

# CITY OF ALBUQUERQUE



**December 22, 2016**

Richard J. Berry, Mayor

David Soule, P.E.  
Rio Grande Engineering  
P.O. Box 93924  
Albuquerque, NM 87199

**RE: Lomas Town Homes  
Grading and Drainage Plan  
Engineer's Stamp Date 12-21-2016 (file: K22D057)**

Dear Mr. Soule:

Based upon the information provided in your submittal received 12-21-2016, the above referenced plan is approved for Grading and Building Permit and SO-19 permit.

Please attach a copy of this approved plan in the construction sets for Building Permit processing. Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

PO Box 1293

If you have any questions, you can contact me at 924-3986.

Albuquerque

Sincerely,

New Mexico 87103

www.cabq.gov

Abiel Carrillo, P.E.  
Principal Engineer, Planning Dept.  
Development Review Services

MA/AC



# City of Albuquerque

## Planning Department

### Development & Building Services Division

#### DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: LOMAS TOWNHOMES Building Permit #: \_\_\_\_\_ City Drainage #: K22-D057

DRB#: \_\_\_\_\_ EPC#: \_\_\_\_\_ Work Order#: \_\_\_\_\_

Legal Description: LOTS 2D1 AND 2E1 BLOCK 2A CHELWOOD PARK

City Address: 12844 LOMAS NE

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: WORQUE LLC Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Architect: \_\_\_\_\_ Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Other Contact: \_\_\_\_\_ Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

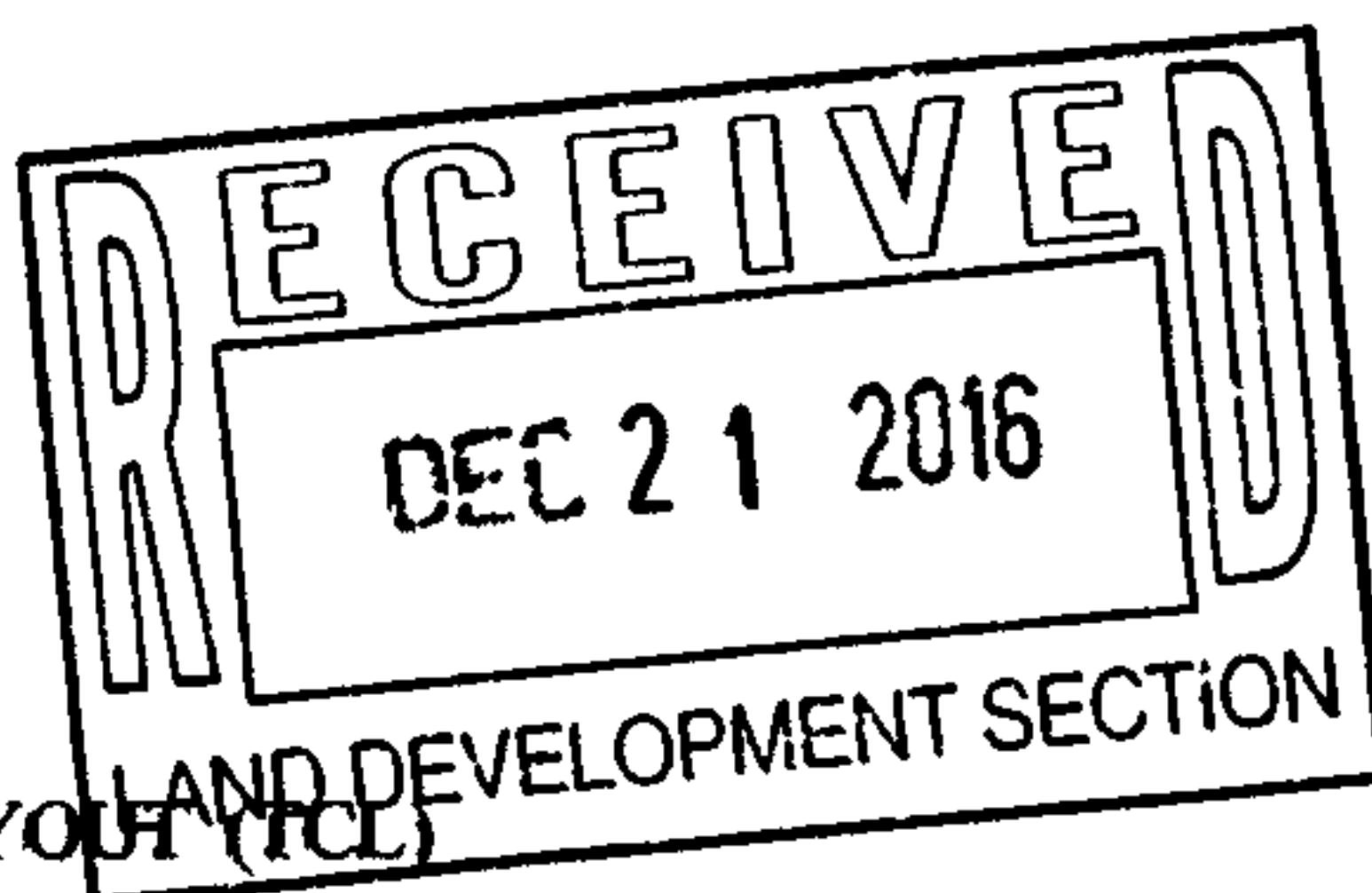
Check all that Apply:

#### DEPARTMENT:

- ☒ HYDROLOGY/ DRAINAGE  
☐ TRAFFIC/ TRANSPORTATION  
☐ MS4/ EROSION & SEDIMENT CONTROL

#### TYPE OF SUBMITTAL:

- ☐ ENGINEER/ ARCHITECT CERTIFICATION
- ☐ CONCEPTUAL G & D PLAN  
☒ GRADING PLAN  
☐ DRAINAGE MASTER PLAN  
☐ DRAINAGE REPORT  
☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)  
☐ TRAFFIC IMPACT STUDY (TIS)  
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ☐ OTHER (SPECIFY) \_\_\_\_\_



#### CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

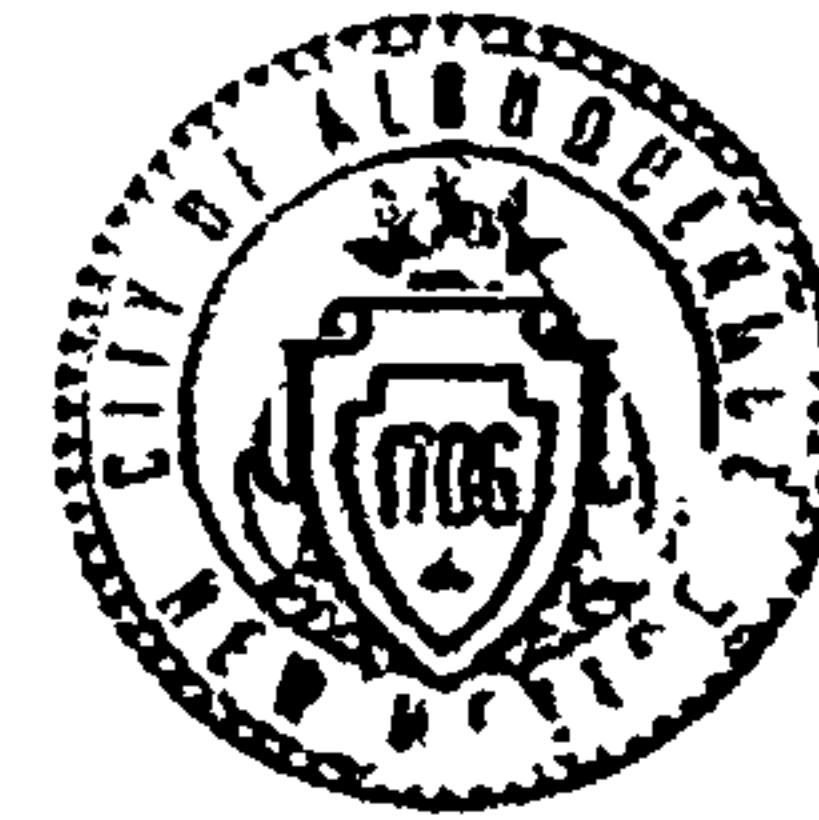
- ☒ BUILDING PERMIT APPROVAL  
☐ CERTIFICATE OF OCCUPANCY
- ☐ PRELIMINARY PLAT APPROVAL  
☐ SITE PLAN FOR SUB'D APPROVAL  
☐ SITE PLAN FOR BLDG. PERMIT APPROVAL  
☐ FINAL PLAT APPROVAL  
☐ SIA/ RELEASE OF FINANCIAL GUARANTEE  
☐ FOUNDATION PERMIT APPROVAL  
☒ GRADING PERMIT APPROVAL  
☒ SO-19 APPROVAL  
☐ PAVING PERMIT APPROVAL  
☐ GRADING/ PAD CERTIFICATION  
☐ WORK ORDER APPROVAL  
☐ CLOMR/LOMR
- ☐ PRE-DESIGN MEETING  
☐ OTHER (SPECIFY) \_\_\_\_\_

IS THIS A RESUBMITTAL?: ☒ Yes ☐ No

DATE SUBMITTED: 12/20/16 By: DAVID SOULE

COA STAFF ELECTRONIC SUBMITTAL RECEIVED \_\_\_\_\_

# CITY OF ALBUQUERQUE



December 15, 2016

Richard J. Berry, Mayor

David Soule, P.E.  
Rio Grande Engineering  
P.O. Box 93924  
Albuquerque, NM 87199

RE: Lomas Town Homes  
Grading and Drainage Plan  
Engineer's Stamp Date 12-6-2016 (file: K22D057)

Dear Mr. Soule:

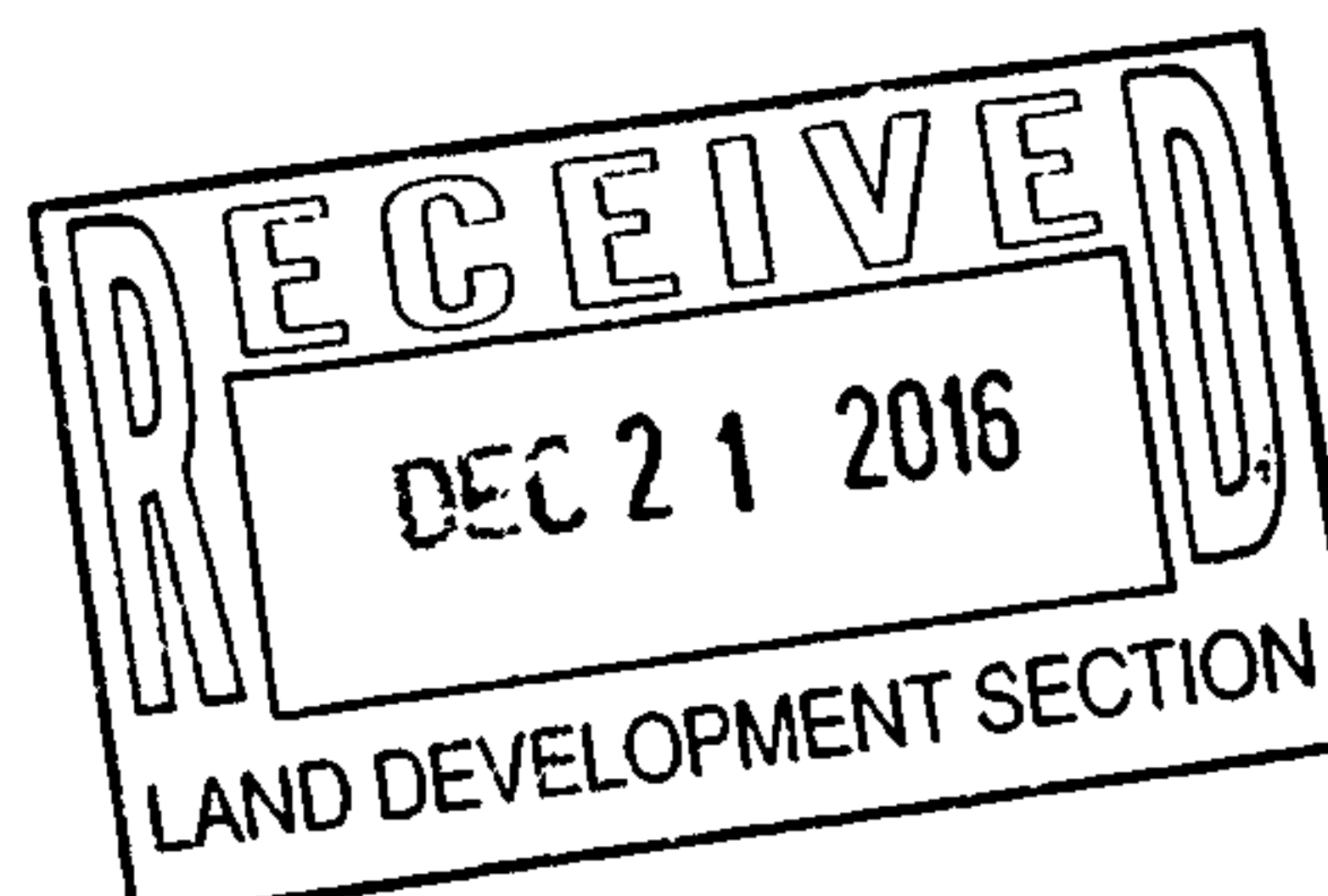
Based upon the information provided in your submittal received 12-6-2016, the above referenced plan cannot be approved for ESC Permit for grading and Building Permit and SO-19 permit until the following comments are addressed:

1. Provide a basin map for the offsite basin. Include calculations for flow and volume. It appears the swale in the southeast corner drains north. Shouldn't it drain south?
2. Provide the outfall location for the offsite basin. we have added map, calcs and outfall
3. The plan doesn't appear to provide storm water quality for basin C. we have added were practical
4. The pond in the northwest corner appears to have zero volume, pond bottom 99.5, culvert invert 99.5. we have modified to have 9" deep volume
5. Provide a build note for the curb cut in the parking island in the middle of the site. It seems a curb cut on the east side of parking island would also be beneficial. we have added
6. Please add that an excavation permit or work order is require for grading the alley. we have added
7. Please revise the water quality cobble swale detail to agree with the build note. we have revised

If you have any questions, you can contact me at 924-3986.

Sincerely,

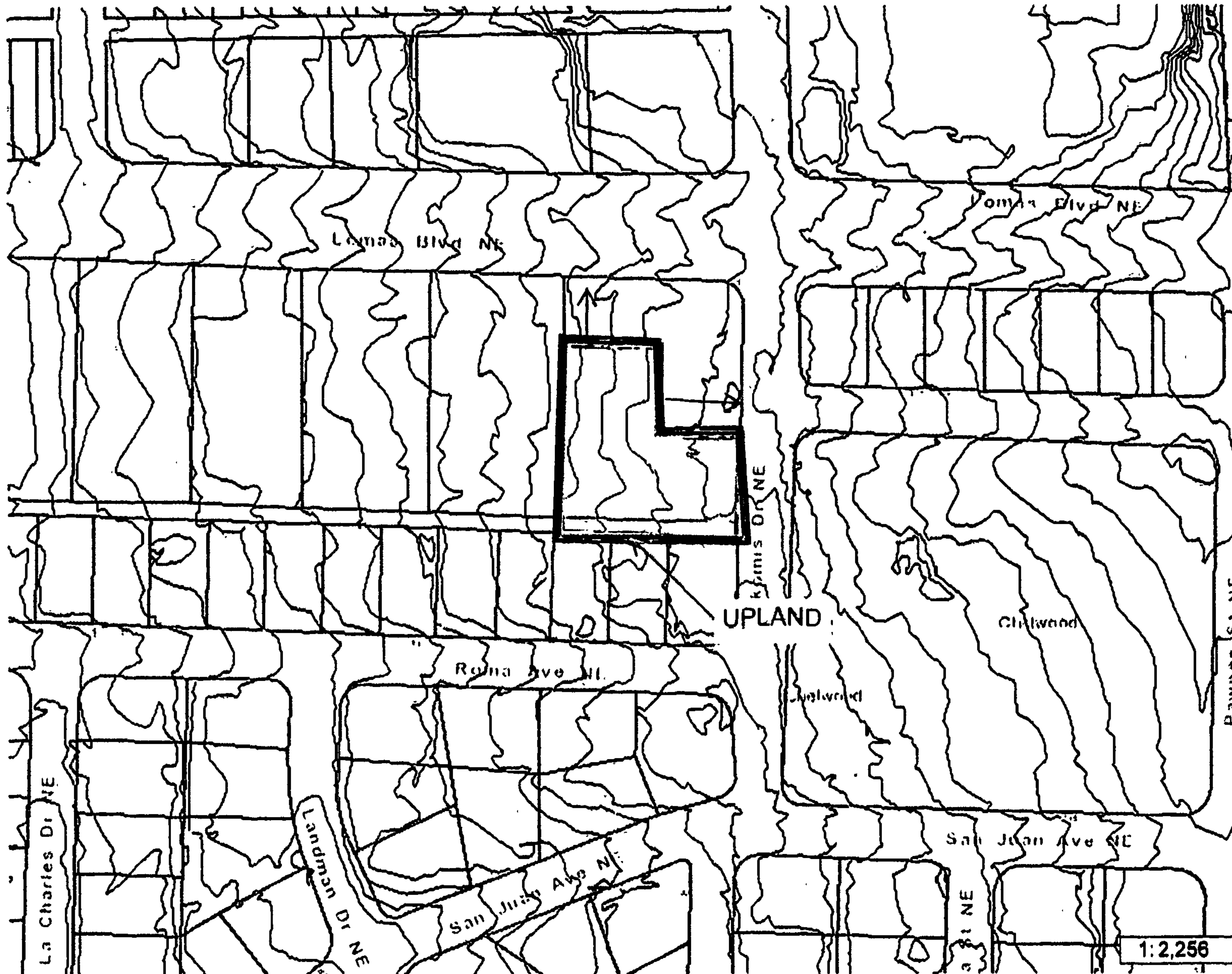
Abiel Carrillo, P.E.  
Principal Engineer, Planning Department  
Development Review Services





