flows from areas 2 & 3 on Exhibit A, potentially affect this parcel before they reach the intersection of Sage and 98th St.? Particularly since the drainage report estimates the potential discharge in 469 cfs, and talks of massive sheet flow.
4. According to the interim drainage guidelines published by the City Engineer's Office, the ponding requirement has been defined as that necessary to contain the developed runoff volume for the 100 yr. frequency storm with a maximum allowable discharge rate equivalent to the 5 yr. undeveloped flow. Test cases have shown that this approach allows the emptying of the ponding area in 3-4 hrs., the City would like to have this approach followed by this development as well.

### MUNICIPAL DEVELOPMENT DEPARTMENT

Richard S. Heller, P.E., City Engineer

ENGINEERING DIVISION


Telephone (505) 766-7467

Chuck Campbell  
4/25/80  
Page 2

I am enclosing a recommended methodology to be followed in the design of the detention area, with an example of the required inflow-outflow determination.

If you have any questions on the above, please don't hesitate to contact me.

Very truly yours,



Bruno Conegliano  
Assistant City Engineer/Hydrology

BC/lc  
encl.

xc: Richard Leonard, AMAFCA  
Richard Heller, City Engineer ✓



GORDON HERKENHOFF & ASSOCIATES, INC.  
302 Eighth Street, N.W.  
Albuquerque, New Mexico 87102  
(505) 247-0295

695-1651.34-80

April 4, 1980

*M9-D1*

Mr. Bruno Conegliano  
Assistant City Engineer-Hydrology  
Municipal Development Department  
City of Albuquerque  
City Hall  
400 Marquette Avenue N.W.  
Albuquerque, New Mexico 87102

RECEIVED

APR 07 1980

CITY ENGINEER


RE: DRAINAGE REPORT WESTVIEW TOWNHOMES

Dear Mr. Conegliano:

Attached please find three (3) copies of the referenced report for your review.

We will appreciate it very much if you can expedite this review, so that we can proceed with construction drawings.

Very truly yours,

  
J. E. PINO  
JEP:er

Encl: 3

cc: Max Walker, Buttrum Construction

FEB 7 1980 *sup***buttrum construction co.**

757 98th Street, SW Suite 807

Albuquerque, New Mexico 87105

(505) 831-2505

February 6, 1980

Mr. Gerald D. Davenport  
Director  
Municipal Development Department  
P.O. Box 1293  
Albuquerque, New Mexico 87103

*Ma-DI*

RE: WESTVIEW TOWNHOMES-WESTGATE HEIGHTS AREA-DRAINAGE

Dear Mr. Davenport:

Our Engineer, Mr. Charles Campbell of Gordon Herkenhoff and Associates, has informed me that Mr. Conegliano and Mr. Charles Johnston have indicated the referenced subdivision will not be approved due to drainage problems.

This issue greatly concerns me and I would like to schedule a meeting with yourself, Mr. Heller, Mr. Conegliano and Mr. Leonard to resolve these problems. I will be in Albuquerque from Phoenix on Thursday, February 14th and would ask that you please schedule a meeting for that date. I am sending copies of this letter to the aforementioned parties and would ask that they also place this on their schedules. I will direct Mr. Campbell to call early in the week to reaffirm the meeting.

Should you have any questions, please feel free to contact Mr. Campbell or our local office.

Sincerely,

*Max Walker*

Max Walker  
MW:er

cc: Mr. Richard Heller  
Mr. Bruno Conegliano  
Mr. Richard Leonard

# CITY OF ALBUQUERQUE

ALBUQUERQUE, NEW MEXICO

INTER-OFFICE CORRESPONDENCE

November 26, 1979

REF. NO. *existing*

TO: Gene Mares, Planner

FROM: Bruno Conegliano, Assistant City Engineer, Hydrology *B.C.*

SUBJECT: Comments on Vacation-Subdivision-Annexations  
Actions due November 26, 1979

V-79-50

Refer to Comments by City Engineer.

AX-79-29

Z-79-150

Absence of drainage outfall facilities requires full retention of all the runoff generated by this site. Site planning must incorporate this requirement: possibly reservation of part of the site as a community pond may be necessary.

AX-79-30

Z-79-156

Defer to AMAFCA comments for approval of the zone change request. Proposal must not adversely affect the Mariposa Detention requirements. Property bound along the South by the proposed drainage channel and by the Mariposa Retention Basin. Request that dedication of the master planned R.O.W., be dedicated on the plat for this development. Necessary drainage easements and conveyance facilities must also be reserved for the Mariposa North Channel, and for the outfall from the Homestead Hills Subdivision.

Z-79-149

Development proposal should be reviewed by M.R.C.C.D., Western portion of property inside the 10 and 100 year flood area (see attachment.) Development may not displace the water accumulating on the site onto others, and in the absence of drainage outfall facilities 100% runoff retention must be provided.



Gene Mares

Page 2

S-79-53

Development in the Westgate Area has occurred in the absence of drainage facilities to collect, convey, and safely dispose of the drainage and flood flows. Make shift solutions such as that provided for the Sunset West Subdivision and the several units of the Westgate Development, are not consistent with an organic approach to the provision of a fundamental utility such as drainage. It is incumbent on the City to provide this, as well as other utilities in order to achieve the orderly development of the community. An equitable assessment procedure for the construction of the necessary drainage facilities must also be devised to prevent excess future demand on public resources or private contributions. The present approach does not provide for order, equity, or protection of the properties.

With specific referenced to the captioned, subdivision action, a drainage report must be submitted, addressing the present flooding conditions before construction of the A.M.A.F.C.A. facilities to the West. In particular protective measures must be established along Sage Road. The drainage report must also be prepared recognizing the existing infiltration capabilities of the soils as reported in the Bernalillo County soil maps. It must be demonstrated that no increase in runoff will result after Development for all storm conditions. This requirement is established on the basis of the absence of drainage facilities East of the Westgate Development. Community ponding may be required, as an interim measure to achieve the goals stipulated above. At the time of the construction of the drainage network required to service the Westgate Area, this development will be assessed a "prorata" share of the construction costs. In return, the size of the required community pond will be reviewed, possibly reduced, with the excess land returned to the developer. Attention must also be paid to the collection of the offsite water generated by the land South of 94th Street through this Subdivision.

The Engineer for the Development is requested to contact my office before preparation of the drainage report.

BC/lc

cc: Laurence Frishman, City Planner  
File

ENGINEER'S REPORT ON  
STORM DRAINAGE  
FOR WESTVIEW TOWNHOMES

INTRODUCTION: This subdivision area situates on a natural island between two ephemeral drainage swales, and existing upstream development has not apparently jeopardized the natural protection from flooding. Some diverted drainage will affect the Sage Road S.W. entrance, and some special design requirements are indicated at that intersection. Existing curb and gutter on the southerly portion of 98th Street S.W. (Snow Vista Boulevard S.W.) on the west side of the tract will adequately channel the small area of local runoff contributing to the street and will protect the subdivision from flows reaching the street. Structural treatment equivalent to the existing curb will be required to provide temporary protection for the remainder of the west side to the northwest corner of the tract. Final construction of 98th Street will provide permanent protection. Several drainage areas west of the tract between the drainage interceptor dike approximately one mile west of 98th Street on the alignment of the Bureau of Reclamation Electric Power Transmission Line and 98th Street will contribute runoff to Sage Road affecting access to this tract from the south. The Drainage Management Plan Western Albuquerque Area prepared for the Albuquerque Metropolitan Arroyo Flood Control Authority (A.M.A.F.C.A.) proposed a diversion facility approximately 1150 feet west of and parallel to 98th Street which would intercept a majority of that runoff, and would direct it to the Amole Arroyo on the south. A more recent study of this urban watershed has suggested alternative locations for the major diversion channel, but, even if the location of the major facility is changed, it will be necessary during the local development of the area to provide for interception and for outfall of the same drainage areas in a similar location.

and manner. Therefore, ultimate development of drainage facilities to the west will insure access to the tract from the south, and, coupled with the natural protected location, this should provide for a relatively secure location with respect to storm runoff.

PURPOSE: The purpose of this report is to present information and proposals regarding the management of storm runoff relating to this tract.

DESCRIPTION OF THIS SITE AND PROJECT: The site consists of a 14.6 acre tract which situates at the northeast corner of Sage Road and 98th Street S.W. between San Ygnacio Road S.W. on the north and Sage Road S.W. on the south and between 98th Street S.W. on the west and Sunset West Subdivision Unit 1 on the east. (see vicinity map)

The site will be subdivided into 122 lots for two unit townhouses. The design size for lots for individual units is 30 to 36 feet by 91 feet excluding space occupied by rear yard embankments. Each unit is anticipated to have a roof area of 1300 square feet including the single car garage.

Existing development in the immediate area consists of a mobile home park across 98th Street on the west and a single family subdivision under construction on the east.

HYDROLOGY AND HYDRAULICS: A study was made of available mapping and information together with field examination in order to ascertain the conditions relating to offsite storm runoff. The topographic map in Appendix A depicts those findings. Indications are that prior to development of the mobile home park west of the tract across 98th Street, storm drainage accumulations flowed in a southeasterly direction in existing ephemeral drainage swales north and south of the tract without eroding into the tract area. It is believed that the

construction of the mobile home park did not substantially alter this expectation, and the larger scale (1" = 200') orthophoto-contour map in Appendix B clearly indicates the general orientation of a majority of the offsite drainage toward the intersection of Sage Road and 98th Street S.W. Some minimum capacity formal drainage facilities were constructed within the mobile home park, but those would only suffice for very small storms. Runoff from a storm of the magnitude of the 100 year frequency event would accumulate flows at the southeast corner until possible structural failure of the park concrete block wall would release the impoundment. Other structural failures of the block wall surrounding the park would be possible during such a storm, however a close examination of the facility indicates that flows would continue to be directed toward the southeast corner and subsequently the street intersection. The anticipated flow from the 100 year frequency storm accumulated at the intersection of Sage Road and 98th Street S.W. is 469 cubic feet per second (C.F.S.), and it is believed that existing constructed facilities would cause this to result in massive sheetflow. Close examination of the map in Appendix B indicates that such a flow would be divided with the large portion following a southeasterly alignment normal to contours. The small ephemeral channel scoured by discharge from existing constructed drainage improvements existing on the north side of Sage Road will intercept some of this sheetflow. It is estimated that approximately one-fourth of the total with a maximum of 150 C.F.S. can be expected to utilize this channel under the most adverse conditions. This channel will direct flows onto the proposed new pavement section of Sage Road, and a four foot deep cutoff wall will be constructed at the beginning of the pavement to ensure maintenance of the integrity of the constructed section proposed. A 12 inch high straight curb and gutter section will be utilized in order to improve the hydraulic capacity of the street, and a temporary pavement section will be designed at the intersection with

the south subdivision entrance street connection to existing Sage Road pavement to provide for accommodating the anticipated flow within the new street until permanent upstream facilities are installed to relieve this problem. This development is adjacent to Sage Road only at the south entrance street intersection and the ponding area, therefore no hazard exists to habitable properties. This partial street construction will terminate on the east into the constructed partial street for Sunset West Subdivision Unit 1.