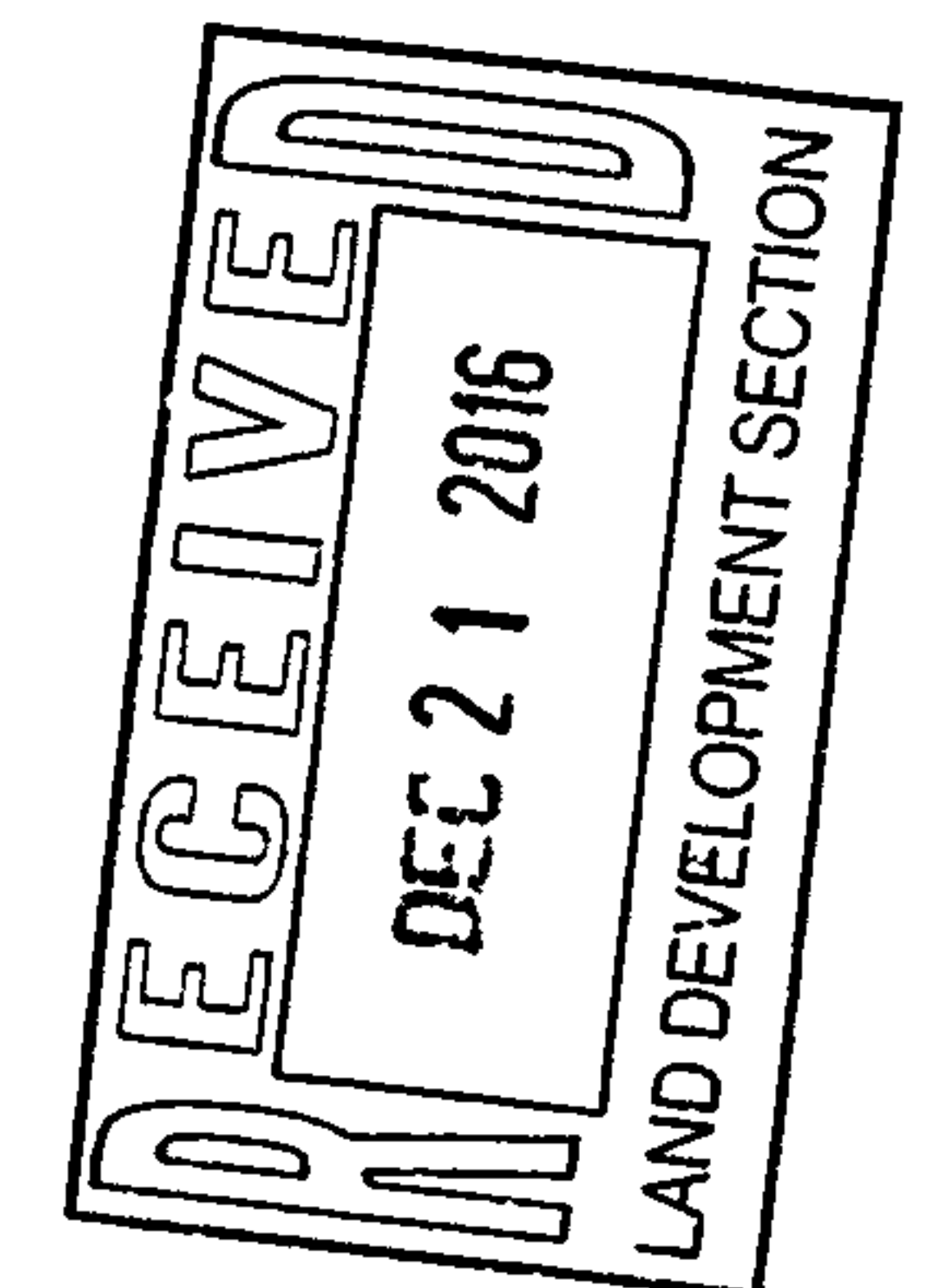


# City of Albuquerque



## Legend

- ☐ City Parcels
- Municipal Limits**
  - Corrales
  - Edgewood
  - Los Ranchos
  - Rio Rancho
  - Tijeras
  - UNINCORPORATED
- World Street Map



## Notes

0.0 0 0.02 0.0 Miles

WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
9/17/2016 © City of Albuquerque

This map is a user generated static output from [www.cabq.gov/gis](http://www.cabq.gov/gis) and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR LEGAL PURPOSES

Weighted E Method  
LOMAS APTS

Existing Developed Basins

	Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		100-Year, 6-hr		10-day
				%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
EXISTING	LOMAS	19819	0.455	70%	0.31849	30.0%	0.136	0.0%	0	0.0%	0.000	0.884	0.034	1.10
	ALLEY	48421	1.112	80%	0.88927	20.0%	0.222	0.0%	0	0.0%	0.000	0.856	0.079	2.61
	TOTAL	68240	1.567	77%	1.20776	22.9%	0.359	0.0%	0.000	0.0%	0.000	0.864	0.113	3.70
	DEV UPLAND	52960	1.216	0%	0	10.0%	0.122	20.0%	0.24316	70.0%	0.851	2.248	0.228	5.73
PROPOSED TO LOMAS	B	6642	0.152	0%	0	15.0%	0.023	39.0%	0.05947	46.0%	0.070	1.946	0.025	0.66
	C	30994	0.712	0%	0	0.0%	0.000	9.0%	0.06404	91.0%	0.647	2.534	0.150	3.64
	D	777	0.018	0%	0	18.0%	0.003	48.0%	0.00856	34.0%	0.006	1.793	0.003	0.07
	E	3704	0.085	0%	0	16.0%	0.014	42.0%	0.03571	42.0%	0.036	1.895	0.013	0.36
	TOTAL	42117	0.967	0%	0.000	4.1%	0.040	17.4%	0.168	78.5%	0.759	2.371	0.191	4.73
PROPOSED TO ALLEY	A	8712	0.200	0%	0	16.0%	0.032	43.0%	0.086	41.0%	0.082	1.883	0.031	0.84
	F	13041	0.299	0%	0	14.0%	0.042	17.0%	0.05089	69.0%	0.207	2.221	0.056	1.40
	G	4370	0.100	0%	0	19.0%	0.019	23.0%	0.02307	58.0%	0.058	2.072	0.017	0.45
	TOTAL	26123	0.600	0%	0.000	15.5%	0.093	26.7%	0.160	57.8%	0.347	2.083	0.104	2.69

Equations:

Weighted E =  $E_a \cdot A_a + E_b \cdot A_b + E_c \cdot A_c + E_d \cdot A_d$  / (Total Area)

Volume = Weighted D \* Total Area

Flow =  $Q_a \cdot A_a + Q_b \cdot A_b + Q_c \cdot A_c + Q_d \cdot A_d$

Where for 100-year, 6-hour storm (zone 4)

$E_a = 0.8$	$Q_a = 2.2$
$E_b = 1.08$	$Q_b = 2.92$
$E_c = 1.46$	$Q_c = 3.73$
$E_d = 2.64$	$Q_d = 5.25$

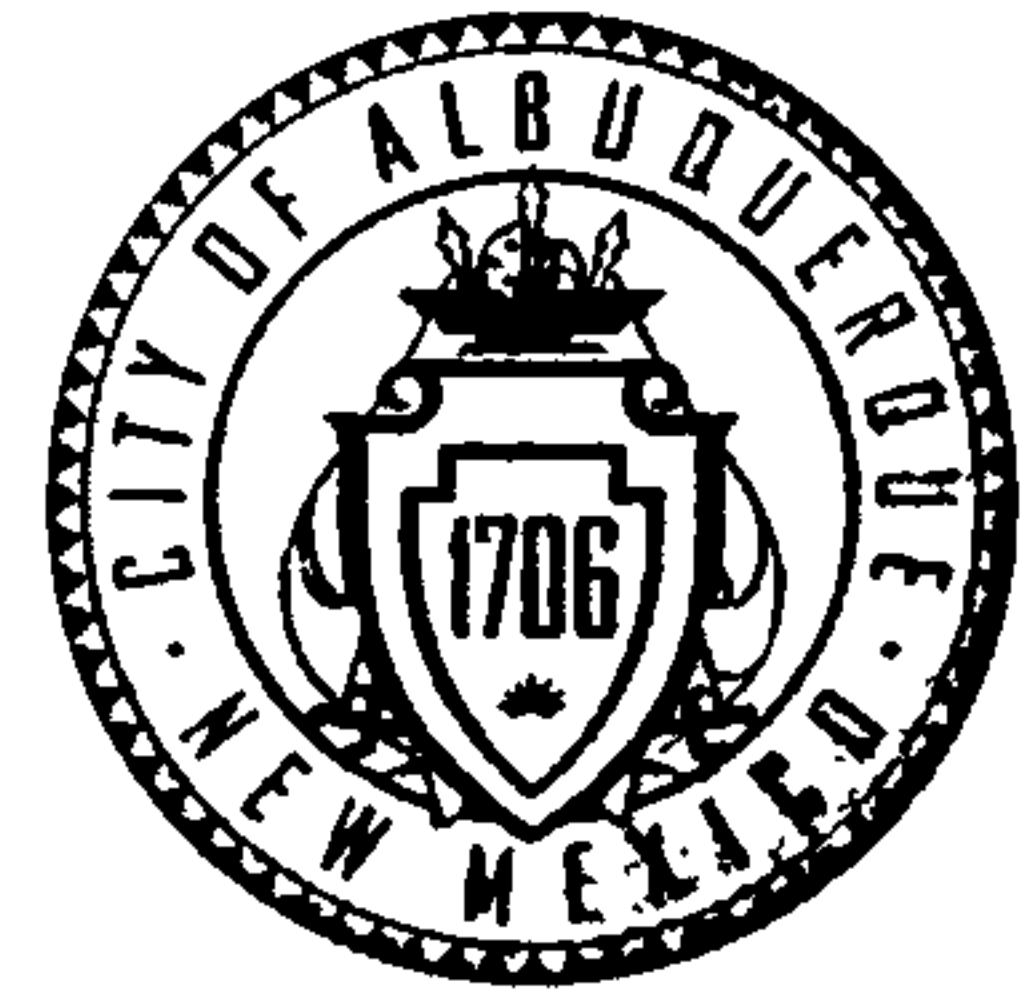
FLOW SUMMARY	EXISTING	PROPOSED
LOMAS (AFTER ROUTING)	1.10	0.96
TO ALLEY	2.61	2.69
TO ALLEY (PASSED THRU)	5.73	5.73

PONDING PROVIDED  
FIRST FLUSH REQUIREMENT

2030.0 CF  
1365.2 CF



# CITY OF ALBUQUERQUE



December 15, 2016

Richard J. Berry, Mayor

David Soule, P.E.  
Rio Grande Engineering  
P.O. Box 93924  
Albuquerque, NM 87199

**RE: Lomas Town Homes  
Grading and Drainage Plan  
Engineer's Stamp Date 12-6-2016 (file: K22D057)**

Dear Mr. Soule:

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5. Provide a build note for the curb cut in the parking island in the middle of the site. It seems a curb cut on the east side of parking island would also be beneficial.
6. Please add that an excavation permit or work order is require for grading the alley.
7. Please revise the water quality cobble swale detail to agree with the build note.

PO Box 1293

Albuquerque

New Mexico 87103

If you have any questions, you can contact me at 924-3986.

[www.cabq.gov](http://www.cabq.gov)

Sincerely,

Abiel Carrillo, P.E.  
Principal Engineer, Planning Department  
Development Review Services





# City of Albuquerque

Planning Department

Development & Building Services Division

## DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: LOMAS TOWNHOMES Building Permit #: \_\_\_\_\_ City Drainage #: K22-D057  
DRB#: \_\_\_\_\_ EPC#: \_\_\_\_\_ Work Order#: \_\_\_\_\_  
Legal Description: LOTS 2D1 AND 2E1 BLOCK 2A CHELWOOD PARK  
City Address: 12844 LOMAS NE

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE  
Address: PO BOX 93924, ALBUQUERQUE, NM 87199  
Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: WORQUE LLC Contact: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Architect: \_\_\_\_\_ Contact: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

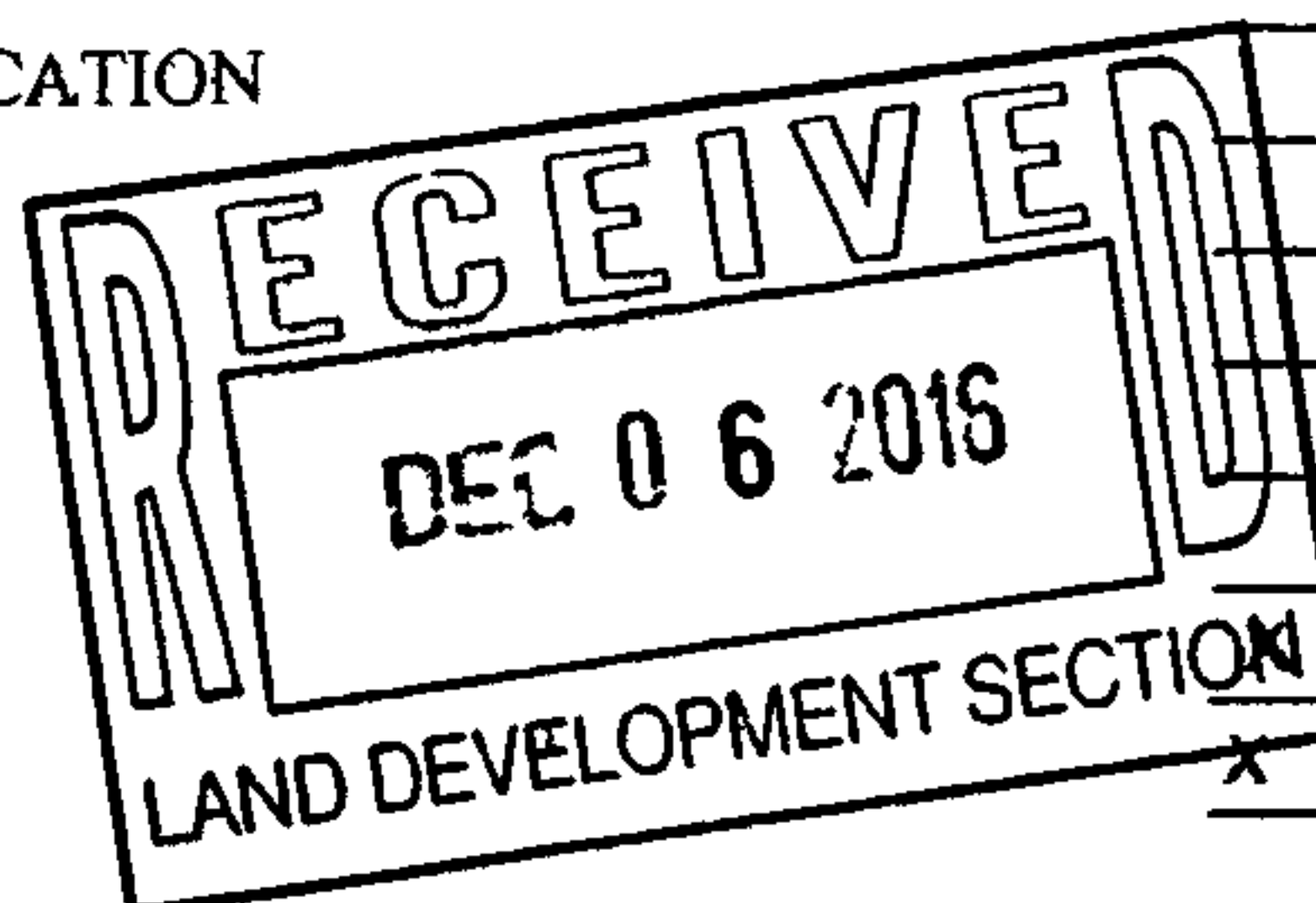
Other Contact: \_\_\_\_\_ Contact: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Check all that Apply:

DEPARTMENT:  
☒ HYDROLOGY/ DRAINAGE  
☐ TRAFFIC/ TRANSPORTATION  
☐ MS4/ EROSION & SEDIMENT CONTROL

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:  
☒ BUILDING PERMIT APPROVAL  
☐ CERTIFICATE OF OCCUPANCY

TYPE OF SUBMITTAL:  
☐ ENGINEER/ ARCHITECT CERTIFICATION  
☐ CONCEPTUAL G & D PLAN  
☒ GRADING PLAN  
☐ DRAINAGE MASTER PLAN  
☐ DRAINAGE REPORT  
☐ CLOMR/LOMR  
☐ TRAFFIC CIRCULATION LAYOUT (TCL)  
☐ TRAFFIC IMPACT STUDY (TIS)  
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)



☐ PRELIMINARY PLAT APPROVAL  
☐ SITE PLAN FOR SUB'D APPROVAL  
☐ SITE PLAN FOR BLDG. PERMIT APPROVAL  
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☐ PAVING PERMIT APPROVAL  
☐ GRADING/ PAD CERTIFICATION  
☐ WORK ORDER APPROVAL  
☐ CLOMR/LOMR

☐ OTHER (SPECIFY) \_\_\_\_\_

☐ PRE-DESIGN MEETING  
☐ OTHER (SPECIFY) \_\_\_\_\_

IS THIS A RESUBMITTAL?: ☒ Yes ☐ No

DATE SUBMITTED: 12/5/16 By: DAVID SOULE

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: \_\_\_\_\_

12/5/16

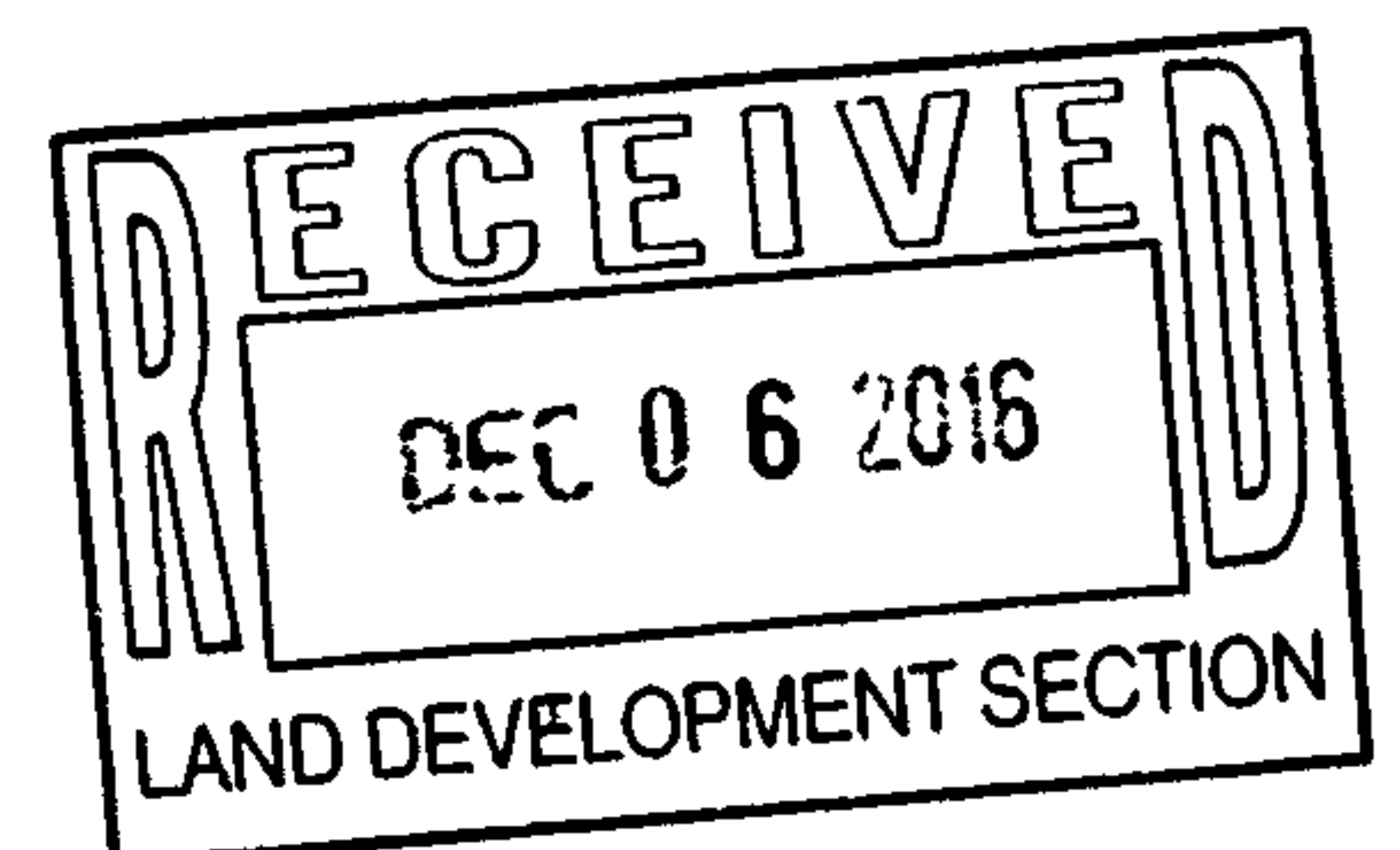
Abiel Carrillo, PE, CFM  
Principal Engineer - Hydrology  
City of Albuquerque  
600 2<sup>nd</sup> Street NW  
Albuquerque, NM 87102

The purpose of this letter is to accompany the enclosed grading plan. The plan has been revised to address your email comments dated 11/21/16. Below are your comment and our response as to how they were addresses are underlined:

1. The Grading Plan exhibit in the Report is different from the full size Plan submitted. We have attached the corrected plan and electronic. The basin map within the report was an older version but is not being built off of and an exhibit to delineate basin boundaries
2. Since the alley is being utilized to drain a portion of the developed flows, it will need to be improved, at a minimum, with a shaped roadway section with a concrete alley gutter that extends to the Nakomi Dr pavement. Currently, the "alley" does not appear to be physically aligned or shaped to accept flows from this development. Erosion control would also need to be added to the outfall into Nakomi Dr. Based upon our discussion i have created and invert in the alley and since the flow drains west rather than east and is paved west of our site, we have called for compacted base course rather than pavement and valley gutter since paving the alley was not required by transportation development
3. Specify the size of the rock to be used. If larger rock is proposed, we recommend that it is placed over filter fabric. We have called out 4" rock over filter fabric.
4. Although cross-lot drainage is discouraged, it appears that the grading of the back yards drains away from the building and towards the retaining walls that will feature turned blocks that discharge to the alley. The plan includes a note to address any future walls that might be constructed by townhome owners, but those notes are not often referenced once the project is constructed. Will the turn blocks in the southern wall serve as an overflow if the side yard walls are not constructed to allow cross lot flows? All the units are located on the same lot, therefore we do not have cross-lot drainage. The note was added since the call out on the drawing made the plan hard to read. This builder has built this same product many times and i will not be certifying until the walls are in.
5. It's not clear if the main inlet in the center of the parking lot will be set at the bottom of the pond or elevated. If it is set at the bottom of the landscaped area, it should be surrounded with rip-rap. We have added 6" cobble to protect the inlet.
6. An ESC Plan will need to be approved prior to Hydrology's approval (if one has already been submitted you can disregard this comment). This plan has been submitted separately

Sincerely

David Soule  
Rio Grande Engineering





DRAINAGE REPORT

For

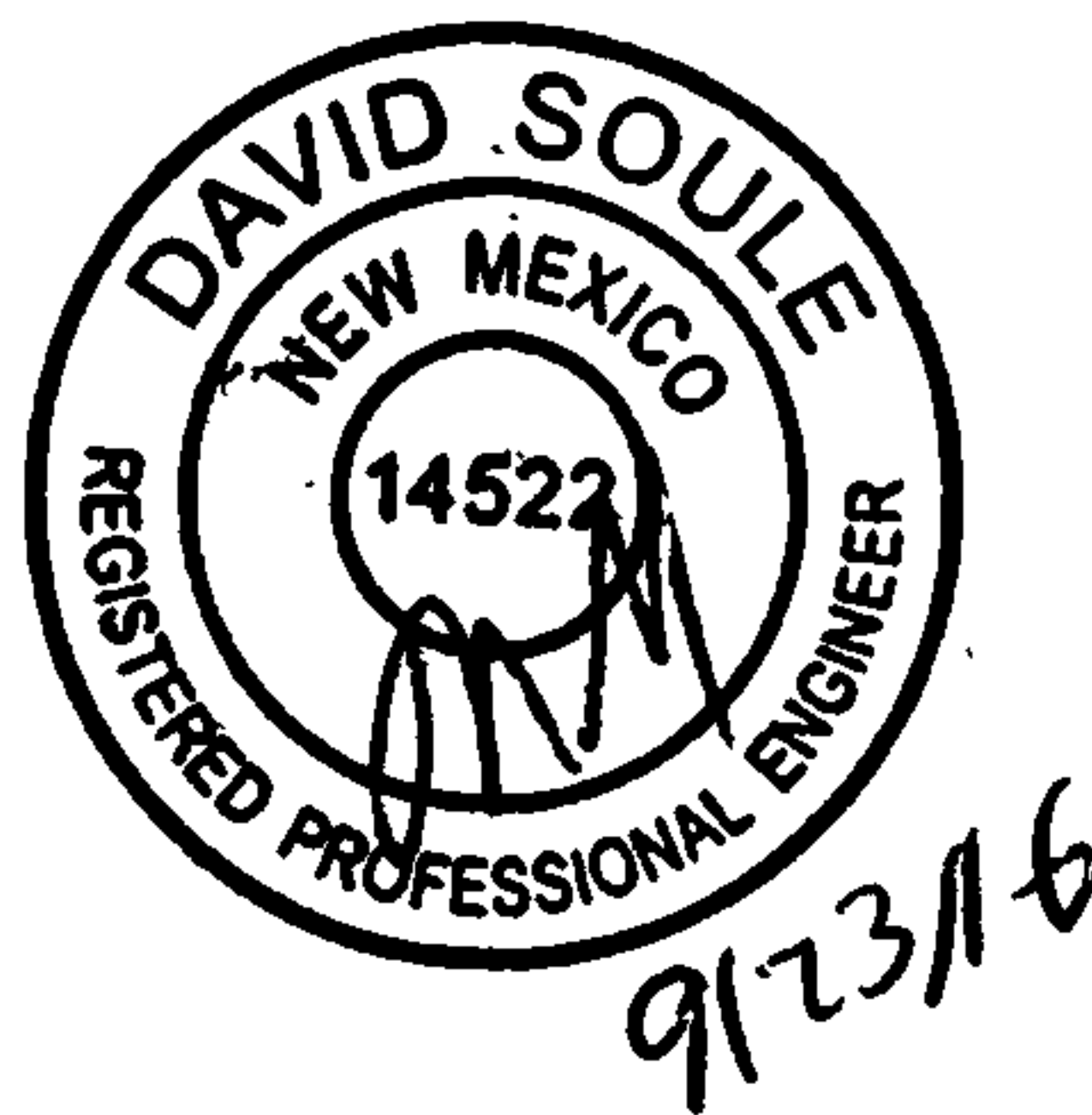
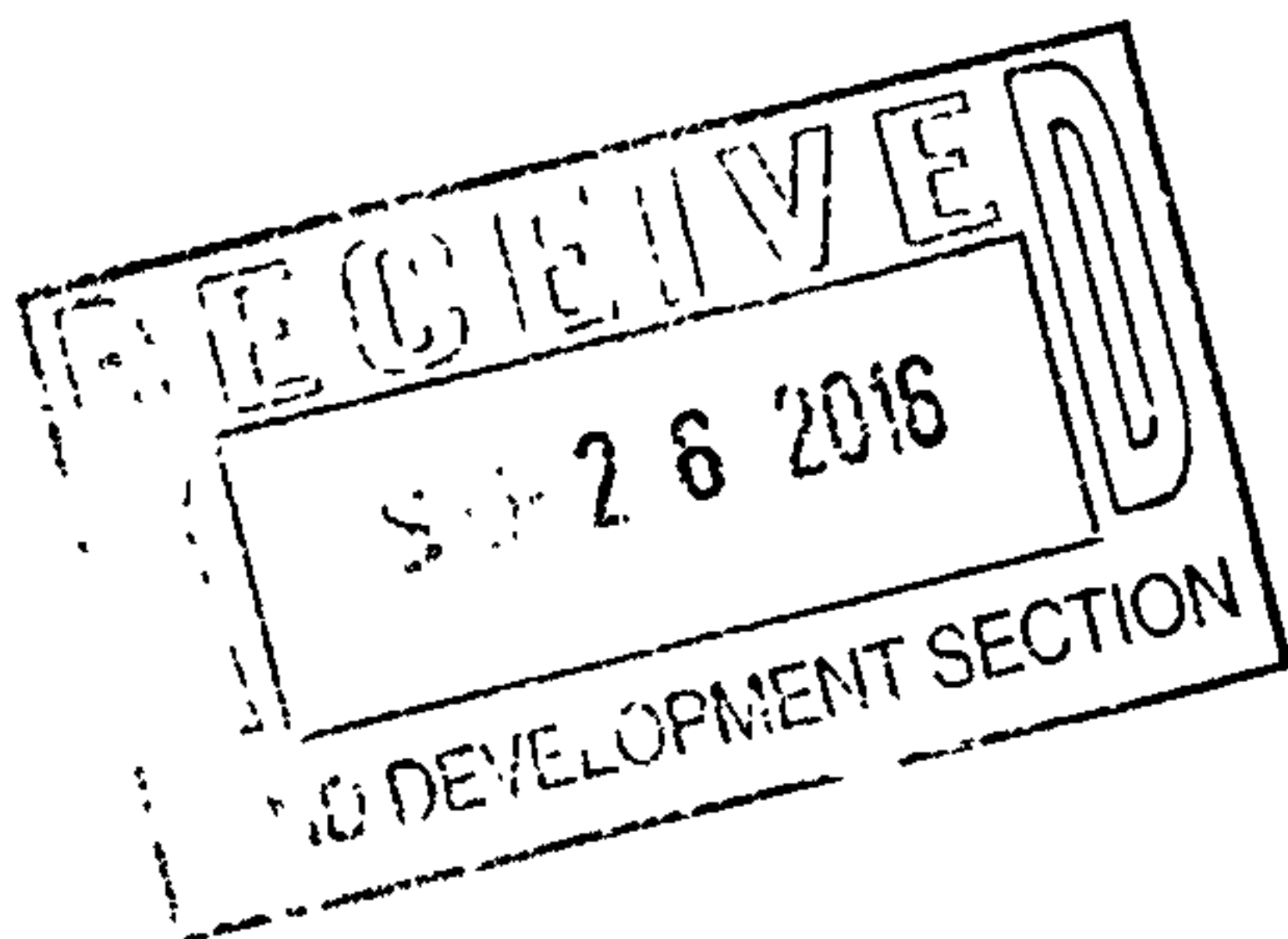
**LOMAS TOWN HOMES**  
**12844 LOMAS NE**

**Albuquerque, New Mexico**

Prepared by

Rio Grande Engineering  
PO Box 93924  
Albuquerque, New Mexico 87199

SEPTEMBER 2016



David Soule P.E. No. 14522

## TABLE OF CONTENTS

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### **Appendix**

Site Hydrology .....	A
Hydraulic Model.....	B
Hydraulic calculations.....	C

### **Map**

Site Grading and Drainage Plan

## PURPOSE

The purpose of this report is to provide the Drainage Management Plan for the development of a 1.6 acre apartment complex located at 12844 Lomas. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