Offsite flows anticipated on the west side of the subdivision tract would be quite easily handled in the existing section of 98th Street extended north to San Ygnacio approximately 400 feet. San Ygnacio Road on the north is located on a topographic ridge, therefore no offsite flows will enter the street from the north or from 98th Street. 98th Street has a potential of receiving some overflow from the mobile home park from a flume through the east block wall near the San Ygnacio intersection, and the total anticipated rate of flow expected in the street near the southwest corner of subdivision during a 100 year frequency storm is 60 C.F.S. The existing street section or its equivalent channel section will handle approximately 114 C.F.S.

The subdivision will be graded to drain entire lot areas to the streets without on-lot ponding, and the street system will accumulate runoff and will discharge it into a community ponding area at the southeast corner of the tract (see Grading Concept Contour Map in Appendix I). This concept complies with Drainage Resolution 1972-2 as well as recent City suggestions. A small outlet pipe will be provided to drain the pond into the street through a curb opening downstream in Sage Road.

The gross developed area excluding those adjacent street areas which do not contribute drainage (San Ygnacio, 98th Street, and Sage Road S.W.) and excluding the ponding area is 14.22 acres. All onsite computations relating to drainage are shown in Appendix H. The anticipated rate of onsite runoff generated by the 100 year frequency storm prior to development is 26 C.F.S., and the volume of runoff expected is 45,219 cubic feet. (C.F.). The comparable quantities anticipated after development are a rate of 59 C.F.S. and a volume of 79,483 C.F. To comply with the dictates of Drainage Resolution 1972-2, a maximum discharge rate of 26 C.F.S. is permissible and a pond volume of 34,064 C.F. is required.

The maximum rate of flow to be expected in a 32 foot wide residential street within the tract is 45 C.F.S. for the 100 year frequency storm, and this would produce a flow 6 inches deep at the curb face in the standard street section. The total flow anticipated in the 40 foot wide entrance street is the 59 C.F.S. developed rate, and this would be handled with less than a depth of 7 inches at the curb face in a standard street section. Total street capacity for standard street sections of the 32 foot street is 95 C.F.S. and of the 40 foot street is 104 C.F.S.

Detention will be accomplished by diverting surface flows from the street into a pond on the parcel of land in the southeast corner of the subdivision. Drainage regulations coupled with the mechanics of managing the ponding of drainage dictate that the total runoff must be channeled through the pond. A six inch diameter pipe drain will be provided to control the discharge emptying the entire pond volume through a curb outlet at a maximum rate of less than 2 C.F.S. The overflow spillway will be through a concrete underwalk-curb opening discharge flume with a maximum rate of flow of 24 C.F.S. In order to comply with all requirements, it will be necessary to impound more than the excess volume generated by development, thus the runoff from the 25 year-6 hour

precipitation will be detained below the floor elevation of the overflow discharge flume. The top area of the pond will be approximately 19,500 square feet, and the depth will be about 5 feet utilizing 3:1 side slopes.

RECOMMENDATION: It is recommended that the City of Albuquerque approve this report, since it does provide for adequate site protection together with adhering to the requirements set forth in drainage regulations.

Although the anticipated flows on Sage Road S.W. are not a threat to proposed development in this tract and have only a minor affect on one entrance, it is recommended that the City give careful consideration to temporarily modifying the intersection of 98th Street (Snow Vista Boulevard) and Sage Road S.W. (Gibson Boulevard) to ensure that storm runoff accumulated at that point will be positively directed south to the dike constructed along Snow Vista Boulevard S.W. for that purpose to provide outfall to the Amole Arroyo. It is believed that such a temporary modification would not interfere with traffic at this four way stop intersection, and, pending construction of the proposed A.M.A.F.C.A. facility(ies) upstream, this would afford protection to a substantial already inhabited area together with relieving street flows in several developing and proposed subdivisions by channelizing the runoff to its ultimate discharge point in the Amole Arroyo.

**ENGINEER'S REPORT**

1651.34

**ON**

**STORM DRAINAGE**

**FOR**

**WESTVIEW TOWNHOMES**



**GORDON HERKENHOFF & ASSOCIATES, INC.**

302 Eighth Street, N.W.

Albuquerque, New Mexico 87102

**ENGINEERS**

**ARCHITECTS**

**PLANNERS**



ENGINEER'S REPORT

1651.34

ON

STORM DRAINAGE

FOR

WESTVIEW TOWNHOMES

RECEIVED  
APR 07 1980  
CITY ENGINEER



**GORDON HERKENHOFF & ASSOCIATES, INC.**

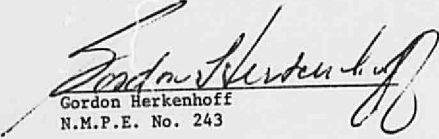
302 Eighth Street, N.W.  
Albuquerque, New Mexico 87102

**ENGINEERS**

**ARCHITECTS**

**PLANNERS**

I hereby certify that this Drainage Report for Westview Townhomes was prepared under my direction, conforms to Drainage Resolution 1972-2 and City of Albuquerque Resolution No. 59-1976, and is true and correct to the best of my knowledge and belief.

  
Gordon Herkenhoff  
N.M.P.E. No. 243

Date

3-31-80

Approved:



\_\_\_\_\_  
For the City of Albuquerque



N  
Scale: 1"=1000'

VICINITY MAP:  
WESTVIEW TOWNHOMES  
ALBUQUERQUE, NEW MEXICO

ZONE ATLAS SHEETS  
L-9-Z & M-9-Z

ENGINEER'S REPORT ON  
STORM DRAINAGE  
FOR WESTVIEW TOWNHOMES

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and manner. Therefore, ultimate development of drainage facilities to the west will insure access to the tract from the south, and, coupled with the natural protected location, this should provide for a relatively secure location with respect to storm runoff.

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The gross developed area excluding those adjacent street areas which do not contribute drainage (San Ygnacio, 98th Street, and Sage Road S.W.) and excluding the ponding area is 14.22 acres. All onsite computations relating to drainage are shown in Appendix H. The anticipated rate of onsite runoff generated by the 100 year frequency storm prior to development is 26 C.F.S., and the volume of runoff expected is 45,219 cubic feet. (C.F.). The comparable quantities anticipated after development are a rate of 59 C.F.S. and a volume of 79,483 C.F. To comply with the dictates of Drainage Resolution 1972-2, a maximum discharge rate of 26 C.F.S. is permissible and a pond volume of 34,064 C.F. is required.

The maximum rate of flow to be expected in a 32 foot wide residential street within the tract is 45 C.F.S. for the 100 year frequency storm, and this would produce a flow 6 inches deep at the curb face in the standard street section. The total flow anticipated in the 40 foot wide entrance street is the 59 C.F.S. developed rate, and this would be handled with less than a depth of 7 inches at the curb face in a standard street section. Total street capacity for standard street sections of the 32 foot street is 95 C.F.S. and of the 40 foot street is 104 C.F.S.

Detention will be accomplished by diverting surface flows from the street into a pond on the parcel of land in the southeast corner of the subdivision. Drainage regulations coupled with the mechanics of managing the ponding of drainage dictate that the total runoff must be channeled through the pond. A six inch diameter pipe drain will be provided to control the discharge emptying the entire pond volume through a curb outlet at a maximum rate of less than 2 C.F.S. The overflow spillway will be through a concrete underwalk-curb opening discharge flume with a maximum rate of flow of 24 C.F.S. In order to comply with all requirements, it will be necessary to impound more than the excess volume generated by development, thus the runoff from the 25 year-6 hour



precipitation will be detained below the floor elevation of the overflow discharge flume. The top area of the pond will be approximately 19,500 square feet, and the depth will be about 5 feet utilizing 3:1 side slopes.