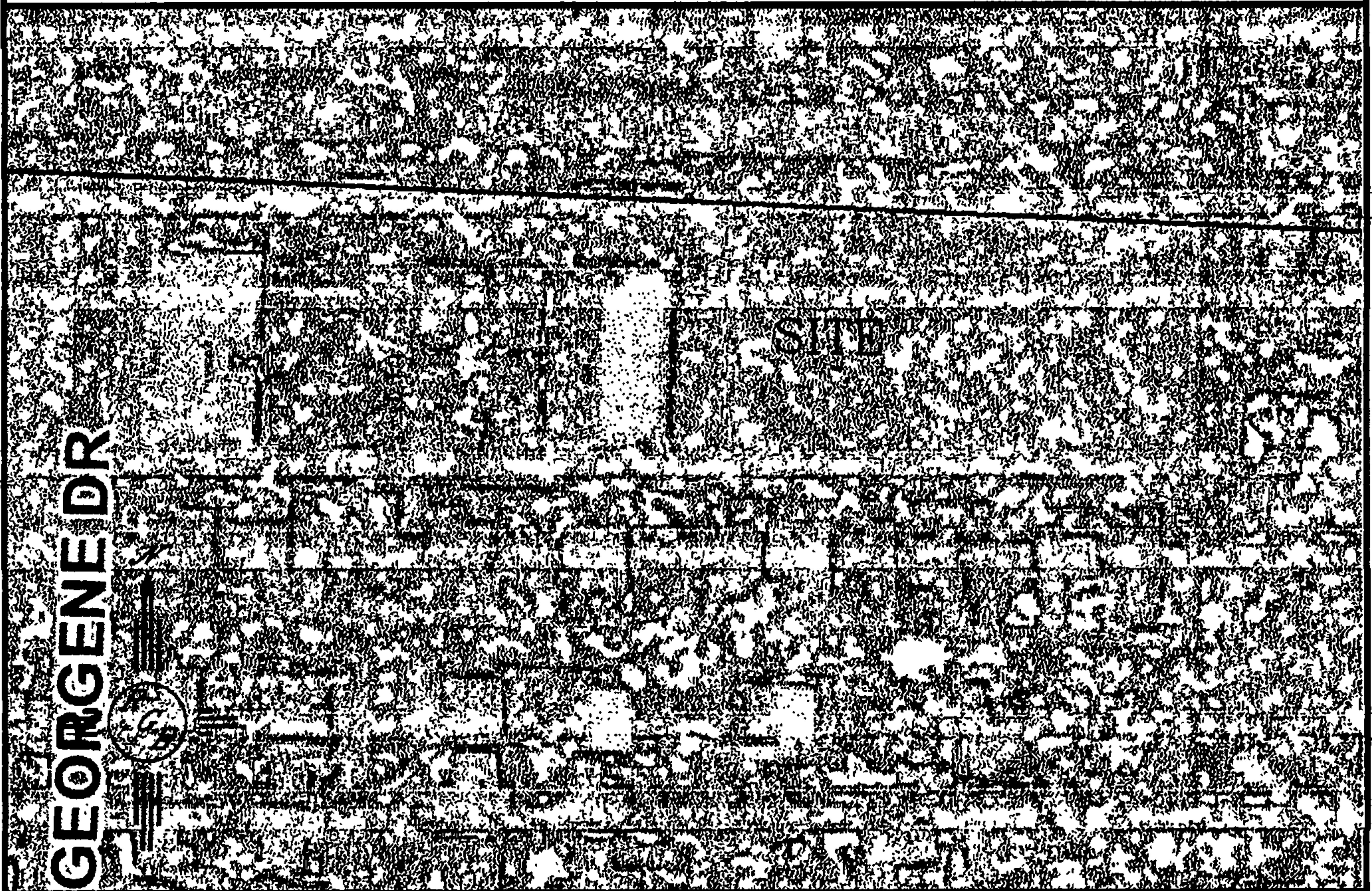
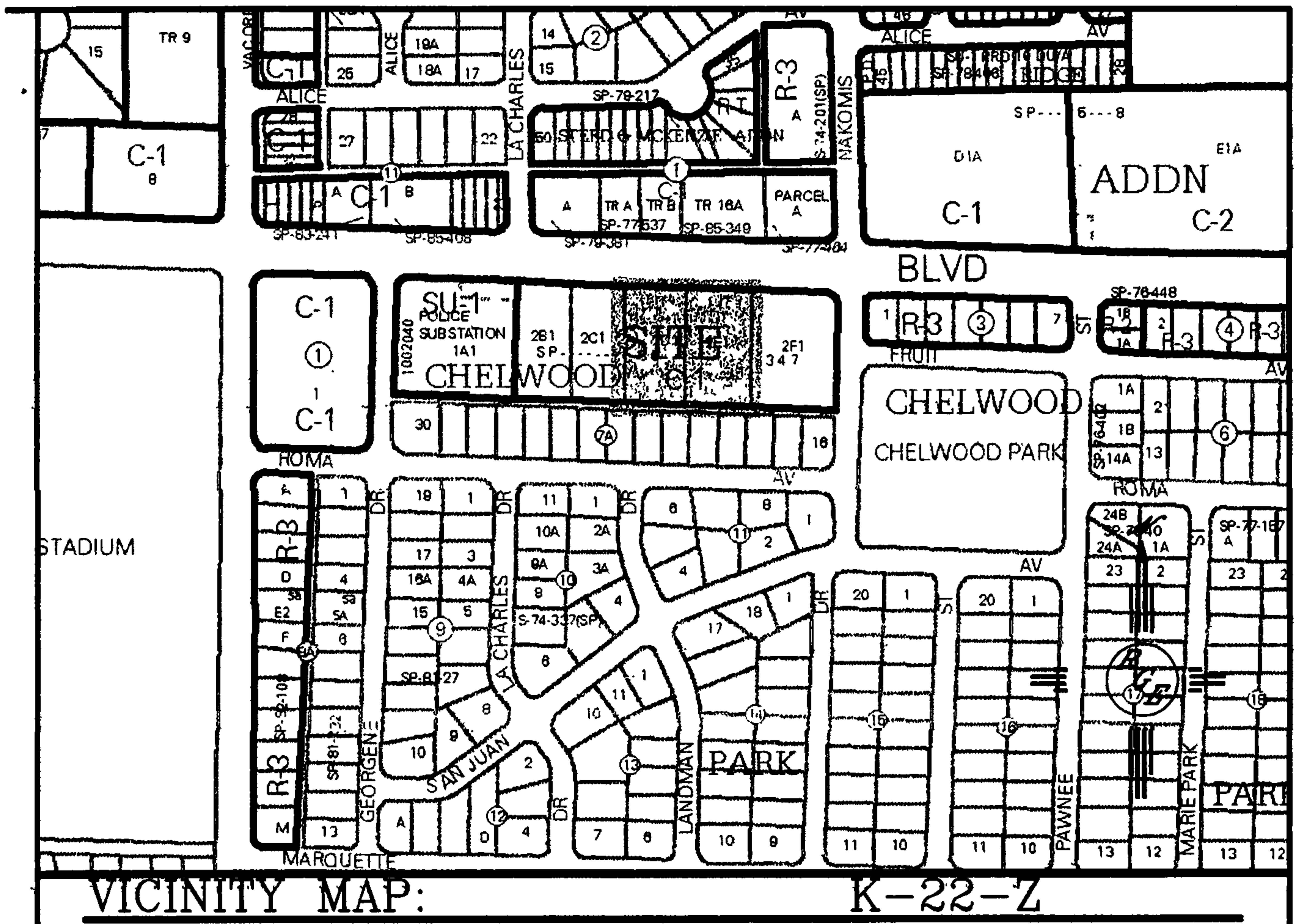
## INTRODUCTION

The subject of this report, as shown on the Exhibit A, is a 1.6-acre parcel of land located on the south side of Lomas between Juan tabo and Tramway Northeast. The legal description of this site is currently lot 2D1 and 2E1, Block 2A, Chelwood Park. As shown on FIRM map35013C0359G, the entire site is located within Flood Zone X. The site does not appear to have been graded in the past, yet has significant pedestrian activity. The site contains native grasses and hard packed paths. Due to the upstream construction of a parking lot with curbs and a block wall, the front portion of the site is not affected by any upland flows from the east, but the rear portion is impacted by upland flow. The site is surrounded by fully developed sites on all sides with walls on the south side and on the west side, with Lomas Boulevard on the north. The site currently free discharges as sheet flow to the adjacent lot to the west where it passes thru the adjacent site entering Lomas down stream to the north and an public alley to the south The development of the site will require the site to discharge at a rate equal to or less than the existing conditions and retain the first flush water quality volume onsite.

## EXISTING CONDITIONS

The site is currently undeveloped and impacted by upland flows. The adjacent site development cut off flows that entered the front portion of the site, yet 5.73 cfs enter the site along the south east corner. The site is located in flood zone x. The site currently discharges 3.7 cfs as sheet flow to the site to the west. As shown in appendix A, the front basin discharges 1.1 cfs that enter the Lomas roadway down stream of this site, and 2.6 cfs enter the alley way due to a wall on the





FIRM MAP:

FM35001C0359G

LEGAL DESCRIPTION:

LOTS 2-D AND 2-E, BLOCK 2-A, CHELWOOD PARK



down stream property. This flow enters a public storm drain at Chelwood. All downstream improvements are in place and maintained by the city of Albuquerque.

## **PROPOSED CONDITIONS**

WTV  
The proposed improvements consist of a new 24 unit apartment complex. A drainage sub basin map and hydraulic spread sheet is included in appendix A. The proposed development will have small ponds located in the landscape areas where practical to capture 2,030 cubic feet, which is in excess of the 1366 cubic feet of first flush ponding required. The site is divided into two main basins comprised of several sub-basins. As shown in appendix A, the basin contributing to Lomas generated 4.73 cfs. The basin contributing to the ally generates 2.69 cfs. Due to this exceeding historical, the Lomas basin will be throttled using parking lot detention facility. The discharge is controlled by a 4.5" orifice plate within an inlet. The pond has been modeled utilizing a stage-storage tabulation and AHYMO Model found in appendix B. As shown the Lomas basin discharge rate is reduced to 0.96 cfs. The driveway serves as this ponds emergency overflow. The flow total flow leaving the site will be 3.65 cfs which is less than the 3.70 cfs that is currently generated. The flow discharge to the alley leaves at two locations. The western basin is conveyed via a small storm drain. The inlet and pipe capacities are shown in appendix C. The upland flow will be directed to the alley via a 3' swale. This capacity of this swale is shown in appendix C.

## **SUMMARY AND RECOMMENDATIONS**

This project is a development of multifamily residential infill development within the fully developed northeast heights watershed. The development of this site will retain the first flush volume onsite. The site will discharge less than existing conditions. The drainage structures have been adequately sized. The development of this site will not negatively impact the upstream nor down stream facilities. Since this site exceed 1 acre, erosion and sediment Control Plan will be required, a NPDES permit will also be required prior to any construction activity.

**APPENDIX A**  
**SITE HYDROLOGY**



Weighted E Method  
LOMAS APTS

Existing Developed Basins

	Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		100-Year, 6-hr		10-day
				%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
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	ALLEY	48421	1.112	80%	0.88927	20.0%	0.222	0.0%	0	0.0%	0.000	0.856	0.079	2.61
	TOTAL	68240	1.567	77%	1.20776	22.9%	0.359	0.0%	0.000	0.0%	0.000	0.864	0.113	3.70
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	G	4370	0.100	0%	0	19.0%	0.019	23.0%	0.02307	58.0%	0.058	2.072	0.017	0.45
	TOTAL	26123	0.600	0%	0.000	15.5%	0.093	26.7%	0.160	57.8%	0.347	2.083	0.104	2.69

Equations:

Weighted E =  $E_a \cdot A_a + E_b \cdot A_b + E_c \cdot A_c + E_d \cdot A_d$  / (Total Area)

Volume = Weighted D \* Total Area

Flow =  $Q_a \cdot A_a + Q_b \cdot A_b + Q_c \cdot A_c + Q_d \cdot A_d$

Where for 100-year, 6-hour storm (zone 4)

$E_a = 0.8$	$Q_a = 2.2$
$E_b = 1.08$	$Q_b = 2.92$
$E_c = 1.46$	$Q_c = 3.73$
$E_d = 2.64$	$Q_d = 5.25$

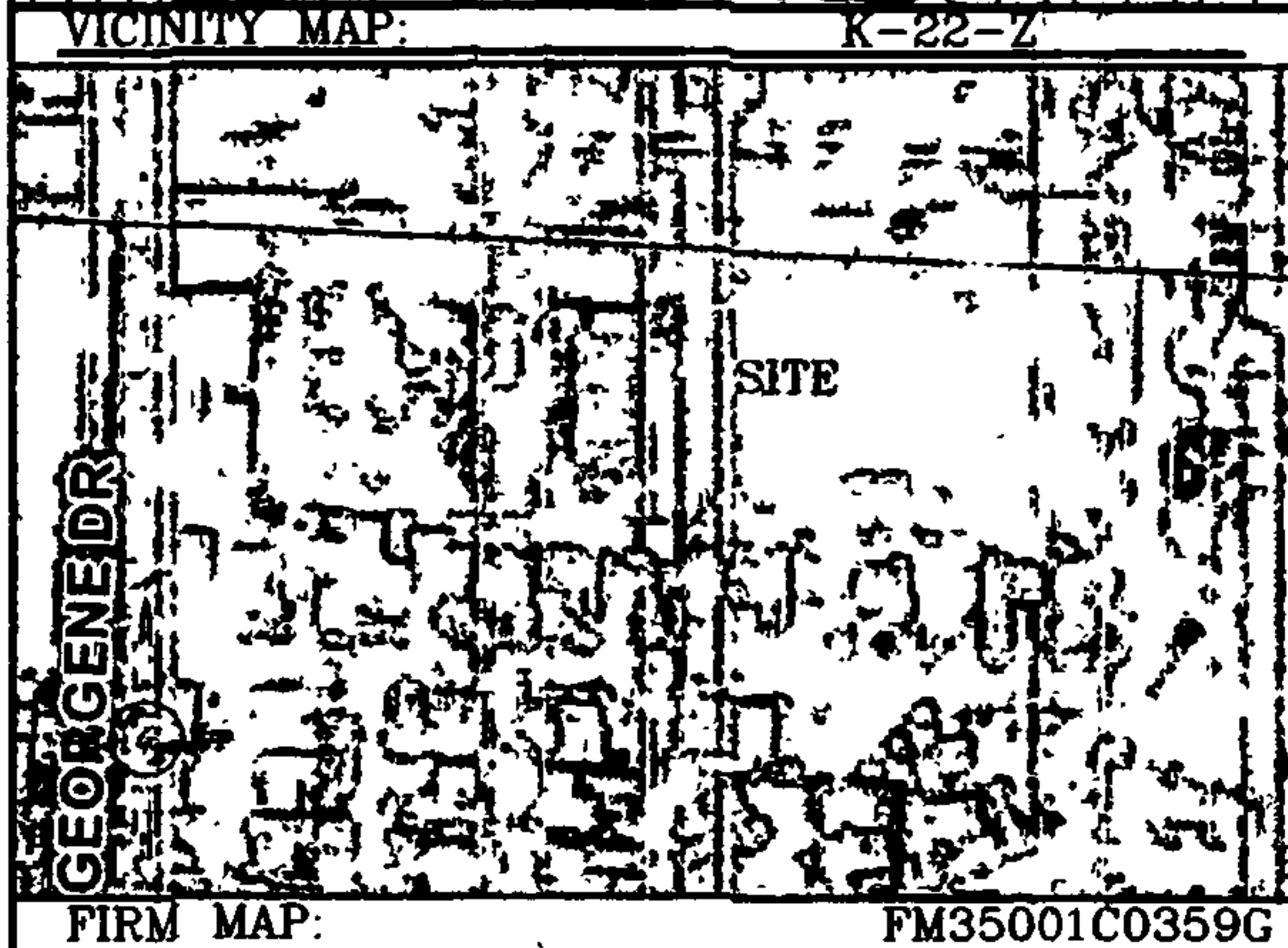
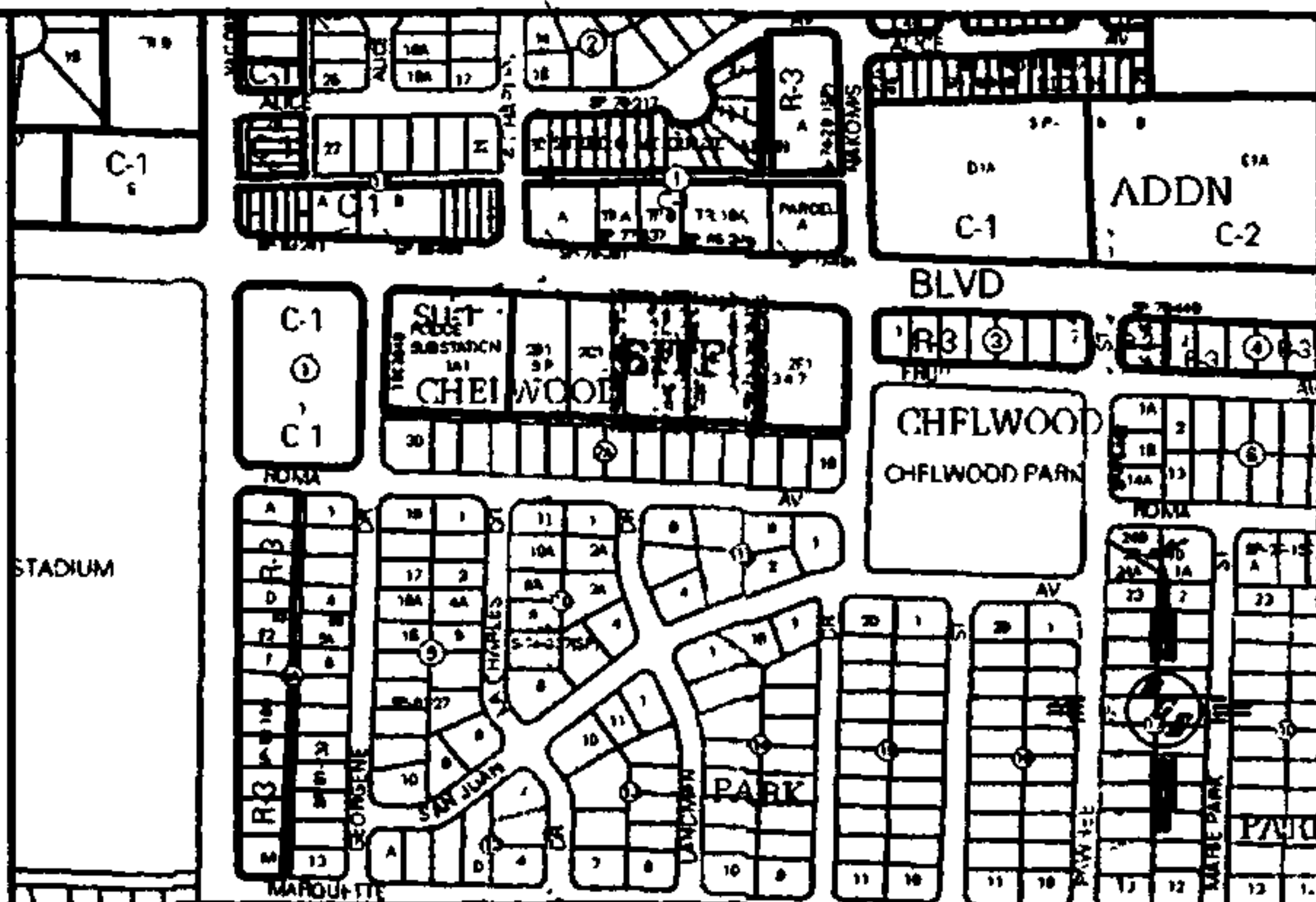
FLOW SUMMARY	EXISTING	PROPOSED
LOMAS (AFTER ROUTING)	1.10	0.96
TO ALLEY	2.61	2.69
TO ALLEY (PASSED THRU)	5.73	5.73

PONDING PROVIDED  
FIRST FLUSH REQUIREMENT

2030.0 CF  
1365.2 CF

Handwritten calculations:  
 $34^u$   
 $2 \times 43560 = 87120 \text{ ft}^2$   
 $2.28 \text{ cfs} / 43560 \text{ ft}^2 = 97923 \text{ ft}^2$   
759

CAUTION  
EXISTING UTILITIES ARE NOT SHOWN  
IT SHALL BE THE SOLE RESPONSIBILITY  
OF THE CONTRACTOR TO CONDUCT ALL  
NECESSARY FIELD INVESTIGATIONS PRIOR  
TO ANY EXCAVATION TO DETERMINE THE  
ACTUAL LOCATION OF UTILITIES & OTHER



FIRM MAP: FM35001C0359G

LEGAL DESCRIPTION:  
LOTS 2-D AND 2-E, BLOCK 2-A, CHELWOOD PARK

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.