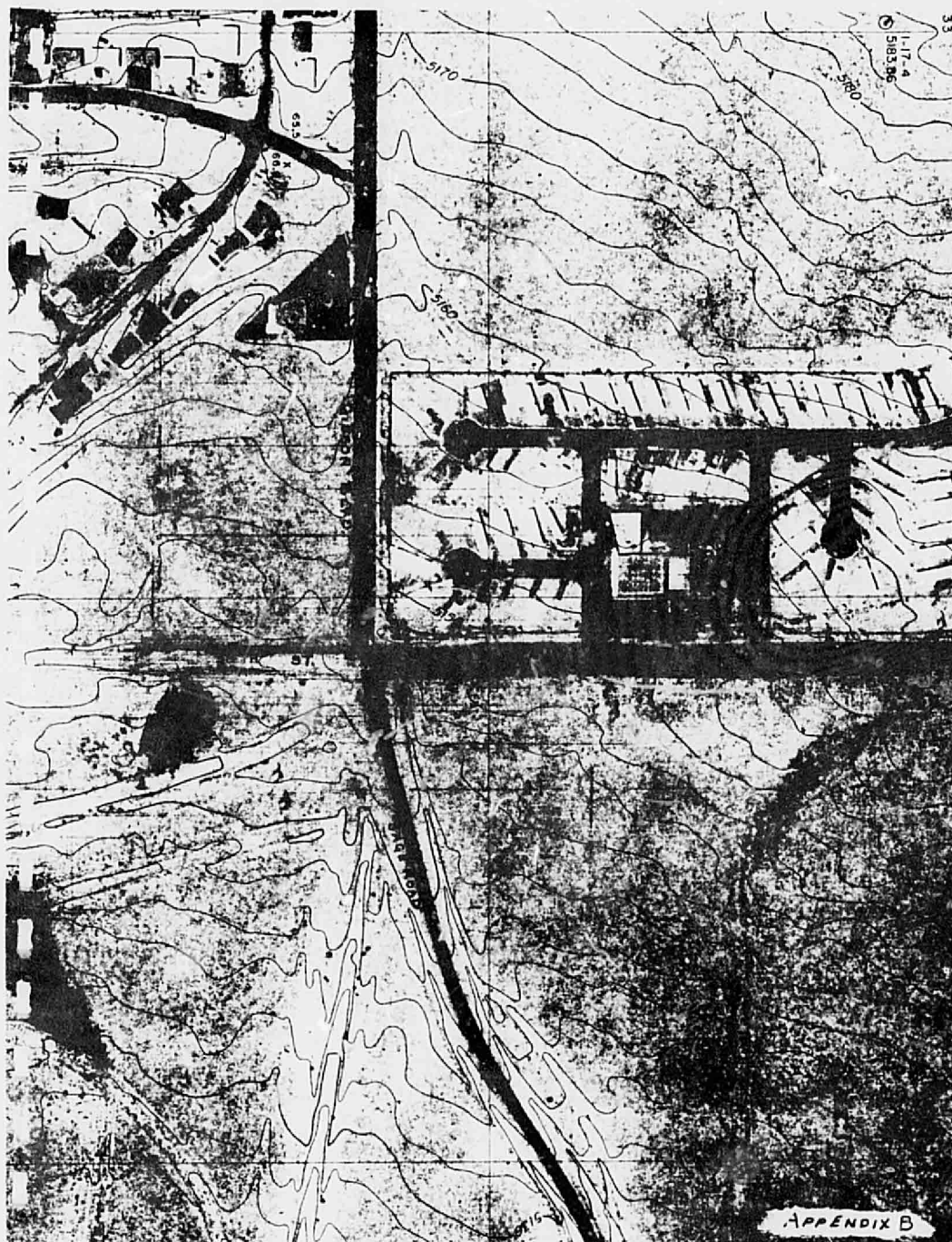
RECOMMENDATION: It is recommended that the City of Albuquerque approve this report, since it does provide for adequate site protection together with adhering to the requirements set forth in drainage regulations.

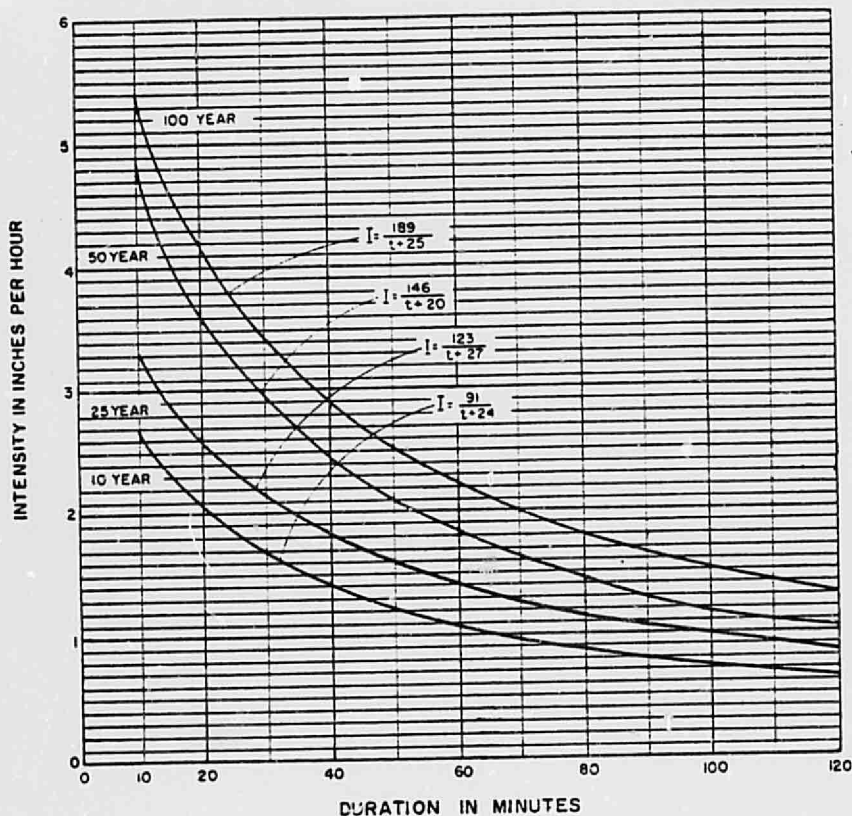
Although the anticipated flows on Sage Road S.W. are not a threat to proposed development in this tract and have only a minor affect on one entrance, it is recommended that the City give careful consideration to temporarily modifying the intersection of 98th Street (Snow Vista Boulevard) and Sage Road S.W. (Gibson Boulevard) to ensure that storm runoff accumulated at that point will be positively directed south to the dike constructed along Snow Vista Boulevard S.W. for that purpose to provide outfall to the Amole Arroyo. It is believed that such a temporary modification would not interfere with traffic at this four way stop intersection, and, pending construction of the proposed A.M.A.F.C.A. facility(ies) upstream, this would afford protection to a substantial already inhabited area together with relieving street flows in several developing and proposed subdivisions by channelizing the runoff to its ultimate discharge point in the Amole Arroyo.

## APPENDIX INDEX

- Appendix A - Presentation Topographic Map
- Appendix B - Orthophoto-Contour Map of Area in the Vicinity of The Intersection of Sage Road (Gibson Blvd.) and 98th Street (Snow Vista Blvd.) S.W.
- Appendix C - Intensity-Duration-Frequency Curves  
Albuquerque, New Mexico 1961
- Appendix D - Nomograph to Determine Time of Concentration (California Culvert Practice)
- Appendix E - Soil Conservation Service Chart Indicating Average Velocities for Estimating Travel Time for Overland Flow
- Appendix F - American Society of Civil Engineers Chart of Coefficients of Runoff for Rational Formula Computations
- Appendix G - National Oceanic and Atmospheric Administration (NOAA) Atlas 2  
Isopluvial Map of the 100 Year - 6 Hour Precipitation for  
Bernalillo County, New Mexico
- Appendix H - Hydrologic and Hydraulic Computations
- Appendix I - Grading Concept Plan for Westview Townhomes

THIS MICROIMAGE IS THE BEST POSSIBLE  
REPRODUCTION DUE TO THE POOR QUALITY  
OF THE ORIGINAL DOCUMENT





MASTER PLAN OF DRAINAGE  
CITY OF ALBUQUERQUE - NEW MEXICO  
AND ENVIRONS

# INTENSITY DURATION FREQUENCY CURVES

(ALBUQUERQUE AREA - 1961)

GORDON HERKENHOFF & ASSOC  
CONSULTING ENGINEERS  
ALBUQUERQUE, NEW MEXICO

CHART  
1

APPENDIX C

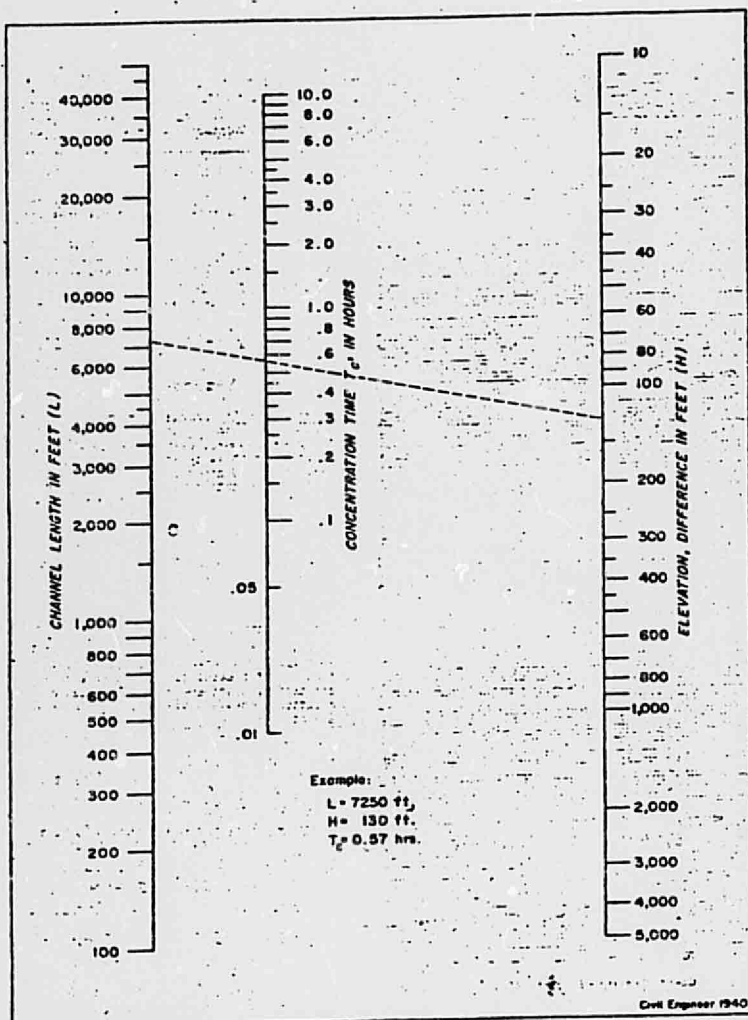
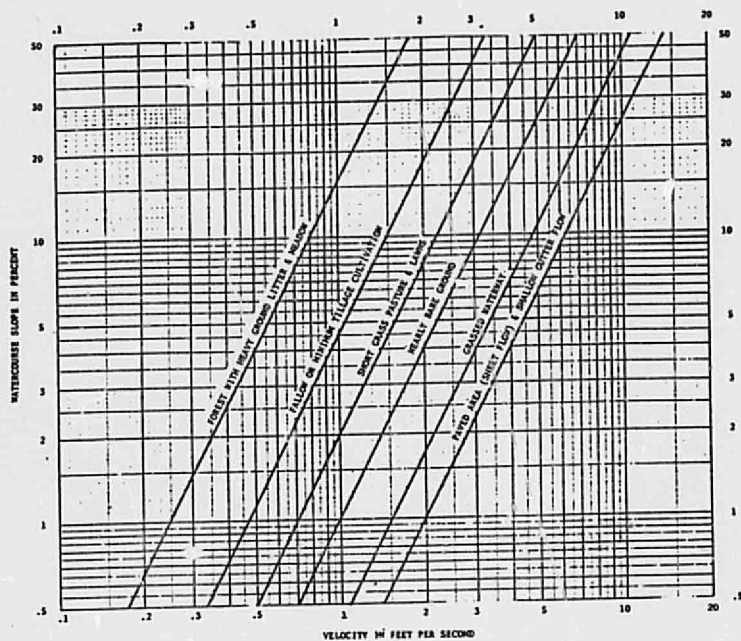


Figure 2-2 --- Nomograph to Determine Time of Concentration  
 CALIFORNIA CULVERT PRACTICE —  
 $T_c = [11.9 (L \text{ MILES})^3 / H \text{ FEET}]^{0.385}$



AVERAGE VELOCITIES FOR ESTIMATING TRAVEL TIME FOR  
OVERLAND FLOWS  
SOIL CONSERVATION SERVICE

**DESIGN AND CONSTRUCTION OF SANITARY  
AND STORM SEWERS  
A.S.C.E. - 1969  
QUANTITY OF STORMWATER**

51

storm, is common. The range of coefficients, classified with respect to the general character of the tributary area reported in use, is:

Description of Area	Runoff Coefficients
<b>Business</b>	
Downtown .....	0.70 to 0.95
Neighborhood .....	0.50 to 0.70
<b>Residential</b>	
Single-family .....	0.30 to 0.50
Multi-units, detached .....	0.40 to 0.60
Multi-units, attached .....	0.60 to 0.75
Residential (suburban) .....	0.25 to 0.40
Apartment .....	0.50 to 0.70
<b>Industrial</b>	
Light .....	0.50 to 0.80
Heavy .....	0.60 to 0.90
Parks, cemeteries .....	0.10 to 0.25
Playgrounds .....	0.20 to 0.35
Railroad yard .....	0.20 to 0.35
Unimproved .....	0.10 to 0.30

It often is desirable to develop a composite runoff coefficient based on the percentage of different types of surface in the drainage area. This procedure often is applied to typical "sample" blocks as a guide to selection of reasonable values of the coefficient for an entire area. Coefficients with respect to surface type currently in use are:

Character of Surface	Runoff Coefficients
<b>Pavement</b>	
Asphaltic and Concrete .....	0.70 to 0.95
Brick .....	0.70 to 0.85
Roofs .....	0.75 to 0.95
<b>Lawns, sandy soil</b>	
Flat, 2 percent .....	0.05 to 0.10
Average, 2 to 7 percent .....	0.10 to 0.15
Steep, 7 percent .....	0.15 to 0.20
<b>Lawns, heavy soil</b>	
Flat, 2 percent .....	0.13 to 0.17
Average, 2 to 7 percent .....	0.15 to 0.22
Steep, 7 percent .....	0.25 to 0.35

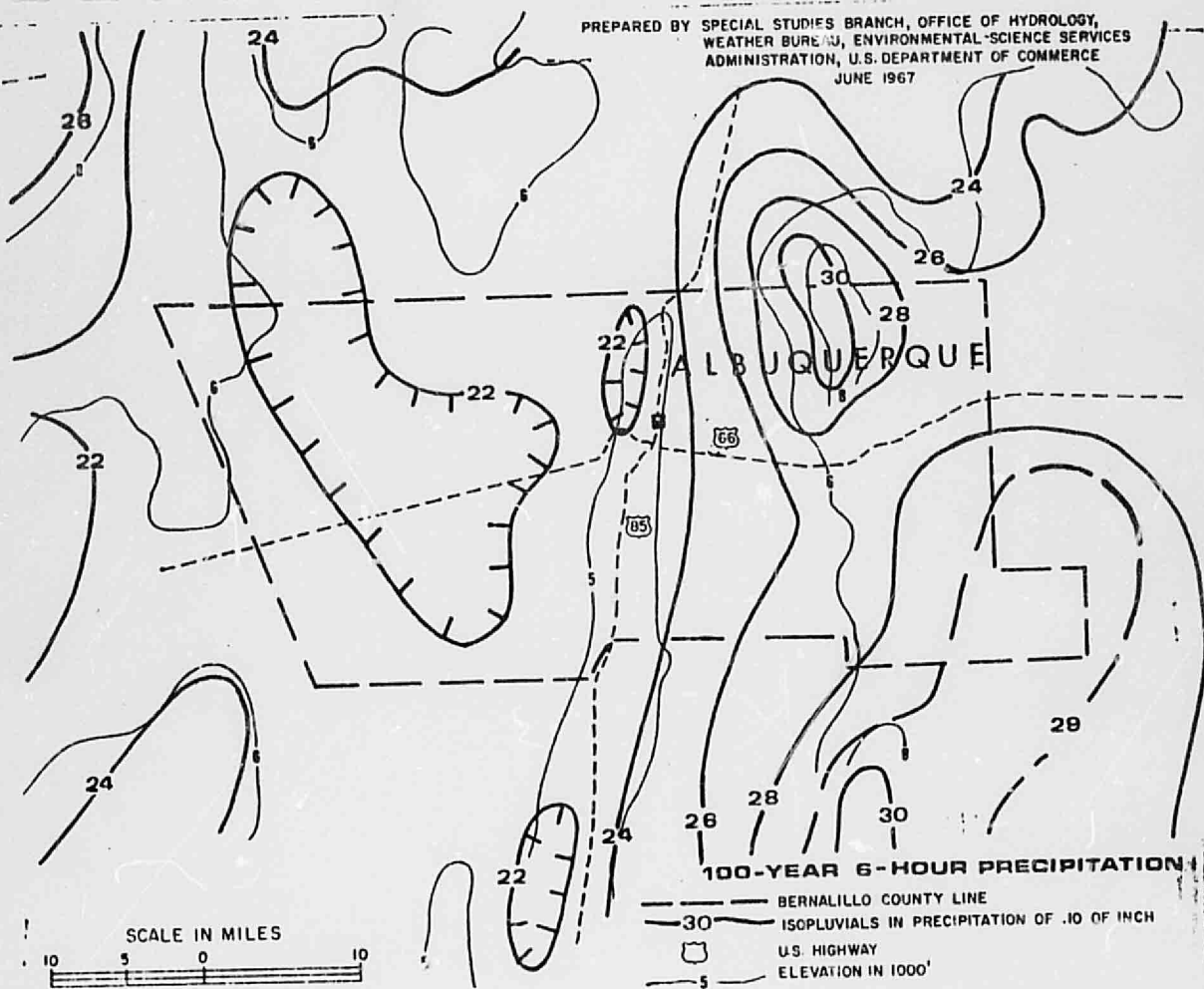
The coefficients in these two tabulations are applicable for storms of 5- to 10-yr frequencies. Less frequent, higher intensity storms will require the use of higher coefficients because infiltration and other losses have a proportionally smaller effect on runoff. The coefficients are based on the assumption that the design storm does not occur when the ground surface is frozen.

(c) **Coefficients Varying with Time.**—Figure 11 shows the variation of the runoff coefficient with respect to length of time of prior wetting,



PREPARED BY SPECIAL STUDIES BRANCH, OFFICE OF HYDROLOGY,  
WEATHER BUREAU, ENVIRONMENTAL SCIENCE SERVICES  
ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE  
JUNE 1967

APPENDIX G.







GORDON HERKENHOFF & ASSOCIATES, INC.  
302 Eighth Street, N.W.  
Albuquerque, New Mexico 87102  
(505) 247-6294  
ENGINEERING COMPUTATIONS

NAME OF PROJECT **WESTVIEW TOWNHOMES**

**HYDROLOGIC & HYDRAULIC COMPUTATION**

COMPUTED BY **P**

CHECKED BY

JOB NUMBER

SHEET NUMBER

**1 OF 5**

DATE

**3/28/90**

# **HYDROLOGY:**

**DRAINAGE FROM AREAS 1, 2, 3, 4 & MOBILE HOME PARK (APPENDIX A) -**  
AREA = 421.37 ACRES; TIME OF CONCENTRATION ( $T_c$ ) = 49.70 MINUTES  
 $I_{100} = 189 / (25 + 49.70) = 2.53$  INCHES / HOUR  
COMPOSITE RUNOFF FACTOR ( $C_{comp}$ ) -  
 $[ (DEVELOPED 49.82 \text{ AC.} \times 0.7) + (UNDEVELOPED 371.5 \text{ AC.} \times 0.4) ] / 421.37$   
 $C_{comp} = 0.44$   
 $Q_{100} = 421.37 \times 0.44 \times 2.53 = 469.07 \text{ C.F.S.}$

**FLOW 98TH STREET @ SOUTHWEST CORNER TRACT -**  
VELOCITY - 1% SHALLOW FLOW PAVED AREA = 2 F.P.S.  
 $T_c = 1600 / (2 \times 60) = 13.33 \text{ MIN.}$   
 $I_{100} = 189 / (25 + 13.33) = 4.93 \text{ IN. / HR.}$   
AREA = 3.70 (STREET) + 10.33 (MOBILE HOME PARK) = 14.03 AC.  
 $C_{comp} = [ (10.33 \times 0.75) + (3.70 \times 0.64) ] / 14.03 = 0.72$   
 $Q_{100} = 49.87 \text{ C.F.S.} (14.03 \times 4.93 \times 0.72)$   
IN THE EVENT THAT THE MOBILE HOME PARK SHOULD  
REVERT TO C1 USE - AREA = 27.55 AC @ 3.70 STREET  
 $C_{comp} = [ (27.55 \times 0.35) + (3.70 \times 0.7) ] / 31.25 = 0.39$   
(COMMERCIAL WOULD POND UNDEVELOPED FLOW)  
 $Q_{100} = 31.25 \times 4.93 \times 0.39 = 60.08 \text{ C.F.S.}$

**UNDEVELOPED AREA RUNOFF -**  
 $C = 0.40$ ; AREA = 14.22 AC. (619,345 SQ. FT.)  
 $T_c$ : TRAVEL = 1360 L.F. @ 30' VERT. FALL = 2% SLOPE  $\rightarrow$  1.4 F.P.S. VELOCITY  
 $= 1360 / 1.4 \times 60 = 16 \text{ MIN.}$   
 $I_{100} = 189 / (16 + 25) = 4.61 \text{ IN. / HR.}$   
 $Q_{100} = 14.22 \times 4.61 \times 0.40 = 26 \text{ C.F.S.}$   
 $Vol._{100} = 619,345 \times 2.2 / 12 \times 0.40 = 45,419 \text{ C.F.}$   
(N.O.A.A. C.M.R. - 100 YR. PRECIP.)