EROSION CONTROL NOTES:

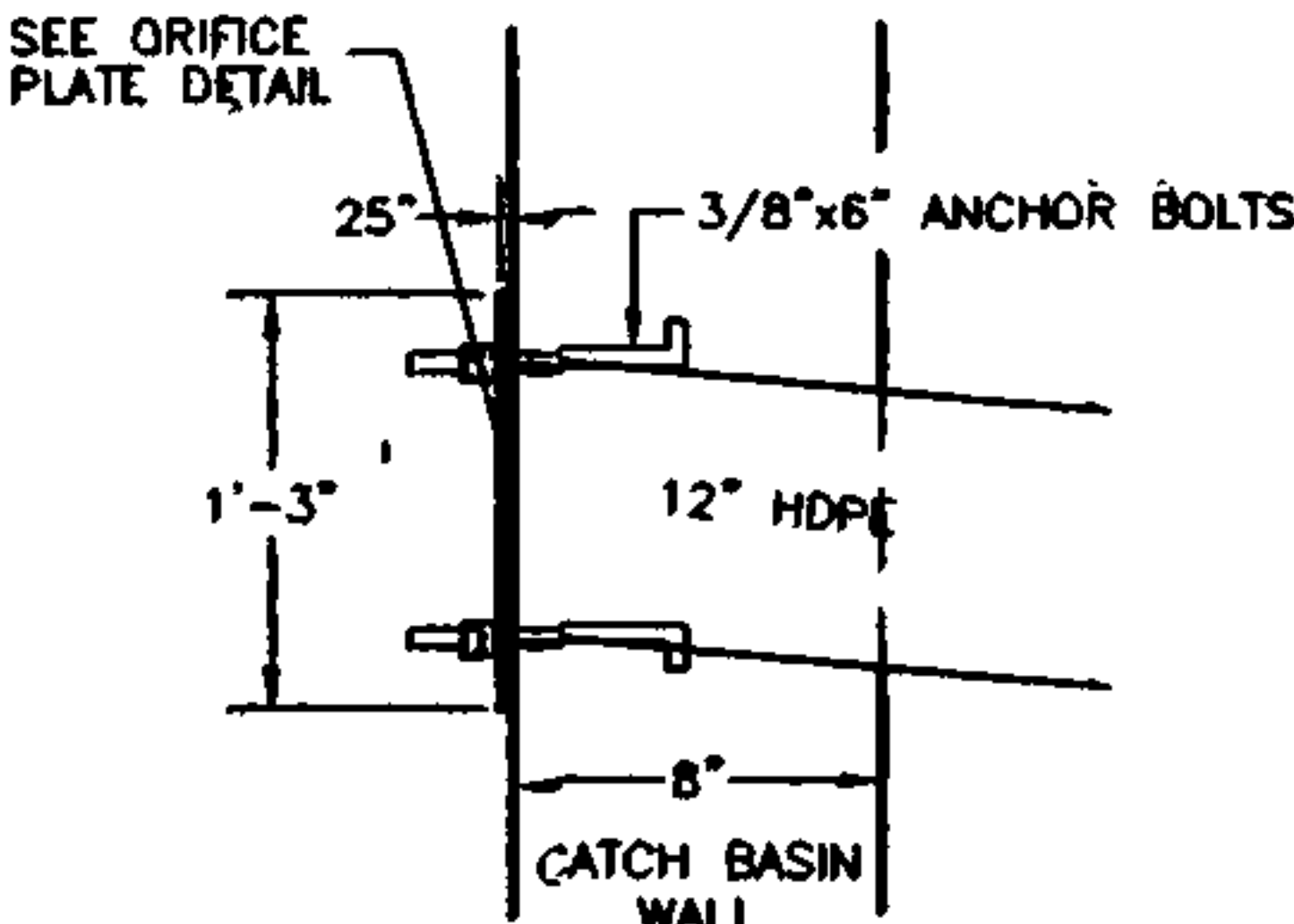
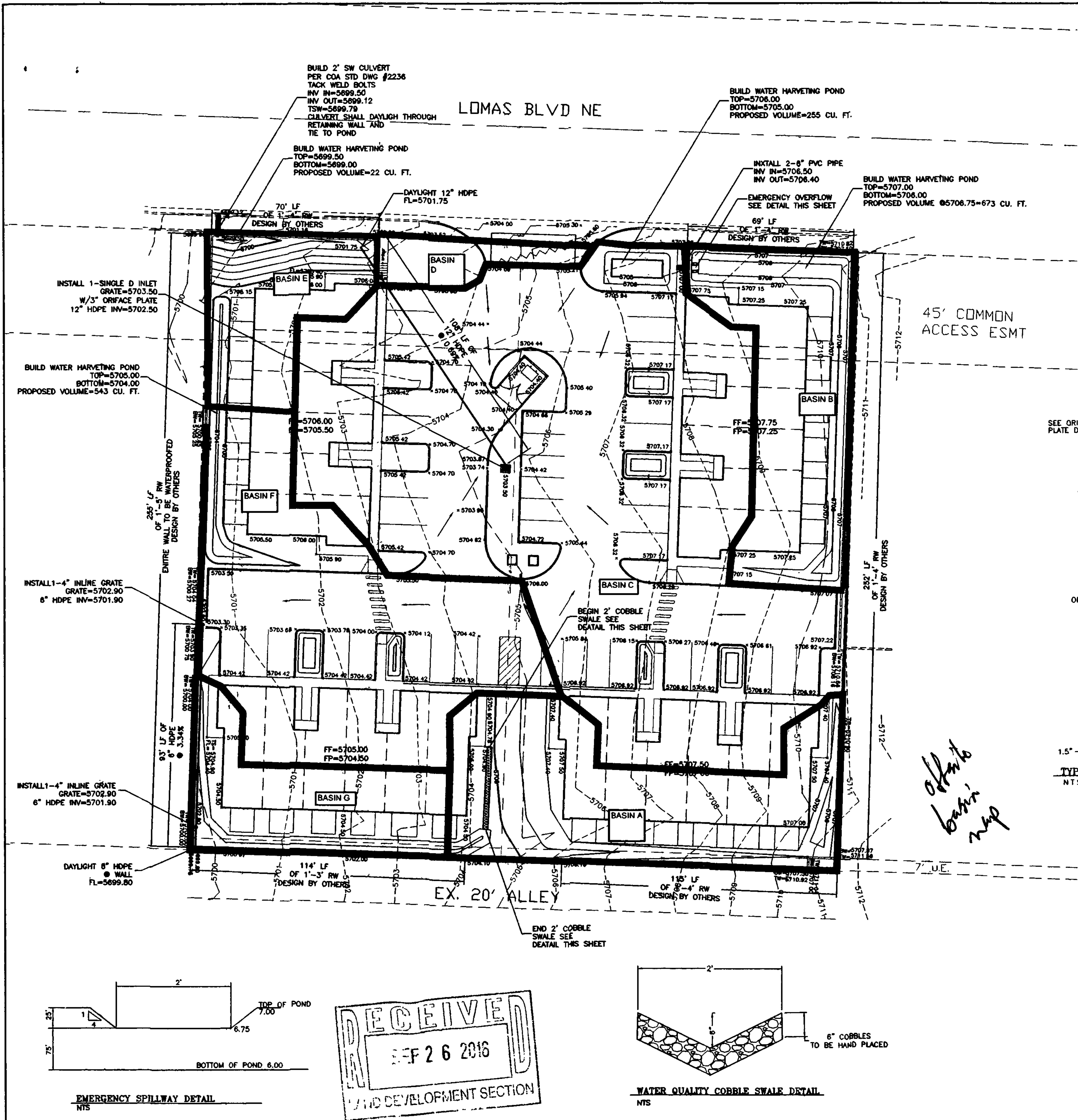
1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.

LEGEND

- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- SLOPE TIE
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- PROPOSED SIDEWALK
- PROPOSED SETBACK
- PROPOSED LOT LINE
- PROPOSED SCREEN WALL
- PROPOSED RETAINING WALL DESIGN BY OTHERS

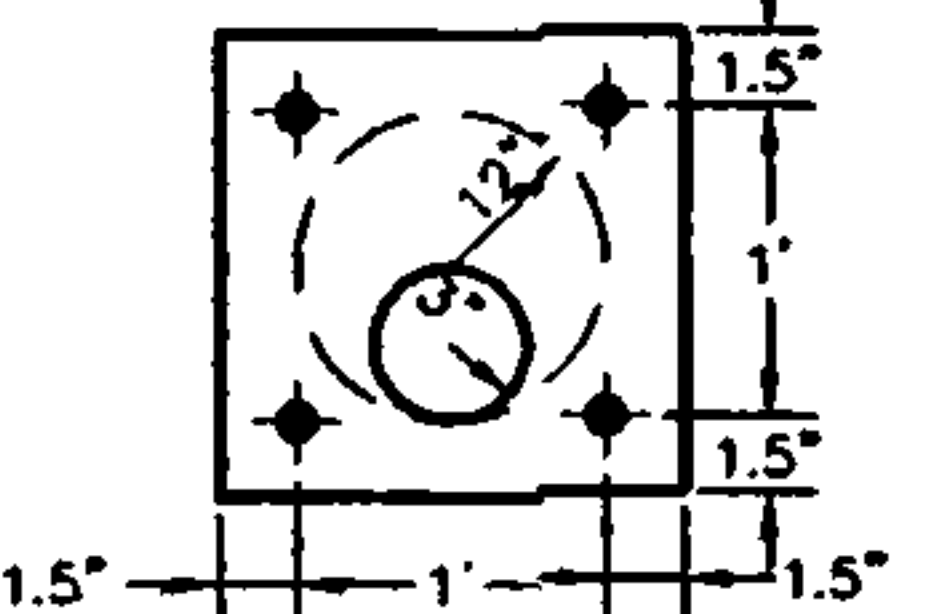
DRAINAGE BASIN

ENGINEER'S SEAL	LOMAS TOWNHOMES	DRAWN BY WCUJ
	GRADING AND DRAINAGE PLAN	DATE 9-12-16
	Rio Grande Engineering	21001-20000-1-07-16
	1808 CENTRAL AVENUE SUITE 201 ALBUQUERQUE, NM 87106 (505) 872-0000	SHEET #
DAVID SOULE P.E. #14522		JOB # 21630



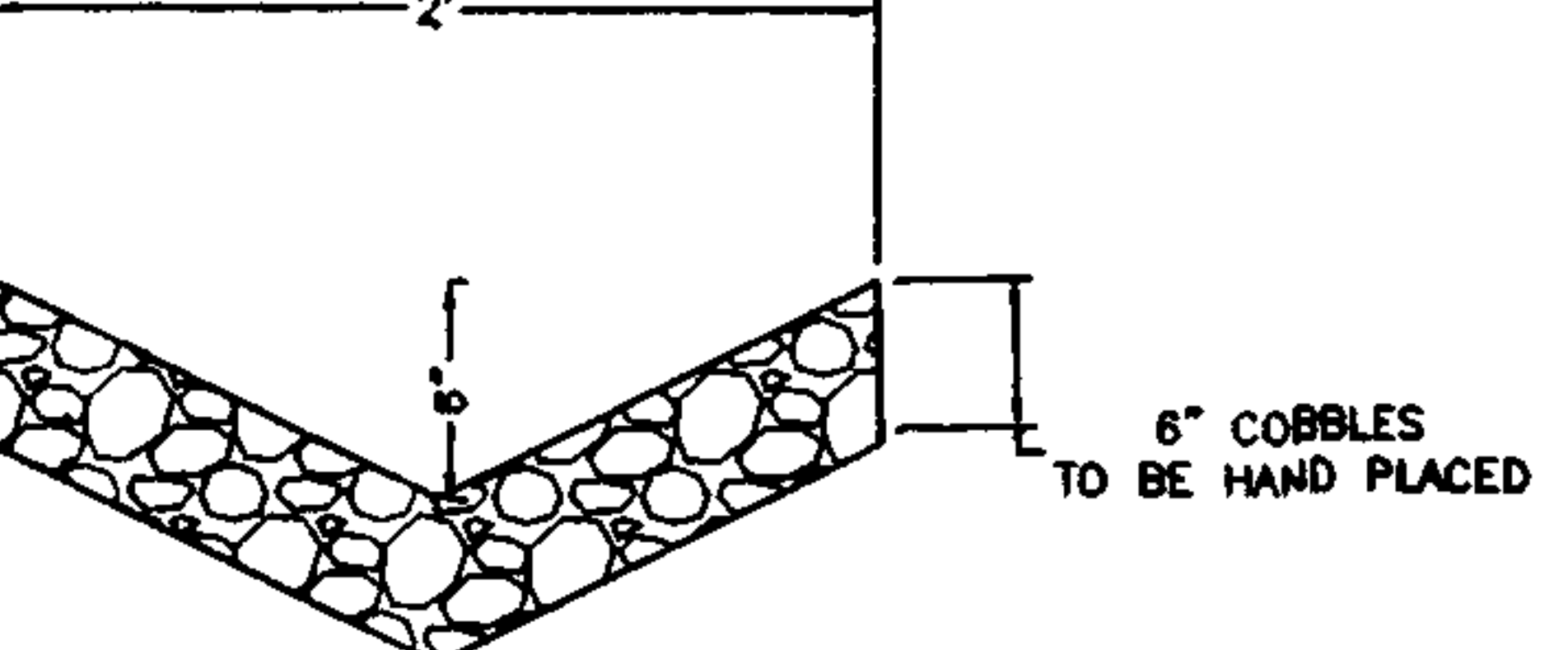
DETAIL A

TO BE INSTALLED @ THE OUTFLOW OF THE CATCH BASINS (SEE THIS PLAN FOR ORIFICE PLATE SIZES)

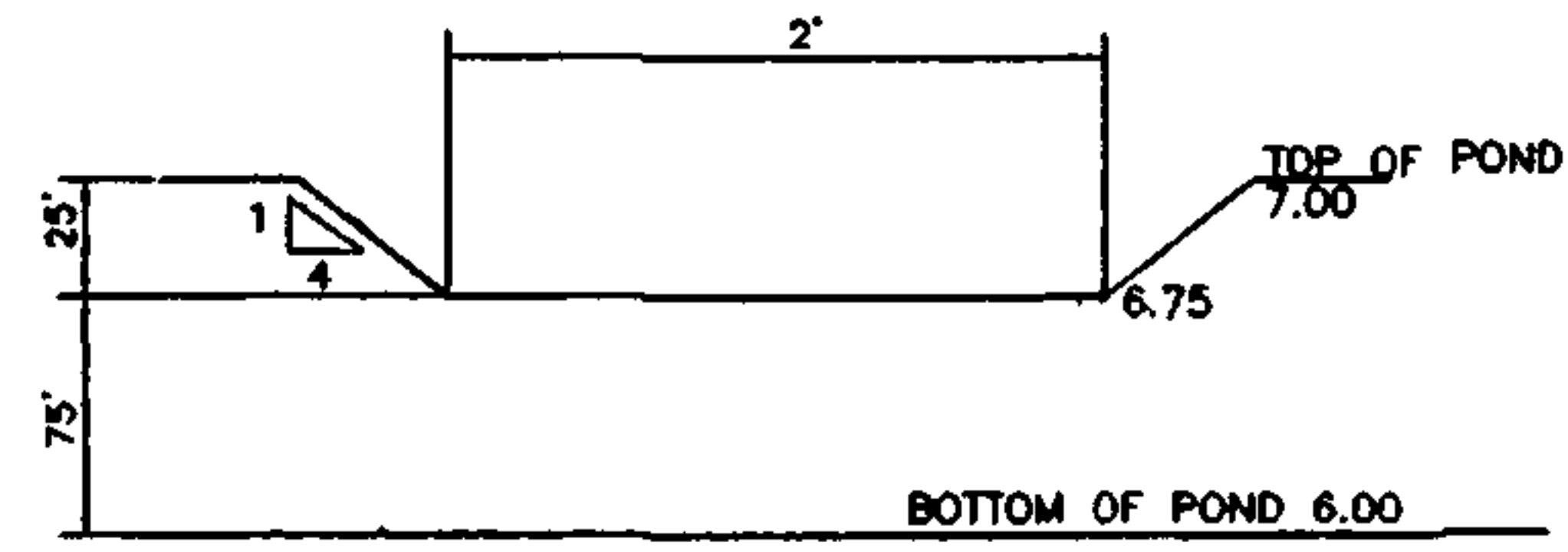
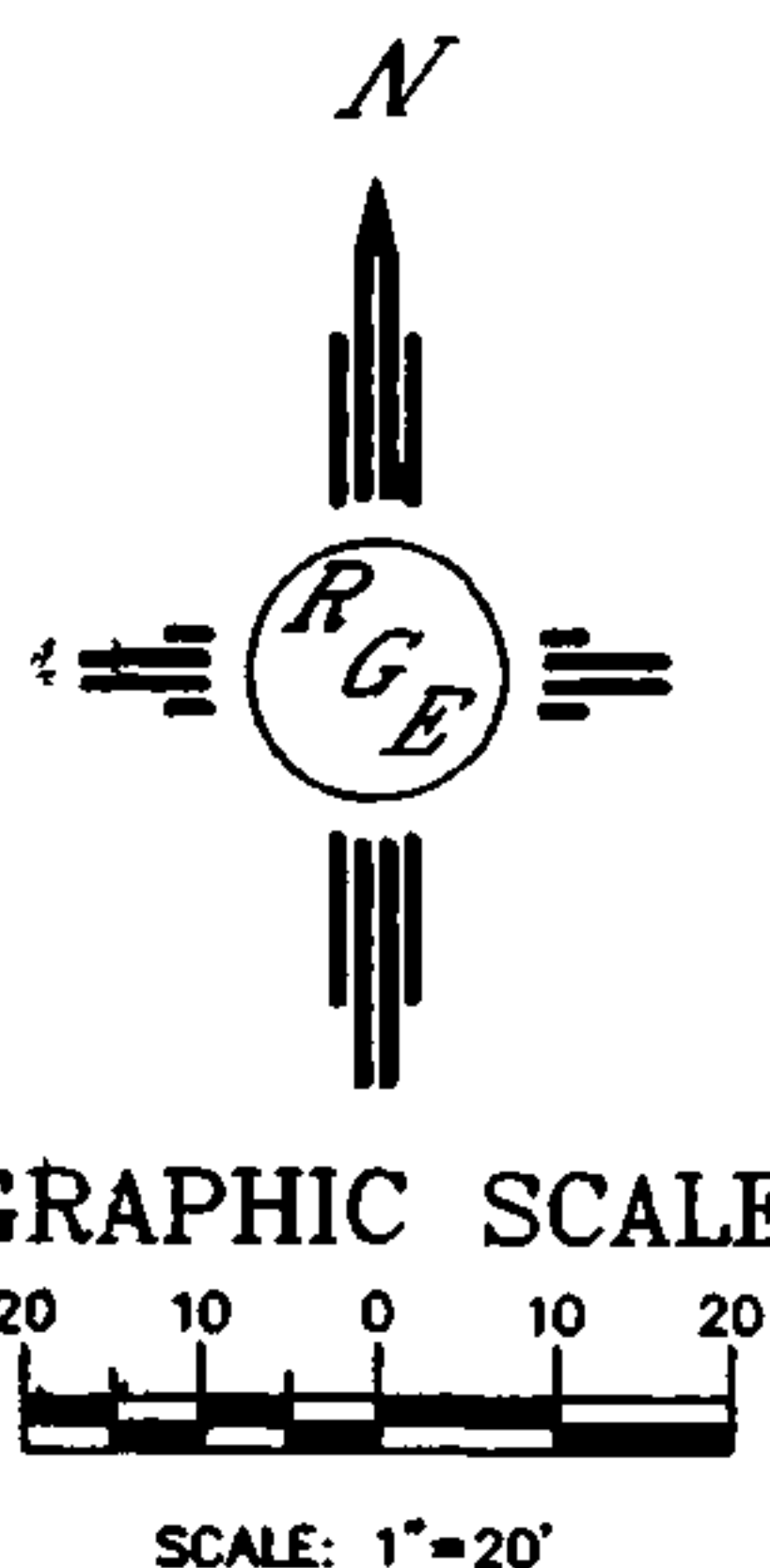


TYP. ORIFICE PLATE DETAIL NTS.