**DEVELOPED AREA RUNOFF -**  
**CONTRIBUTING AREAS -**  
HARD SURFACE STREET RIGHTS OF WAY (R.O.W.)  
 $(2,742.15 \times 41.24) + (422.64 \times 49.24) + (122 \times 10 \times 4.38 \text{ DRIVEWAYS}) = 139,241 \text{ S.F.}$   
UNPAVED AREA STREET R.O.W.  
 $(2,742.15 \times 8.76) + (4 \times 2.64 \times 10.76) = 23,225 \text{ S.F.}$   
HOUSE (ROOF & PATIO) = 1,400  $\times$  122 = 170,800 S.F.  
DRIVEWAYS = 122  $\times$  20  $\times$  10 = 24,400 S.F.  
LOT AREA (SOFT) = 261,679 S.F.  
TOTAL TRACT AREA (14.22 AC) = 619,345 S.F.  
 $C_{comp} = [ (139,241 + 170,800 + 24,400) \times 0.7 + (261,679 \times 23,225) \times 0.40 ] / 619,345$   
 $= 0.67$   
USE  $C_{comp} = 0.70$



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**2 OF 5**

DATE

**3/25/80**

# **HYDROLOGY (CONT'D):**

## **DEVELOPED AREA RUNOFF (CONT'D)-**

$$T_c = 140' \text{ Lot @ } 1.4 \text{ F.P.S.}; 1,496' \text{ STREET @ } 5.0 \text{ F.P.S.} \\ = 140/1.4 \times 60 + 1,496/5.0 \times 60 = 6.65 \text{ Min.}$$

$$I_{100} = 189/(25+6.65) = 5.97 \text{ IN./HR.}$$

$$Q_{100} = 14.22 \times 5.97 \times 0.7 = 59 \text{ C.F.S.}$$

$$\text{VOL}_{100} = 619,345 \times 2.2/12 \times 0.7 = 79,483 \text{ C.F.}$$

## **DISCHARGE RATE & PONDING VOLUME REQUIRED -** **RATE = 26 C.F.S. (UNDEVELOPED)**

### **VOLUME OF PONDING -**

$$\text{DEVELOPED VOLUME OF RUNOFF} = 79,483 \text{ C.F.}$$

$$\text{UNDEVELOPED VOLUME OF RUNOFF} = 45,419 \text{ C.F.}$$

$$\text{VOLUME DUE TO DEVELOPMENT (TO BE PONDED)} = 34,064 \text{ C.F.}$$

## **MAXIMUM FLOW EXPECTED IN 32' WIDE STREET -** **(@ INTERSECTION W/ 60' R.O.W. - NORTH SIDE)** **CONTRIBUTING AREA = 10.15 AC.**

$$T_c = 140' \text{ Lot @ } 1.4 \text{ F.P.S.} + 963' \text{ STREET @ } 5.0 \text{ F.P.S.} \\ = (140/1.4 \times 60) + (963/5.0 \times 60) = 4.88 \text{ Min.}$$

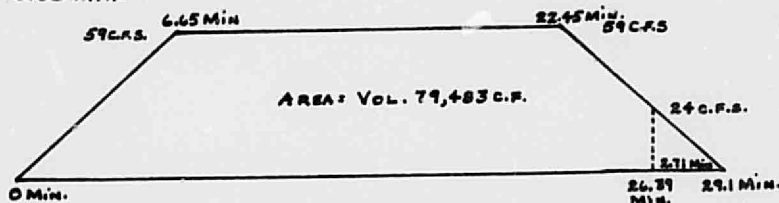
$$I_{100} = 189/(25+4.88) = 6.33 \text{ IN./HR.}$$

$$Q_{100} = 10.15 \times 6.33 \times 0.7 = 44.97 \text{ C.F.S.}$$

## **MAXIMUM FLOW EXPECTED IN 40' WIDE STREET -** **(SAME AS DEVELOPED AREA RUNOFF)** **$Q_{100} = 59 \text{ C.F.S.}$**

## **MODIFIED RATIONAL HYDROGRAPH - (DEVELOPED AREA)** **(BASED ON $Q_{DEV} = 59 \text{ C.F.S.}$ & $\text{VOLUME}_{DEV} = 79,483 \text{ C.F.S.}$ )**

$$T_c = 6.65 \text{ Min.}$$



$$\text{VOL}_{100} = 2(6.65 \times 60 \times 59/2) + (15.80 \times 59 \times 60) = 79,473 \text{ C.F.} \checkmark$$



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NAME OF PROJECT **WESTVIEW TOWNHOMES**  
**HYDROLOGIC & HYDRAULIC COMPUTATION**

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**3/28/80**

**HYDROLOGY (CONT'D):**

**MODIFIED RATIONAL HYDROGRAPH — (DEVELOPED AREA) — (CONT'D)**  
**MAXIMUM DISCHARGE PERMITTED FROM POND IS 26 C.F.S.**  
**MAX. DISCHARGE FROM FLUME = 26 C.F.S. — MAX. DRAIN DISCHARGE (2 C.F.S.)**  
**= 24 C.F.S.**

**IN ORDER TO PROVIDE FOR THE MAXIMUM PERMISSIBLE**  
**24 C.F.S. DISCHARGE THROUGH THE OUTFALL FLUME**  
**WITHOUT OVERFLOWING THE POND, A 24 C.F.S. INFLOW**  
**TO THE POND MUST BE REALIZED ON THE DESCENDING**  
**LIMB OF THE HYDROGRAPH WHEN THE POND IS FULL**

**TIME @ 24 C.F.S. =  $24/59 \times 6.65 = 2.71 \text{ MIN.}$**

**VOL. POND @ 24.39 MIN. =  $79,483 \text{ C.F.} - (2.71 \times 60 \times 24/2) =$**   
**= 77,535 C.F. (@ TOP DISCHARGE FLUME)**



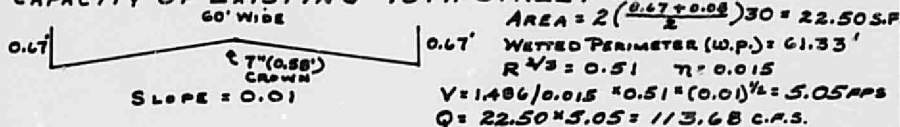
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DATE 3/28/80

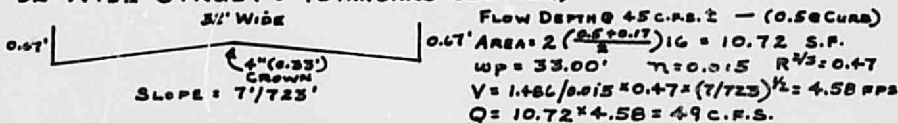
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3/28/80

# HYDRAULICS:

## CAPACITY OF EXISTING 98TH STREET:



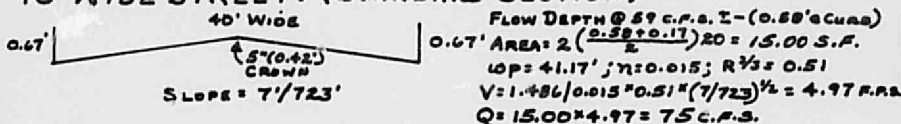
## 32' WIDE STREET: (STANDARD SECTION)



## CAPACITY (CURB FULL) -

AREA =  $2 \left( \frac{0.67 + 0.23}{2} \right) 16 = 16.00 \text{ S.F.}$   
W.P. = 33.33'  $\eta = 0.015$  ;  $R^{2/3} = 0.61$   
 $V = 1.486 / 0.015 \times 0.61 = (7/123)^{1/2} = 5.95 \text{ F.P.S.}$   
 $Q = 16.00 \times 5.95 = 95 \text{ C.F.S.}$

## 40' WIDE STREET: (STANDARD SECTION)



## CAPACITY (CURB FULL) -

AREA =  $2 \left( \frac{0.67 + 0.25}{2} \right) 20 = 18.40 \text{ S.F.}$   
W.P. = 41.33'  $\eta = 0.015$  ;  $R^{2/3} = 0.58$   
 $V = 1.486 / 0.015 \times 0.58 = (7/123)^{1/2} = 5.65 \text{ F.P.S.}$   
 $Q = 18.40 \times 5.65 = 104 \text{ C.F.S.}$

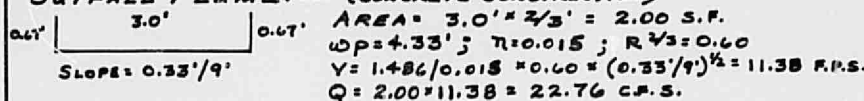
## 6" PIPE DRAIN LINE @ POND -

NO PIPE SLOPE; HEAD = 5'; LENGTH = 250'

$S = \frac{V^2}{2g} + 0.01 \left( \frac{250}{0.5} \right) \left( \frac{V^2}{2g} \right)$  ;  $V = 7.30 \text{ F.P.S.}$

$Q = 0.196 \times 7.30 = 1.43 \text{ C.F.S.}$  ; USE  $Q_{MAX} = 2 \text{ C.F.S.}$

## OUTFALL FLUME: - (CONCRETE CONSTRUCTION)





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HYDRAULICS (CONT'D):

DETENTION POND:

AREA AVAILABLE TOTAL LOT = 0.5169 AC = 22,516 S.F.

LESS PERIMETER - 595' x 5' = 2975 S.F.

POND AREA AVAILABLE @ TOP OF FLUME = 19,541 S.F.

DEPTH = 5' ±

REDUCTION IN VOLUME TO BOTTOM OF FLUME —  
(19,541 \* 0.67) - (560 \* 2.0 \* 0.67 / 2) = 12,717 C.F.

VOLUME OF POND TO BOTTOM (FLOOR) OF FLUME —  
77,535 - 12,717 = 64,818 C.F. (90% MORE THAN REQ'D).