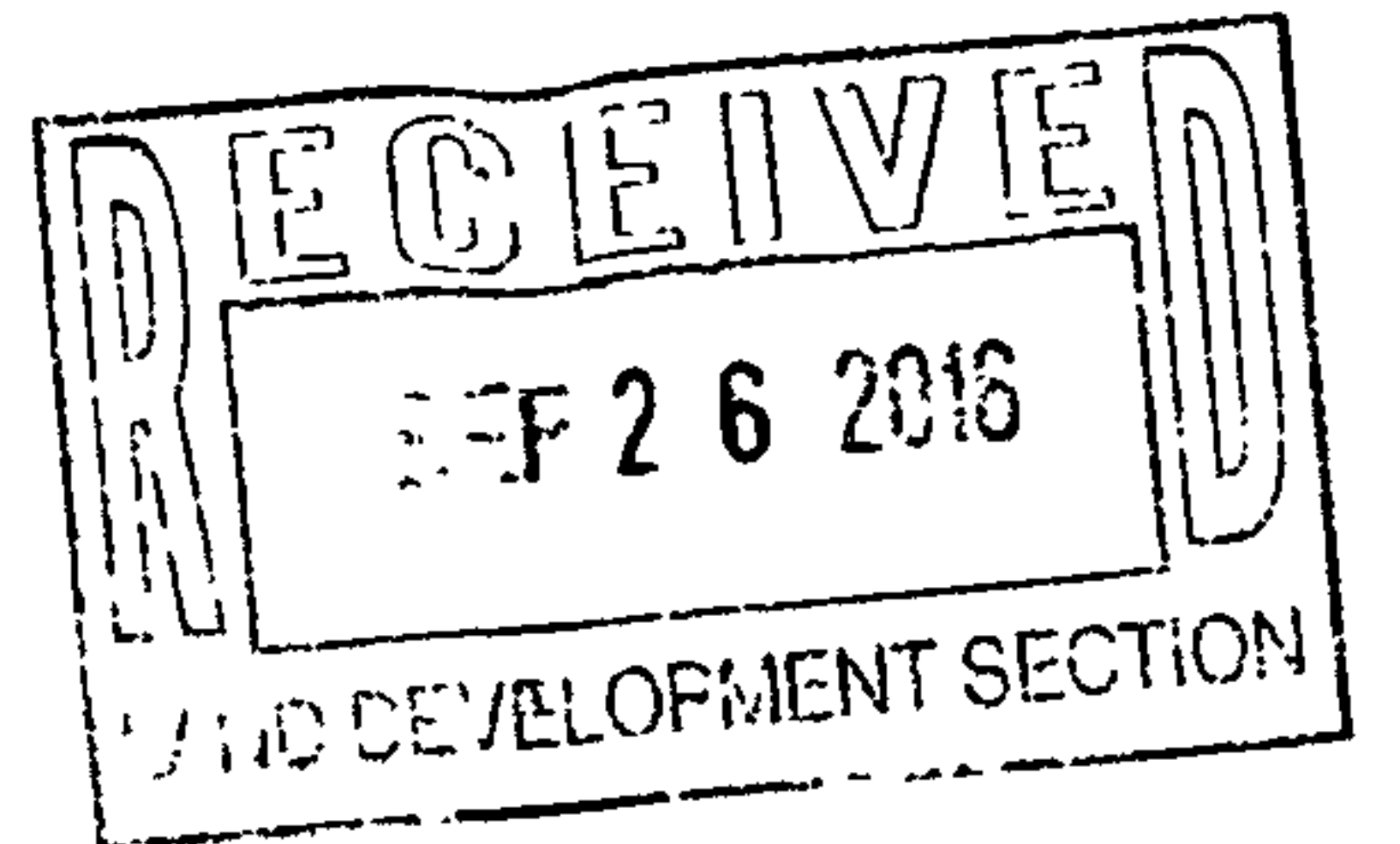
off site basin map



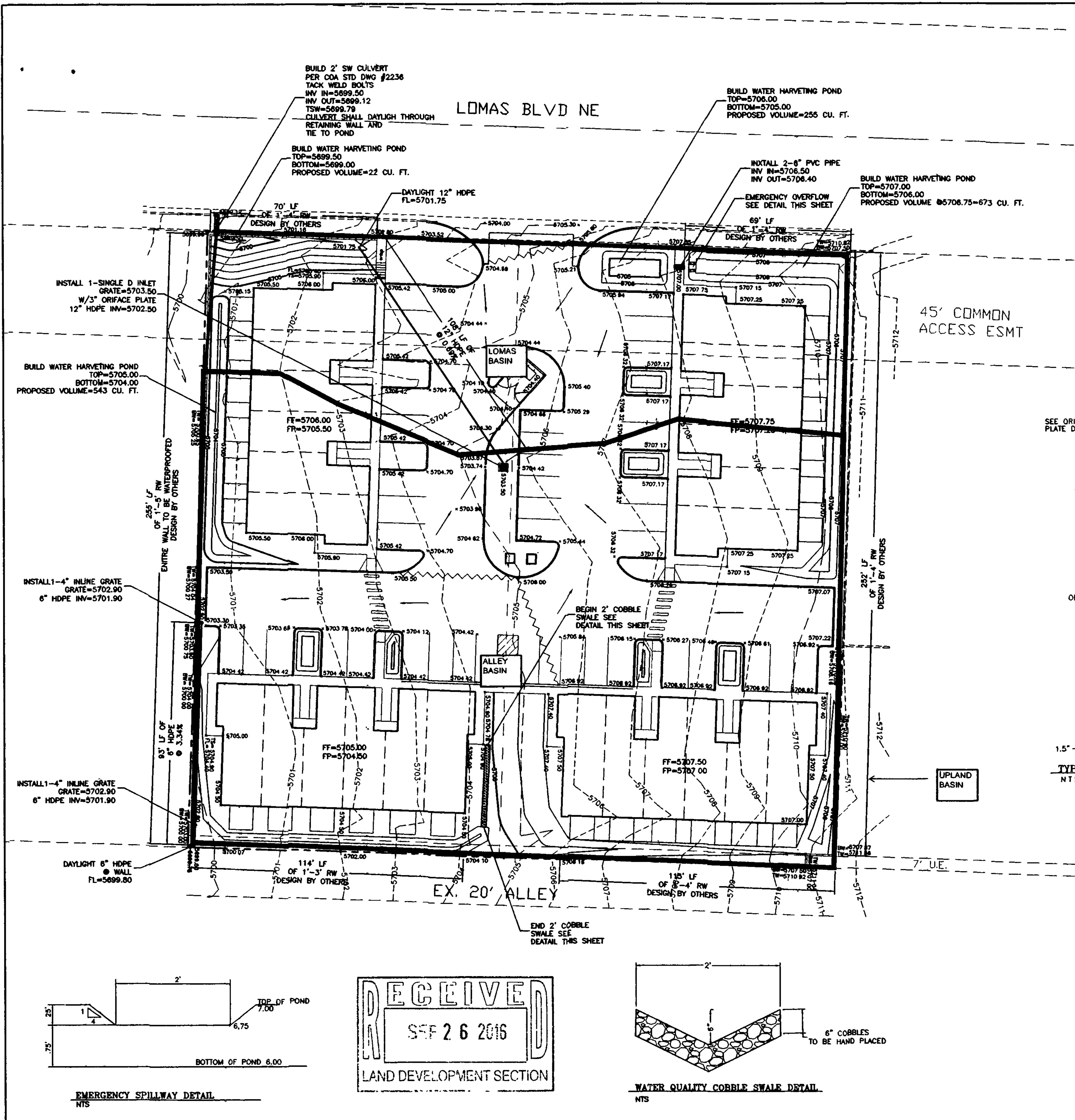
WATER QUALITY COBBLE SWALE DETAIL NTS



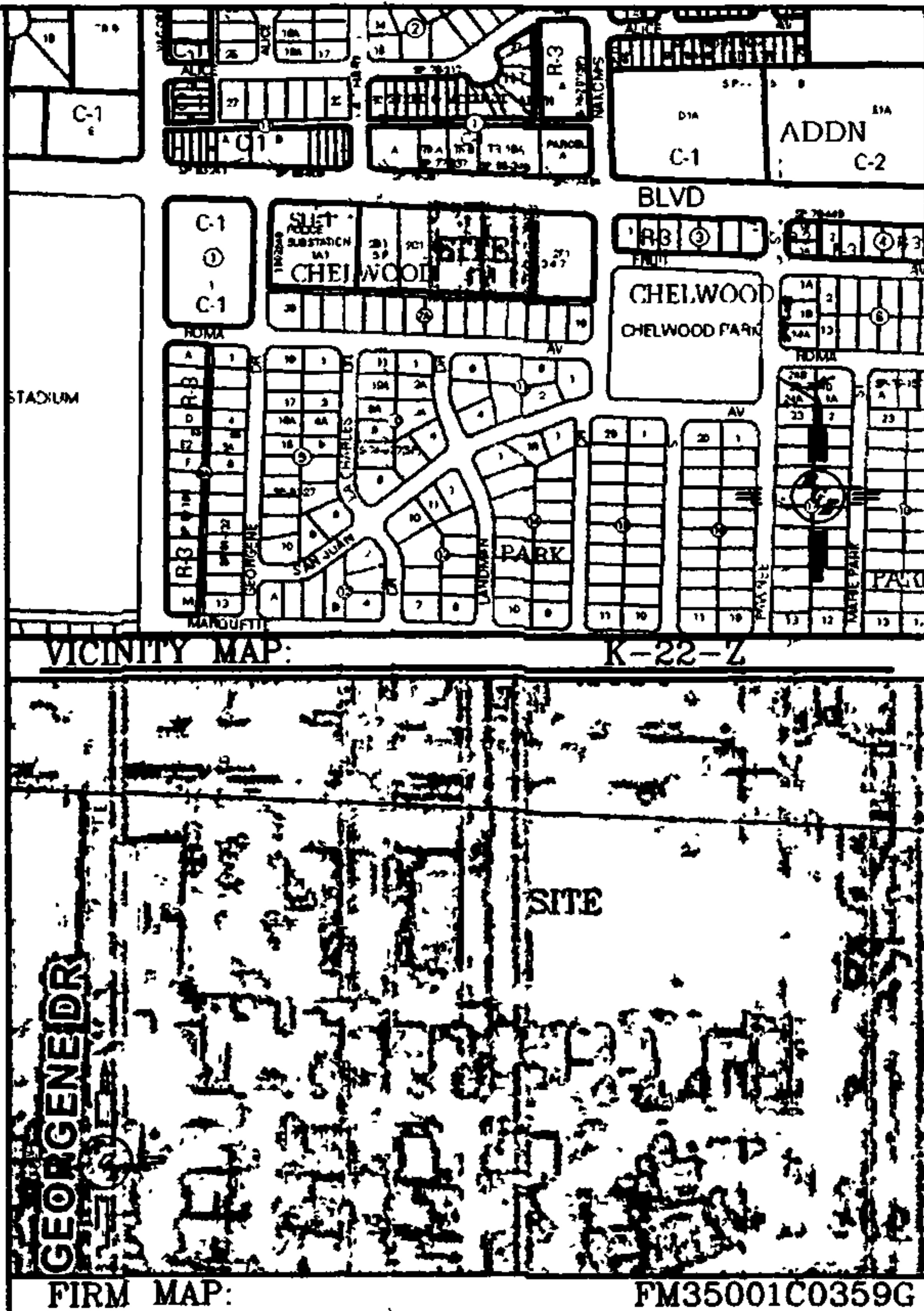
EMERGENCY SPILLWAY DETAIL NTS







**CAUTION**  
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ACTUAL LOCATION OF UTILITIES & OTHER



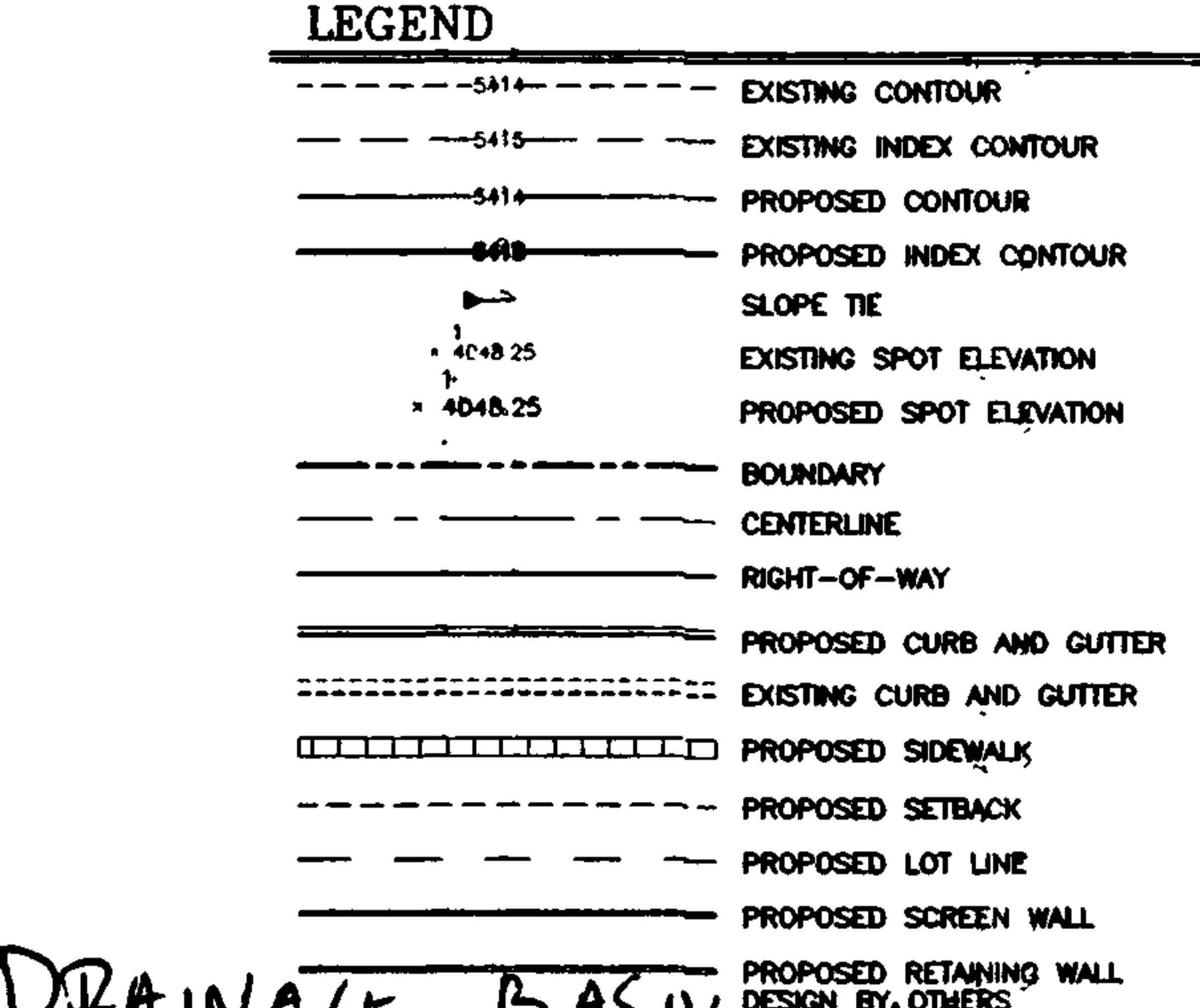
**LEGAL DESCRIPTION:**  
LOTS 2-D AND 2-E, BLOCK 2-A, CHELWOOD PARK


**NOTES:**

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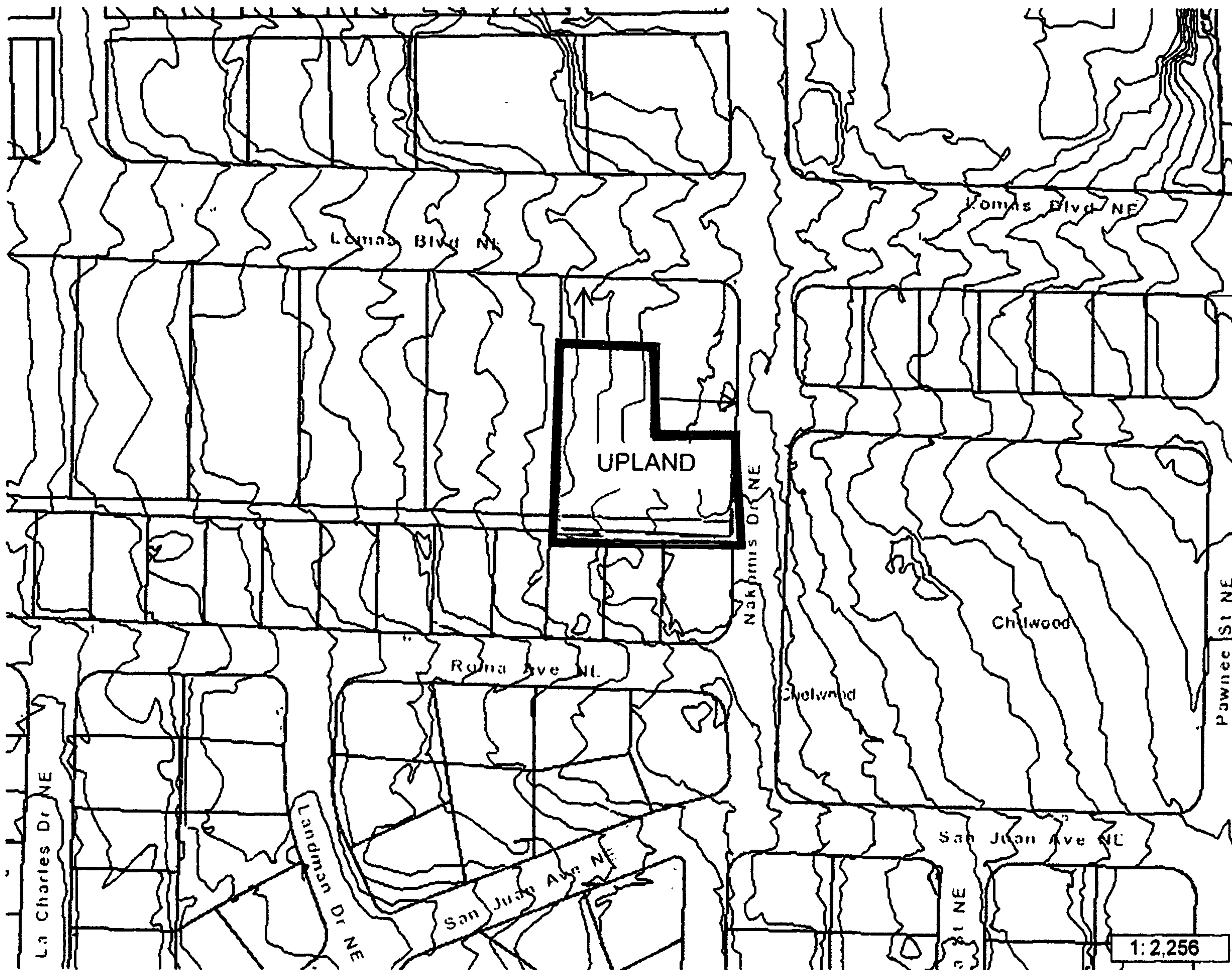


ENGINEER'S SEAL	LOMAS TOWNHOMES	DRAWN BY WCMJ
	GRADING AND DRAINAGE PLAN	DATE 9-12-16
		21001-LANDSC-1-02-16
D SOULE #14522	 <i>Rio Grande Engineering</i> 1808 CENTRAL AVENUE SUITE 201 ALBUQUERQUE, NM 87106 (505) 872-0888	SHEET #
		JOB # 21630



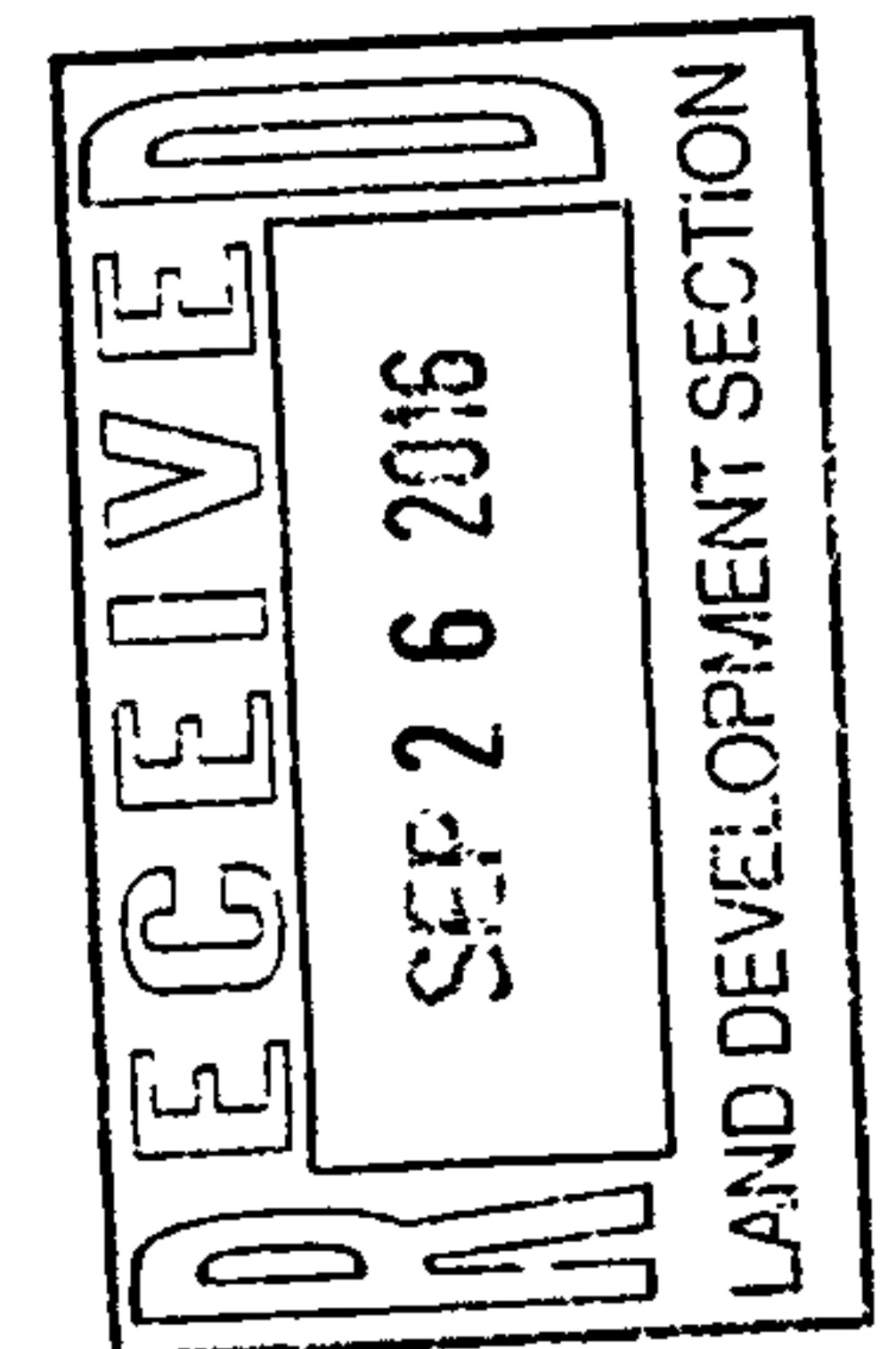


# City of Albuquerque



## Legend

- ☐ City Parcels
- Municipal Limits**
  - Corrales
  - Edgewood
  - Los Ranchos
  - Rio Rancho
  - Tijeras
  - UNINCORPORATED
- World Street Map



## Notes

0.0 0 0.02 0.0 Miles

WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
9/17/2016 © City of Albuquerque

This map is a user generated static output from [www.cabq.gov/gis](http://www.cabq.gov/gis) and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR LEGAL PURPOSES

**APPENDIX B**

**HYDRAULIC MODEL**

# VOLUME CALCULATIONS

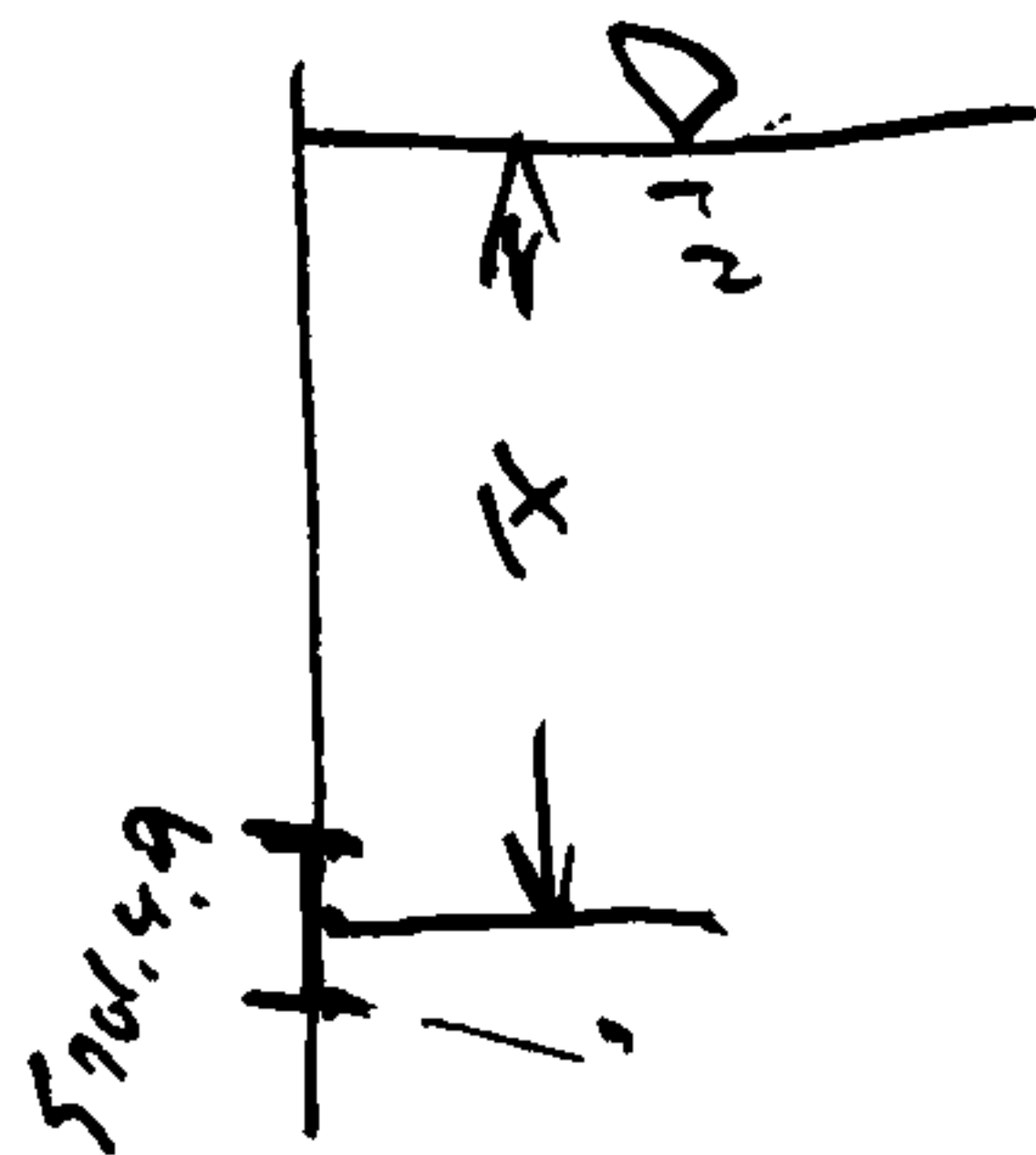
INLET DRAIN

OUTLET      inlet bottom  
POND OUTLET

ACTUAL ELEV.	DEPTH (FT)	AREA SF	VOLUME PER UNIT	VOLUME CUMULATIVE	VOLUME AC-FT	Q (CFS)
1.00	0.00	6.00	0	0	0.000	
1.32	0.00	6.0000	6	6	0.000	
3.50	2.18	6.0000	6.0000	12	0.000	0.78
4.00	2.68	450.0000	228.0000	240	0.006	0.84
4.50	3.18	2895.0000	1672.5000	1912.5	0.044	0.92
5.00	3.68	5240.0000	4067.5000	5980	0.137	0.99

Orifice Equation  
 $Q = CA \sqrt{2gH}$

C = 0.6  
Diameter (in) 4.5  
Area (ft^2) = 0.110446617





Npondrout0917 16.txt

\*S AHYMO - PARKING LOT DETENTION-LOMAS APTS  
\*S POND ROUTING

START TIME=0.0 PUNCH CODE=0

RAINFALL TYPE=2  
QUARTER=0.0 ONE= 2.23 IN  
SIX= 2.90 IN DAY= 3.165IN DT = 0.05 HR

COMPUTE NM HYD ID=1 HYD NO=101 DA= .00151 SQ MI  
PER A=0 PER B=4.1 PER C=17.4 PER D=78.5  
TP=-.145 MASSRAIN=-1

PRINT HYD ID=1 CODE=3

\* ROUTE THE TOTAL FLOW THROUGH THE PROPOSED RESERVOIR  
ROUTE RESERVOIR ID=2 HYD NO=102 INFLOW=1 CODE=3  
OUTFLOW(CFS) STORAGE(AC-FT) ELEV(FT)  
0.00 0.000 1.32  
0.78 0.000 3.50  
0.84 0.006 4.00  