TOTAL RAINFALL IMPOUNDED —

64,818 \* 12 / 619,345 \* 0.7 = 1.79" (25 YR - 6 HR PRECIPITATION)  
1.8"

POND VOLUME REQUIRED FOR 100 YR - 24 HR PRECIPITATION  
DEVELOPED LESS UNDEVELOPED VOLUME —

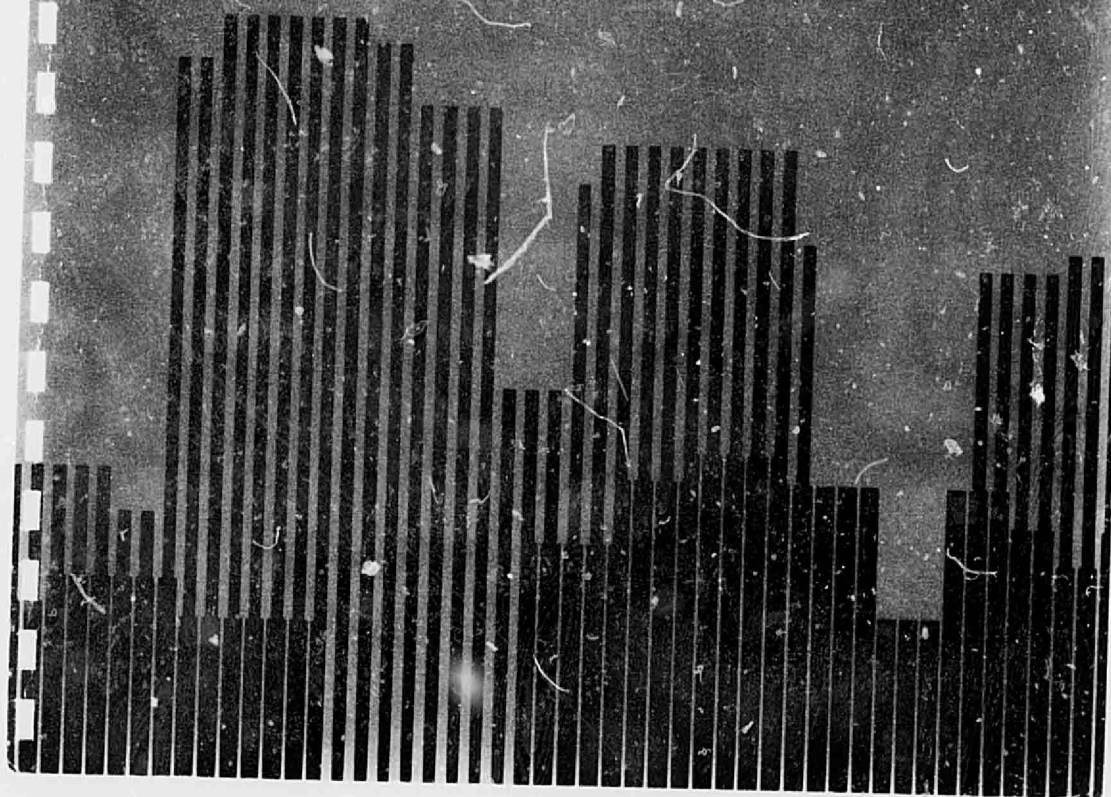
619,345 \* 2.7 / 12 \* (0.7 - 0.4) = 41,806 C.F.

64,818 C.F. TO BE PONDED = 55% MORE THAN 41,806 C.F.

1157

**DMLM**/Adam, Hamlyn, Anderson

---





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

HYDROLOGY SECTION PROJECT NO.: M9-D1

DATE: 4/3/85

PLANNING DIVISION NOS. EPC: \_\_\_\_\_

DRB: \_\_\_\_\_

CONFERENCE RECAP

SUBJECT: M9-D1 WESTVIEW TOWNHOMES

APPROVAL REQUESTED:

\_\_\_\_ PRELIMINARY PLAT

\_\_\_\_ FINAL PLAT

\_\_\_\_ SITE DEVELOPMENT PLAN

\_\_\_\_ BUILDING PERMIT

☒ REENTRY WORK/DRAINAGE REPORT ROUGH GRADING

WHO

REPRESENTING

ATTENDANCE:

JAKE BORRERO

FRED J. AGUIRRE

FINDINGS: (1) POND MUST BE DESIGNED FOR THE 100YR 6HR STORM WITH AN ALLOWABLE DISCHARGE RATE NOT TO EXCEED A 5YR UNDEVELOPED RATE. (2) POND TREATMENT REQUIRED TO ELIMINATE STAGNANT WATER WITHIN THE POND. (3) POND MAINTENANCE WILL BE THE RESPONSIBILITY OF THE DEVELOPER UNTIL SUCH TIME THAT IMPROVEMENTS DOWNSTREAM ELIMINATE THE NEED FOR THE POND. UPON IMPROVEMENTS DOWNSTREAM THE CITY WILL ALLOW WAIVER OF THE EASEMENT/ R/W. HOWEVER CONNECTION TO THE SYSTEM WILL BE THE ~~RESPONSIBILITY~~ RESPONSIBILITY OF THE DEVELOPER. (4) FENCING REQUIRED FOR POND DEPTHS EXCEEDING 18". (5) AN AGREEMENT WILL BE REQUIRED TO ESTABLISH MAINTENANCE AND LIABILITY FOR THE POND'S MAINTENANCE.

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: Fred J. Aguirre

SIGNED: P. P. P. P.

TITLE: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: 4/3/85

DATE: 4/3/85

and value to be for not be d  
on peak 100 year volume rather than  
total 100 year volume

DMJM/AHA ALBUQUERQUE	PROJECT WESTVIEW TOWNHOMES	PROJECT NO. 4690-02-01	PAGE 1
		BY: C. Burn	DATE: 5-9-85
SUBJECT DRAINAGE DESIGN			

### DESIGN CRITERIA

1. Pond will be designed for the 100yr  
6hr storm with an allowable discharge  
rate not to exceed a 5yr undeveloped  
rate.
2. 100yr 6hr Rainfall : 2.2 inches  
Plate 22.2 D-1
3. 5yr storm factor 0.54  
Plate 22.2 D-1
4. Soils Type:  

BCC - Bluepoint loamy fine sand    Type 'A' soil  
PAC - Pajarito loamy fine sand    Type 'B' soil
5. Undeveloped 'C' factor = 0.3
6.  $I = 2.2 (6.84) T_c^{-0.51}$   
 $= 15.05 T_c^{-0.51}$                       PLATE 22.2 D-2
7. A = 14.22 Acres.  
1980 Drainage Report for Westview Townhomes  
by Gordon Hertenoff and Associates.



DMJM/AHA ALBUQUERQUE	PROJECT WESTVIEW TOWNHOMES	PROJECT NO 4690-02-01	PAGE 2
		BY: C. Burr	DATE: 5-9-85
SUBJECT DRAINAGE DESIGN			

UNDEVELOPED CONDITION

$$L = 850 \text{ ft.}$$

$$S = 22/850$$

$$= 0.026 \text{ ft/ft (Avg)}$$

From PLATE 22.2 B-1

$$V = 0.96 \text{ ft/sec}$$

$$T_c = 850 / 0.96 \times 60$$

$$= 15 \text{ min}$$

$$I = 15.05 (15)^{0.61}$$

$$= 3.78$$

$$Q = C I A$$

$$Q_{100} = (0.3)(3.78)(14.22)$$

$$= 16.1 \text{ cfs}$$

$$Q_5 = 0.54(16.1)$$

$$\underline{8.7 \text{ cfs}}$$

MAX. RATE OF DISCHARGE FROM  
POND

DMJM/AHA ALBUQUERQUE	PROJECT WESTVIEW TOWNHOMES	PROJECT NO 4690-02-01	PAGE 5
		BY: C. Burma	DATE: 5.9.85
SUBJECT DRAINAGE DESIGN			

DEVELOPED CONDITION

Composite 'C'

from 1980 Report

HARD Surfaces (streets + sidewalks)	=	139,250 SF
House (Roof + PATIO) 12' x 14'0"	=	170,800 SF
DRIVEWAYS (122' x 12' x 20')	=	29,280 SF
UNPAVED (GROSS + LANDSCAPE)	=	280,015 SF
<u>TOTAL AREA (14.22 AC)</u>	=	<u>619,345 SF</u>

$$\text{Comp. 'C'} = \frac{(139,250 + 170,800 + 29,280)0.95 + (280,015)0.30}{619,345}$$

$$= 0.66$$

Incremental AREA per lot for street flows

$$A_i = 619,345 / 122$$

$$= 5,076.6 \text{ SF}$$

Peak Developed Q

$$T_c = 1100 / 3.1 \times 600 + 210 / 4.95 \times 600 + 115 / 3.9 \times 600 + 120 / 2.6 \times 600$$

$$= 9.6 \text{ min}$$

use 10 min

$$Q_{in} = (0.66 \times 1.505 \times 10)^{0.55} (14.22)$$

$$= 43.6 \text{ cfs}$$

DMJM/AHA ALBUQUERQUE	PROJECT WESTVIEW TOWNHOMES	PROJECT NO. 4690-02-01	PAGE 4
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SUBJECT DRAINAGE DESIGN			

$$\text{Vol} = (14.22)(43560)(0.66 \times 2.2) / 12$$

$$= 74,950 \text{ cf}$$

Effective AREA to POND

$$= (14.22 \times 43560)(0.66) + \text{Pond Site Area}$$

$$= 408,820 + 22,500$$

$$= 431,320 \text{ s.f.}$$

POND INFO.

Bottom Area @ elev 29.5 11,200 s.f.

Top Area @ elev 33.5 18,000 s.f.

Available Storage = 58,400 cf.