0.92 0.044 4.50  
0.99 0.137 5.00

FINISH

AHYMO.OUT

AHYMO PROGRAM (AHYMO-S4) - Version: S4.01a - Rel: 01a  
 RUN DATE (MON/DAY/YR) = 09/17/2016  
 START TIME (HR:MIN:SEC) = 20:16:39 USER NO.=  
 RioGrandeSingleA41963517  
 INPUT FILE = :\\Documents and Settings\\Owner\\Desktop\\2016  
 jobs\\1626-LOMAS\\Npondrout0917 16.txt

\*S AHYMO - NORTH INLET  
 \*S POND ROUTING

START TIME=0.0 PUNCH CODE=0

RAINFALL TYPE=2  
 QUARTER=0.0 ONE= 2.23 IN  
 SIX= 2.90 IN DAY= 3.165IN DT = 0.05 HR

AREAS (NM & AZ) - D1 24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE

DT = 0.050000 HOURS			END TIME = 24.000002 HOURS			
0.0000	0.0045	0.0091	0.0140	0.0193	0.0248	0.0310
0.0398	0.0537	0.0687	0.0842	0.1010	0.1181	0.1356
0.1538	0.1722	0.1925	0.2138	0.2367	0.2658	0.2980
0.3412	0.3902	0.4507	0.5314	0.6221	0.7789	1.0225
1.4400	1.7335	1.9649	2.0812	2.1831	2.2564	2.3147
2.3654	2.4026	2.4368	2.4649	2.4887	2.5102	2.5296
2.5478	2.5640	2.5793	2.5942	2.6086	2.6205	2.6271
2.6337	2.6401	2.6461	2.6521	2.6579	2.6636	2.6693
2.6746	2.6799	2.6851	2.6902	2.6952	2.7000	2.7048
2.7095	2.7141	2.7186	2.7230	2.7273	2.7316	2.7358
2.7399	2.7440	2.7481	2.7521	2.7560	2.7599	2.7638
2.7676	2.7713	2.7751	2.7787	2.7824	2.7860	2.7895
2.7931	2.7965	2.8000	2.8034	2.8068	2.8101	2.8134
2.8167	2.8200	2.8232	2.8263	2.8295	2.8326	2.8357
2.8388	2.8418	2.8448	2.8478	2.8508	2.8537	2.8566
2.8595	2.8623	2.8652	2.8680	2.8708	2.8735	2.8763
2.8790	2.8817	2.8844	2.8870	2.8897	2.8923	2.8949
2.8974	2.9000	2.9007	2.9015	2.9022	2.9029	2.9037
2.9044	2.9052	2.9059	2.9066	2.9074	2.9081	2.9088
2.9096	2.9103	2.9110	2.9118	2.9125	2.9133	2.9140
2.9147	2.9155	2.9162	2.9169	2.9177	2.9184	2.9191
2.9199	2.9206	2.9213	2.9221	2.9228	2.9236	2.9243
2.9250	2.9258	2.9265	2.9272	2.9280	2.9287	2.9294
2.9302	2.9309	2.9317	2.9324	2.9331	2.9339	2.9346
2.9353	2.9361	2.9368	2.9375	2.9383	2.9390	2.9398
2.9405	2.9412	2.9420	2.9427	2.9434	2.9442	2.9449
2.9456	2.9464	2.9471	2.9478	2.9486	2.9493	2.9501
2.9508	2.9515	2.9523	2.9530	2.9537	2.9545	2.9552
2.9559	2.9567	2.9574	2.9582	2.9589	2.9596	2.9604
2.9611	2.9618	2.9626	2.9633	2.9640	2.9648	2.9655
2.9663	2.9670	2.9677	2.9685	2.9692	2.9699	2.9707
2.9714	2.9721	2.9729	2.9736	2.9744	2.9751	2.9758
2.9766	2.9773	2.9780	2.9788	2.9795	2.9802	2.9810
2.9817	2.9824	2.9832	2.9839	2.9847	2.9854	2.9861
2.9869	2.9876	2.9883	2.9891	2.9898	2.9905	2.9913
2.9920	2.9928	2.9935	2.9942	2.9950	2.9957	2.9964
2.9972	2.9979	2.9986	2.9994	3.0001	3.0009	3.0016