OUTLET 12" orifice

From Basin Routing

PEAK DISCHARGE = 6.5 cfs < 8.7 allowable

MAX WATER SURFACE: elev 32.97

MAX STORAGE = 49,100 cf

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		BY: C. Burn	
SUBJECT Drainage Design			

STREET FLOWS:

Analysis Point	Num. of Lots	Area SF	C	T <sub>e</sub> min	I in/hr	Q <sub>100</sub> cfs
1	11	55,843	.66	10	4.65	3.9
2	20	101,532	.66	10	4.65	7.2
3	31	157,375	.66	10	4.65	11.1
4	43	218,294	.66	10	4.65	15.4
5	12	60,919	.66	10	4.65	4.3
6	19	96,455	.66	10	4.65	6.8
7	12	60,919	.66	10	4.65	4.3
8	39	197,987	.66	10	4.65	13.9
9	12	60,919	.66	10	4.65	4.3
10	60	304,596	.66	10	4.65	21.5
11	112	568,579	.66	10	4.65	40.0
12	122	619,345	.66	10	4.65	43.6

FOR ANALYSIS POINT LOCATIONS SEE  
DRAINAGE SUBBASINS PLATE 1



DMJM/AHA

ALBUQUERQUE

PROJECT

WESTVIEW TOWNHOMES

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PAGE

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BY:

C. Burm

DATE:

5-13-85

SUBJECT

DRAINAGE DESIGN

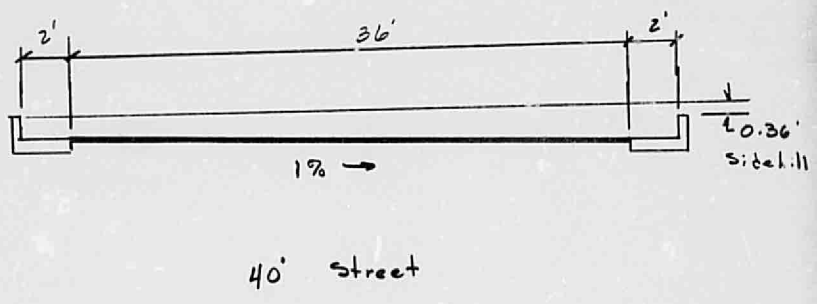
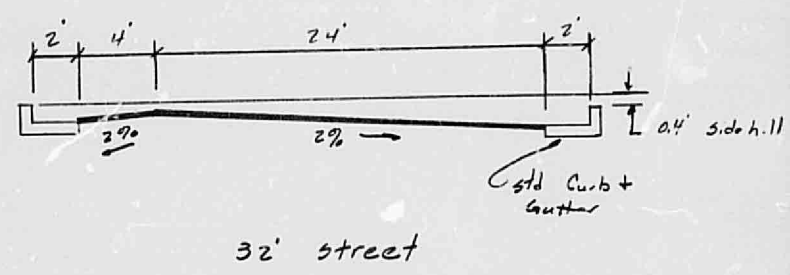
ANALYSIS POINT NO.	Street Width ft.	Street Slope (ft/ft)	$Q_{100}$ (cfs)	$D_{100}$ (ft)	$V_{100}$ ft/sec	$> \times D$	$Q_0$ (cfs)	$D_0$ (ft)	$V_0$ ft/sec	$> \times D$
1	32	0.01615	3.9	0.32	2.7	0.86	2.6	0.28	2.4	0.69
2	32	0.01615	7.2	0.38	3.1	1.2	4.7	0.34	2.8	0.95
3	32	0.02175	11.1	0.42	3.9	1.0	7.3	0.37	3.5	1.30
4	32	0.02175	15.4	0.46	4.2	1.96	10.1	0.45	3.8	1.55
5	32	0.03383	4.3	0.29	3.7	1.08	2.6	0.26	3.3	0.87
6	32	0.01346	6.8	0.39	2.9	1.12	4.5	0.34	2.6	0.89
7	32	0.03176	4.3	0.30	3.6	1.06	2.8	0.26	3.2	0.85
8	32	0.01346	13.9	0.48	3.4	1.66	9.1	0.42	3.1	1.31
9	32	0.02851	4.3	0.30	3.4	1.04	2.8	0.27	3.1	0.85
10	32	0.01346	21.5	.55	3.8	2.13	14.1	0.485	3.5	1.68
11	40	0.01346	40.0	.553	4.0	2.21	26.3	.49	3.4	1.09
12	40	0.01346	43.6	.560	4.1	2.34	28.6	.51	3.5	1.77

ANALYSIS POINT NO.	Street Width ft.	Street Slope (ft/ft)	$Q_{100}$ (cfs)	$D_{100}$ (ft)	$V_{100}$ ft/sec	$V \times D$	$Q_{10}$ (cfs)	$D_{10}$ (ft)	$V_{10}$ (ft/sec)	$V \times D$
1	32	0.01615	3.9	0.32	2.7	0.86	2.6	0.28	2.4	0.69
2	32	0.01615	7.2	0.38	3.1	1.2	4.7	0.34	2.8	0.95
3	32	0.02175	11.1	0.42	3.9	1.6	7.3	0.37	3.5	1.30
4	32	0.02175	15.4	0.46	4.2	1.96	10.1	0.4	3.8	1.55
5	32	0.03383	4.3	0.29	3.7	1.08	2.8	0.26	3.3	0.87
6	32	0.01346	6.8	0.39	2.9	1.12	4.5	0.34	2.6	0.89
7	32	0.03176	4.3	0.30	3.6	1.06	2.8	0.26	3.2	0.85
8	32	0.01346	13.9	0.48	3.4	1.66	9.1	0.42	3.1	1.31
9	32	0.02851	4.3	0.30	3.4	1.04	2.8	0.27	3.1	0.83
10	32	0.01346	21.5	.55	3.8	2.13	14.1	0.485	3.5	1.68
11	40	0.01346	40.0	.553	4.0	2.21	26.3	.49	3.4	1.69
12	40	0.01346	43.6	.566	4.1	2.34	28.6	.51	3.5	1.77

SUBJECT	DMJM/AHA	PROJECT	WESTVIEW Townhomes
	ALBUQUERQUE		
SUBJECT	Drainage	DESIGN	
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BY:	C. Burn	DATE:	5-15-85

DMJM/AHA ALBUQUERQUE	PROJECT WESTVIEW TOWNHOMES	PROJECT NO 4690-02-01	PAGE 7
		BY: C. Burm	
SUBJECT DRAINAGE DESIGN			

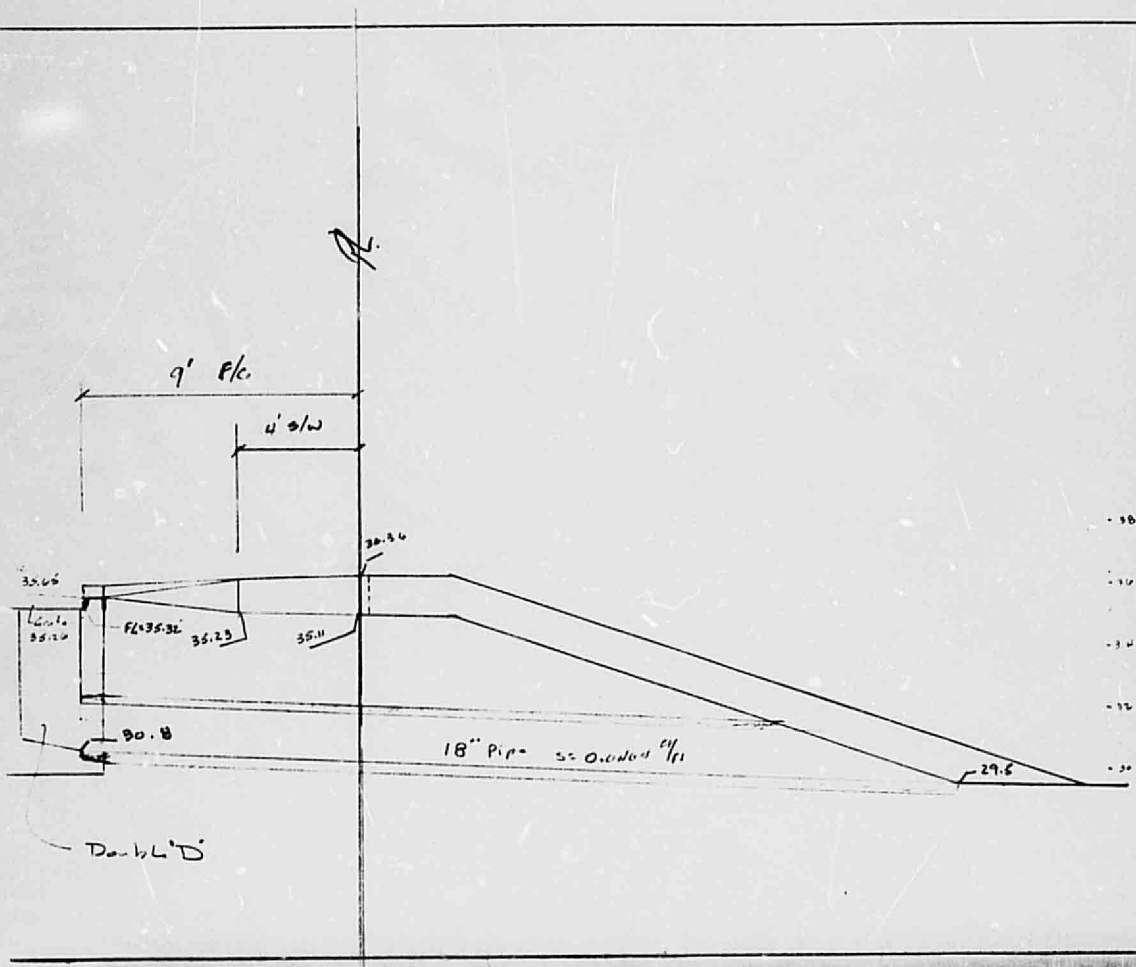
Typical Street Sections







PROJECT	DMJM / AHA	PROJECT NO	PAGE
	ALBUQUERQUE		
SUBJECT	DRAINAGE DESIGN	BY: 4690-02-01	DATE: 5-14-85
			9



DMJM/AHA ALBUQUERQUE	PROJECT WESTVIEW TOWNHOMES	PROJECT NO 4690-02-01		PAGE 10
		BY: C. Burn	DATE: 5-14-85	
SUBJECT DRAINAGE DESIGN				

### POND INLET

1. Catch Basin for Nuisance flow and low flow
2. Curb line will act as a weir
3. flow will be critical through the entrance to pond channel
4. Reduce curb height to 4" at Weir section.

USE Downsize 'D' Catch Basin.

IN Sump CONDITION at POND INLET

Catch Basin Acts as weir instead

$$L: 2 \times 2.1 + 6.5 = 10.7'$$

$$Q: 2.8 (10.7) (4)^{3/2} \quad (\text{for } 4" \text{ curb} + \frac{3}{8}" \text{ depressed curb})$$

$$= 7.6 \text{ cfs.} \quad \text{less } 50\% \text{ for Chugging}$$

$$Q: 3.8 \text{ use 4 cfs}$$

$$\text{at } h: 0.8'$$

$$Q: 2.8 (10.7) (.8)^{3/2}$$

$$= 21.4 \text{ cfs} \quad \text{less } 50\% \text{ for Chugging}$$

$$Q: 10.7 \text{ use 11 cfs}$$

DMJM/AHA ALBUQUERQUE	PROJECT WESTVIEW TOWNHOMES	PROJECT NO. 4690-02-01	PAGE 11
		BY: C.B.M.	DATE: 5-14-85
SUBJECT DRAINAGE DESIGN			

DISCHARGE OVER THE CURB

$$Q = 43.6 - 4$$

$$= 39.6 \text{ cfs}$$

For weir length of 30'

$$39.6 = (2.8)(30)(h^{3/2})$$

$$h^{3/2} = 0.47$$

$$h = 0.60'$$

$$\text{for } Q = 43.6 - 11 \text{ cfs}$$

$$= 32.6$$

$$h^{3/2} = 32.6 / (2.8 \times 30)$$

$$h^{3/2} = 0.39$$

$$h = 0.53'$$

DISCHARGE OVER CURB  $\approx 33 + 39 \text{ cfs}$

$$\text{EL20 WS AT CURB } \approx 35.65 + 0.6$$

$$\approx 36.25$$

DMJM/AHA  
ALBUQUERQUE

PROJECT WESTVIEW TOWNHOME

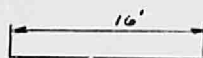
PROJECT NO.  
4690-02-01

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12

BY: C. B. W. M.  
DATE: 5-14-85

SUBJECT DRAINAGE DESIGN

INLET CHANNEL



$$Q_{DES} = 39.6 \text{ cfs}$$

Critical Depth

$$Q = K' b^{5/2} \text{ from KING + BRATER TABLE 8-5}$$

$$K' = \frac{39.6}{10^{5/2}}$$
$$= 0.0787$$

$$D_c/b = 0.036$$

$$D_c = 0.58'$$

WS at channel ENTRANCE

$$= 35.11 + .58$$
$$= 35.69$$

$$Vel = \frac{39.6}{(10 \times .58)}$$
$$= 4.26 \text{ ft/sec}$$

$$EGL = 35.69 + \left( \frac{4.26^2}{64.4} \right)$$
$$= 35.77$$



DMJM/AHA ALBUQUERQUE	PROJECT Westview Townhomes	PROJECT NO 4690.02.01	PAGE 13
		BY: C. Barry	DATE: 5-15-85
SUBJECT DRAINAGE DESIGN			

### CATCH BASIN CONNECTOR PIPE

$$Q = 11 \text{ cfs}$$

$$d = 18''$$

Available Head when pond is full

$$= 35.26 - 33.5 - 0.5'$$

$$= 1.26'$$

$$L \approx 30'$$

$$\text{Available slope} = \frac{1.26}{30} = 0.0420 \text{ ft/ft}$$

$$Q = K s^{1/2}$$

$$K \text{ for } 18'' = 105 \quad (\text{Table 22.3 B-5})$$

Capacity of 18''

$$Q = 105 (0.0420)^{1/2}$$

$$= 21.5 \text{ cfs}$$

DMJM/AHA  
ALBUQUERQUE

PROJECT Westview Townhomes

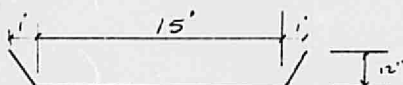
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BY: C. Boem  
DATE: 5-15-85

SUBJECT DRAINAGE DESIGN

OVERFLOW SPILLWAY - where is this?



Channel will act as weir and discharge  
will be at critical depth at entrance.

$$Q = 43.6 \text{ cfs}$$

$$Q = K_c b^{3/2} \quad \text{King \& Brooker Table 8-5}$$

$$K_c = 43.6 / 15^{3/2}$$

$$= 0.0580$$

$$D_c / b = 0.042$$

$$D_c = 0.63'$$

$$V = 43.6 / (15 \times 0.63) = 28.63 \text{ ft/sec}$$

$$= 11.43 \text{ ft/sec}$$

$$V^2 / 2g = 0.30$$

$$\text{Point Elow above outlet} = 0.63 + 0.3 = .93'$$

\*\*\*\*\*  
 \*\*\* BASIN ROUTING \*\*\*  
 \*\*\*\*\*

DMJM  
 5700 HARPER DR. NE SUITE 280  
 ALBUQUERQUE, NEW MEXICO 87109

PROJECT: WESTVIEW TOWNHOMES  
 DATE: 05/10/85

EFFECTIVE AREA 431320 SQ. FT.  
 TOTAL RAINFALL 2.20 INCHES

STORAGE BASIN

ELEV	AREA SQ. FT.	VOLUME CU. FT.
29.50	11200	0
33.50	18000	58400

INFILTRATION 1ST HALF HOUR = 0.50 IN./HR.  
 INFILTRATION 2ND HALF HOUR = 0.25 IN./HR.  
 INFILTRATION AFTER 1 HOUR = 0.25 IN./HR.

OUTLET INFORMATION:

ROUND ORIFICE

DIAMETER INCHES	INVERT ELEV.
12.0	29.50

WEIR

LENGTH FEET	INVERT ELEV.
20.00	33.50



TIME	RAINFALL	ACCUM. INFLOW	POND ELEV.	AVG. POND ELEV.	ACCUM. OUTFLOW	STORAGE
MIN.	INCHES	CUBIC FEET			CUBIC FEET	CUBIC FEET
0	0.000	0	29.500	29.500	0	0
		INFILTRATION		40 CU.FT.		
		ORIFICE FLOW	0.141 CFS	42 CU.FT.		
		WEIR FLOW	0.000 CFS	0 CU.FT.		
5	0.125	4507	29.883	29.691	82	4424
		INFILTRATION		42 CU.FT.		
		ORIFICE FLOW	1.196 CFS	359 CU.FT.		
		WEIR FLOW	0.000 CFS	0 CU.FT.		
10	0.281	10121	30.310	30.097	484	9637
		INFILTRATION		46 CU.FT.		
		ORIFICE FLOW	3.244 CFS	973 CU.FT.		
		WEIR FLOW	0.000 CFS	0 CU.FT.		
15	0.624	22457	31.161	31.736	1503	20951
		INFILTRATION		51 CU.FT.		
		ORIFICE FLOW	4.814 CFS	1444 CU.FT.		
		WEIR FLOW	0.000 CFS	0 CU.FT.		
20	1.045	37560	32.080	31.620	2999	34561
		INFILTRATION		54 CU.FT.		
		ORIFICE FLOW	5.616 CFS	1664 CU.FT.		
		WEIR FLOW	0.000 CFS	0 CU.FT.		
25	1.203	43254	32.330	32.205	4739	38515
		INFILTRATION		56 CU.FT.		
		ORIFICE FLOW	5.857 CFS	1757 CU.FT.		
		WEIR FLOW	0.000 CFS	0 CU.FT.		
30	1.315	47287	32.468	32.39	6552	40734
		INFILTRATION		57 CU.FT.		
		ORIFICE FLOW	6.065 CFS	3639 CU.FT.		
		WEIR FLOW	0.000 CFS	0 CU.FT.		
40	1.513	54403	32.676	32.572	10248	44155
		INFILTRATION		60 CU.FT.		
		ORIFICE FLOW	6.372 CFS	3737 CU.FT.		
		WEIR FLOW	0.000 CFS	0 CU.FT.		
50	1.659	60729	32.826	32.75	1379	46651



	INFILTRATION	ORIFICE FLOW	WEIR FLOW		58 CU.FT.	3862 CU.FT.	0 CU.FT.
60	1.865	67055	32.967	32.897	17991		
	INFILTRATION	ORIFICE FLOW	WEIR FLOW		116 CU.FT.	7605 CU.FT.	0 CU.FT.
80	1.931	69428	32.650	32.808	25714	43714	
	INFILTRATION	ORIFICE FLOW	WEIR FLOW		113 CU.FT.	7157 CU.FT.	0 CU.FT.
100	1.986	71405	32.324	32.487	32984	38420	
	INFILTRATION	ORIFICE FLOW	WEIR FLOW		109 CU.FT.	6672 CU.FT.	0 CU.FT.
120	2.032	73065	31.999	32.162	39766	33299	
	INFILTRATION	ORIFICE FLOW	WEIR FLOW		156 CU.FT.	9016 CU.FT.	0 CU.FT.
150	2.083	74884	31.509	31.754	48939	25946	
	INFILTRATION	ORIFICE FLOW	WEIR FLOW		148 CU.FT.	7697 CU.FT.	0 CU.FT.
180	2.116	76070	31.042	31.276	56776	19293	
	INFILTRATION	ORIFICE FLOW	WEIR FLOW		140 CU.FT.	6241 CU.FT.	0 CU.FT.
210	2.142	77019	30.639	30.840	63156	13841	
	INFILTRATION	ORIFICE FLOW	WEIR FLOW		134 CU.FT.	4698 CU.FT.	0 CU.FT.
240	2.162	77731	30.318	30.478	67991	9739	
	INFILTRATION	ORIFICE FLOW	WEIR FLOW		256 CU.FT.	4995 CU.FT.	0 CU.FT.
300	2.193	78836	29.951	30.150	73243	5594	
	INFILTRATION	ORIFICE FLOW	WEIR FLOW		247 CU.FT.	3673 CU.FT.	0 CU.FT.
360	2.206	79036	29.647	29.846	75409	354	

THIS MICROIMAGE IS THE BEST POSSIBLE  
REPRODUCTION DUE TO THE POOR QUALITY  
OF THE ORIGINAL DOCUMENT

12  
MAXIMUM OUT FLOW IS AT POND ELEV. 32.967  
ORIFICE OUTFLOW IS 6.515 CFS  
WEIR OUTFLOW IS 0.000 CFS