AHYMO.OUT						
3.0023	3.0031	3.0038	3.0045	3.0053	3.0060	3.0067
3.0075	3.0082	3.0089	3.0097	3.0104	3.0112	3.0119
3.0126	3.0134	3.0141	3.0148	3.0156	3.0163	3.0170
3.0178	3.0185	3.0193	3.0200	3.0207	3.0215	3.0222
3.0229	3.0237	3.0244	3.0251	3.0259	3.0266	3.0274
3.0281	3.0288	3.0296	3.0303	3.0310	3.0318	3.0325
3.0332	3.0340	3.0347	3.0354	3.0362	3.0369	3.0377
3.0384	3.0391	3.0399	3.0406	3.0413	3.0421	3.0428
3.0435	3.0443	3.0450	3.0458	3.0465	3.0472	3.0480
3.0487	3.0494	3.0502	3.0509	3.0516	3.0524	3.0531
3.0539	3.0546	3.0553	3.0561	3.0568	3.0575	3.0583
3.0590	3.0597	3.0605	3.0612	3.0620	3.0627	3.0634
3.0642	3.0649	3.0656	3.0664	3.0671	3.0678	3.0686
3.0693	3.0700	3.0708	3.0715	3.0723	3.0730	3.0737
3.0745	3.0752	3.0759	3.0767	3.0774	3.0781	3.0789
3.0796	3.0804	3.0811	3.0818	3.0826	3.0833	3.0840
3.0848	3.0855	3.0862	3.0870	3.0877	3.0885	3.0892
3.0899	3.0907	3.0914	3.0921	3.0929	3.0936	3.0943
3.0951	3.0958	3.0965	3.0973	3.0980	3.0988	3.0995
3.1002	3.1010	3.1017	3.1024	3.1032	3.1039	3.1046
3.1054	3.1061	3.1069	3.1076	3.1083	3.1091	3.1098
3.1105	3.1113	3.1120	3.1127	3.1135	3.1142	3.1150
3.1157	3.1164	3.1172	3.1179	3.1186	3.1194	3.1201
3.1208	3.1216	3.1223	3.1231	3.1238	3.1245	3.1253
3.1260	3.1267	3.1275	3.1282	3.1289	3.1297	3.1304
3.1311	3.1319	3.1326	3.1334	3.1341	3.1348	3.1356
3.1363	3.1370	3.1378	3.1385	3.1392	3.1400	3.1407
3.1415	3.1422	3.1429	3.1437	3.1444	3.1451	3.1459
3.1466	3.1473	3.1481	3.1488	3.1496	3.1503	3.1510
3.1518	3.1525	3.1532	3.1540	3.1547	3.1554	3.1562
3.1569	3.1576	3.1584	3.1591	3.1599	3.1606	3.1613
3.1621	3.1628	3.1635	3.1643	3.1650		

COMPUTE NM HYD            ID=1    HYD NO=101    DA= .00151 SQ MI  
                              PER A=0    PER B=4.1    PER C=17.4    PER D=78.5  
                              TP=-.137    MASSRAIN=-1

K = 0.074665HR    TP = 0.137000HR    K/TP RATIO = 0.545000    SHAPE  
 CONSTANT, N = 7.106428  
 UNIT PEAK = 4.5534    CFS    UNIT VOLUME = 0.9964    B = 526.28  
 P60 = 2.2300  
 AREA = 0.001185 SQ MI    IA = 0.10000 INCHES    INF = 0.04000  
 INCHES PER HOUR  
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  
 0.050000

K = 0.117842HR    TP = 0.137000HR    K/TP RATIO = 0.860161    SHAPE  
 CONSTANT, N = 4.134031  
 UNIT PEAK = 0.86260    CFS    UNIT VOLUME = 0.9857    B = 364.01  
 P60 = 2.2300  
 AREA = 0.000325 SQ MI    IA = 0.37860 INCHES    INF = 0.91009  
 INCHES PER HOUR  
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  
 0.050000

PRINT HYD                    ID=1    CODE=3

PARTIAL HYDROGRAPH    101.00					
TIME	FLOW	TIME	FLOW	TIME	FLOW
Page 2					



			AHYMO.OUT				
TIME	FLOW		TIME	FLOW			
HRS	HRS	CFS	HRS	HRS	CFS	HRS	CFS
	0.000	0.0		4.950	0.0	9.900	0.0
14.850	0.0		19.800	0.0			
	0.150	0.0		5.100	0.0	10.050	0.0
15.000	0.0		19.950	0.0			
	0.300	0.0		5.250	0.0	10.200	0.0
15.150	0.0		20.100	0.0			
	0.450	0.0		5.400	0.0	10.350	0.0
15.300	0.0		20.250	0.0			
	0.600	0.0		5.550	0.0	10.500	0.0
15.450	0.0		20.400	0.0			
	0.750	0.2		5.700	0.0	10.650	0.0
15.600	0.0		20.550	0.0			
	0.900	0.2		5.850	0.0	10.800	0.0
15.750	0.0		20.700	0.0			
	1.050	0.4		6.000	0.0	10.950	0.0
15.900	0.0		20.850	0.0			
	1.200	0.7		6.150	0.0	11.100	0.0
16.050	0.0		21.000	0.0			
	1.350	1.6		6.300	0.0	11.250	0.0
16.200	0.0		21.150	0.0			
	1.500	4.8		6.450	0.0	11.400	0.0
16.350	0.0		21.300	0.0			
	1.650	3.0		6.600	0.0	11.550	0.0
16.500	0.0		21.450	0.0			
	1.800	1.5		6.750	0.0	11.700	0.0
16.650	0.0		21.600	0.0			
	1.950	0.8		6.900	0.0	11.850	0.0
16.800	0.0		21.750	0.0			
	2.100	0.5		7.050	0.0	12.000	0.0
16.950	0.0		21.900	0.0			
	2.250	0.4		7.200	0.0	12.150	0.0
17.100	0.0		22.050	0.0			
	2.400	0.3		7.350	0.0	12.300	0.0
17.250	0.0		22.200	0.0			
	2.550	0.1		7.500	0.0	12.450	0.0
17.400	0.0		22.350	0.0			
	2.700	0.1		7.650	0.0	12.600	0.0
17.550	0.0		22.500	0.0			
	2.850	0.1		7.800	0.0	12.750	0.0
17.700	0.0		22.650	0.0			
	3.000	0.1		7.950	0.0	12.900	0.0
17.850	0.0		22.800	0.0			
	3.150	0.0		8.100	0.0	13.050	0.0
18.000	0.0		22.950	0.0			
	3.300	0.0		8.250	0.0	13.200	0.0
18.150	0.0		23.100	0.0			
	3.450	0.0		8.400	0.0	13.350	0.0
18.300	0.0		23.250	0.0			
	3.600	0.0		8.550	0.0	13.500	0.0
18.450	0.0		23.400	0.0			
	3.750	0.0		8.700	0.0	13.650	0.0
18.600	0.0		23.550	0.0			
	3.900	0.0		8.850	0.0	13.800	0.0
18.750	0.0		23.700	0.0			
	4.050	0.0		9.000	0.0	13.950	0.0
18.900	0.0		23.850	0.0			
	4.200	0.0		9.150	0.0	14.100	0.0
19.050	0.0		24.000	0.0			
	4.350	0.0		9.300	0.0	14.250	0.0
19.200	0.0		24.150	0.0			

				AHYMO. OUT		
19.350	4.500	0.0	24.300	9.450	0.0	14.400
	0.0			0.0		
19.500	4.650	0.0		9.600	0.0	14.550
	0.0					
19.650	4.800	0.0		9.750	0.0	14.700
	0.0					

RUNOFF VOLUME = 2.58163 INCHES = 0.2079 ACRE-FEET  
 PEAK DISCHARGE RATE = 4.78 CFS AT 1.500 HOURS BASIN AREA =  
 0.0015 SQ. MI.

\* ROUTE THE TOTAL FLOW THROUGH THE PROPOSED RESERVOIR

ROUTE RESERVOIR	ID=2	HYD NO=102	INFLOW=1	CODE=3
	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEV(FT)	
	0.00	0.000	1.32	
	0.78	0.000	3.50	
	0.84	0.006	4.00	
	0.92	0.044	4.50	
	0.99		0.137	5.00

\* \* \* \* \*

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	1.32	0.000	0.00
0.15	0.00	1.32	0.000	0.00
0.30	0.00	1.32	0.000	0.00
0.45	0.00	1.32	0.000	0.00
0.60	0.01	1.35	0.000	0.01
0.75	0.18	1.81	0.000	0.18
0.90	0.24	2.00	0.000	0.24
1.05	0.36	2.33	0.000	0.36
1.20	0.68	3.21	0.000	0.68
1.35	1.64	3.79	0.004	0.82
1.50	4.78	4.36	0.033	0.90
1.65	2.98	4.65	0.073	0.94
1.80	1.46	4.73	0.087	0.95
1.95	0.84	4.74	0.089	0.95
2.10	0.52	4.72	0.086	0.95
2.25	0.36	4.69	0.079	0.95
2.40	0.26	4.65	0.071	0.94
2.55	0.14	4.60	0.062	0.93
2.70	0.08	4.54	0.052	0.93
2.85	0.07	4.47	0.041	0.91
3.00	0.05	4.33	0.031	0.89
3.15	0.05	4.19	0.021	0.87
3.30	0.04	4.06	0.011	0.85
3.45	0.04	3.57	0.001	0.79
3.60	0.04	1.32	0.000	0.00

AHYMO.OUT				
3.75	0.04	1.54	0.000	0.08
3.90	0.04	1.32	0.000	0.00
4.05	0.04	1.53	0.000	0.07
4.20	0.04	1.32	0.000	0.00
4.35	0.04	1.52	0.000	0.07
4.50	0.04	1.32	0.000	0.00
4.65	0.04	1.52	0.000	0.07
4.80	0.04	1.32	0.000	0.00
4.95	0.04	1.52	0.000	0.07
5.10	0.04	1.32	0.000	0.00
5.25	0.04	1.52	0.000	0.07
5.40	0.04	1.32	0.000	0.00
5.55	0.04	1.52	0.000	0.07
5.70	0.04	1.33	0.000	0.00
5.85	0.04	1.53	0.000	0.07
6.00	0.04	1.33	0.000	0.00
6.15	0.02	1.48	0.000	0.06
6.30	0.01	1.32	0.000	0.00
6.45	0.01	1.39	0.000	0.03
6.60	0.01	1.32	0.000	0.00
6.75	0.01	1.39	0.000	0.02
6.90	0.01	1.32	0.000	0.00
7.05	0.01	1.38	0.000	0.02
7.20	0.01	1.32	0.000	0.00
7.35	0.01	1.38	0.000	0.02
7.50	0.01	1.32	0.000	0.00
7.65	0.01	1.38	0.000	0.02
7.80	0.01	1.32	0.000	0.00
7.95	0.01	1.38	0.000	0.02
8.10	0.01	1.32	0.000	0.00
8.25	0.01	1.38	0.000	0.02
TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
8.40	0.01	1.32	0.000	0.00
8.55	0.01	1.38	0.000	0.02
8.70	0.01	1.32	0.000	0.00
8.85	0.01	1.38	0.000	0.02
9.00	0.01	1.32	0.000	0.00
9.15	0.01	1.38	0.000	0.02
9.30	0.01	1.32	0.000	0.00
9.45	0.01	1.38	0.000	0.02
9.60	0.01	1.32	0.000	0.00
9.75	0.01	1.38	0.000	0.02
9.90	0.01	1.32	0.000	0.00
10.05	0.01	1.38	0.000	0.02
10.20	0.01	1.32	0.000	0.00
10.35	0.01	1.38	0.000	0.02
10.50	0.01	1.32	0.000	0.00
10.65	0.01	1.38	0.000	0.02
10.80	0.01	1.32	0.000	0.00
10.95	0.01	1.38	0.000	0.02
11.10	0.01	1.32	0.000	0.00
11.25	0.01	1.38	0.000	0.02
11.40	0.01	1.32	0.000	0.00
11.55	0.01	1.38	0.000	0.02
11.70	0.01	1.32	0.000	0.00
11.85	0.01	1.38	0.000	0.02
12.00	0.01	1.32	0.000	0.00
12.15	0.01	1.38	0.000	0.02
12.30	0.01	1.32	0.000	0.00
12.45	0.01	1.38	0.000	0.02



			AHYMO.OUT	
12.60	0.01	1.32	0.000	0.00
12.75	0.01	1.38	0.000	0.02
12.90	0.01	1.32	0.000	0.00
13.05	0.01	1.38	0.000	0.02
13.20	0.01	1.32	0.000	0.00
13.35	0.01	1.38	0.000	0.02
13.50	0.01	1.32	0.000	0.00
13.65	0.01	1.38	0.000	0.02
13.80	0.01	1.32	0.000	0.00
13.95	0.01	1.38	0.000	0.02
14.10	0.01	1.32	0.000	0.00
14.25	0.01	1.38	0.000	0.02
14.40	0.01	1.32	0.000	0.00
14.55	0.01	1.38	0.000	0.02
14.70	0.01	1.32	0.000	0.00
14.85	0.01	1.38	0.000	0.02
15.00	0.01	1.32	0.000	0.00
15.15	0.01	1.38	0.000	0.02
15.30	0.01	1.32	0.000	0.00
15.45	0.01	1.38	0.000	0.02
15.60	0.01	1.32	0.000	0.00
15.75	0.01	1.38	0.000	0.02
15.90	0.01	1.32	0.000	0.00
16.05	0.01	1.38	0.000	0.02
16.20	0.01	1.32	0.000	0.00
16.35	0.01	1.38	0.000	0.02
16.50	0.01	1.32	0.000	0.00
16.65	0.01	1.38	0.000	0.02

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
16.80	0.01	1.32	0.000	0.00
16.95	0.01	1.38	0.000	0.02
17.10	0.01	1.32	0.000	0.00
17.25	0.01	1.38	0.000	0.02
17.40	0.01	1.32	0.000	0.00
17.55	0.01	1.38	0.000	0.02
17.70	0.01	1.32	0.000	0.00
17.85	0.01	1.38	0.000	0.02
18.00	0.01	1.32	0.000	0.00
18.15	0.01	1.38	0.000	0.02
18.30	0.01	1.32	0.000	0.00
18.45	0.01	1.38	0.000	0.02
18.60	0.01	1.32	0.000	0.00
18.75	0.01	1.38	0.000	0.02
18.90	0.01	1.32	0.000	0.00
19.05	0.01	1.38	0.000	0.02
19.20	0.01	1.32	0.000	0.00
19.35	0.01	1.38	0.000	0.02
19.50	0.01	1.32	0.000	0.00
19.65	0.01	1.38	0.000	0.02
19.80	0.01	1.32	0.000	0.00
19.95	0.01	1.38	0.000	0.02
20.10	0.01	1.32	0.000	0.00
20.25	0.01	1.38	0.000	0.02
20.40	0.01	1.32	0.000	0.00
20.55	0.01	1.38	0.000	0.02
20.70	0.01	1.32	0.000	0.00
20.85	0.01	1.38	0.000	0.02
21.00	0.01	1.32	0.000	0.00
21.15	0.01	1.38	0.000	0.02
21.30	0.01	1.32	0.000	0.00

			AHYMO.OUT	
21.45	0.01	1.38	0.000	0.02
21.60	0.01	1.32	0.000	0.00
21.75	0.01	1.38	0.000	0.02
21.90	0.01	1.32	0.000	0.00
22.05	0.01	1.38	0.000	0.02
22.20	0.01	1.32	0.000	0.00
22.35	0.01	1.38	0.000	0.02
22.50	0.01	1.32	0.000	0.00
22.65	0.01	1.38	0.000	0.02
22.80	0.01	1.32	0.000	0.00
22.95	0.01	1.38	0.000	0.02
23.10	0.01	1.32	0.000	0.00
23.25	0.01	1.38	0.000	0.02
23.40	0.01	1.32	0.000	0.00
23.55	0.01	1.38	0.000	0.02
23.70	0.01	1.32	0.000	0.00
23.85	0.01	1.38	0.000	0.02
24.00	0.01	1.32	0.000	0.00
24.15	0.01	1.36	0.000	0.01
24.30	0.00	1.32	0.000	0.00

PEAK DISCHARGE = 0.954 CFS - PEAK OCCURS AT HOUR 1.90  
 MAXIMUM WATER SURFACE ELEVATION = 4.744  
 MAXIMUM STORAGE = 0.0894 AC-FT INCREMENTAL TIME= 0.050000HRS

FINISH  
 NORMAL PROGRAM FINISH                      END TIME (HR:MIN:SEC) = 20:16:39

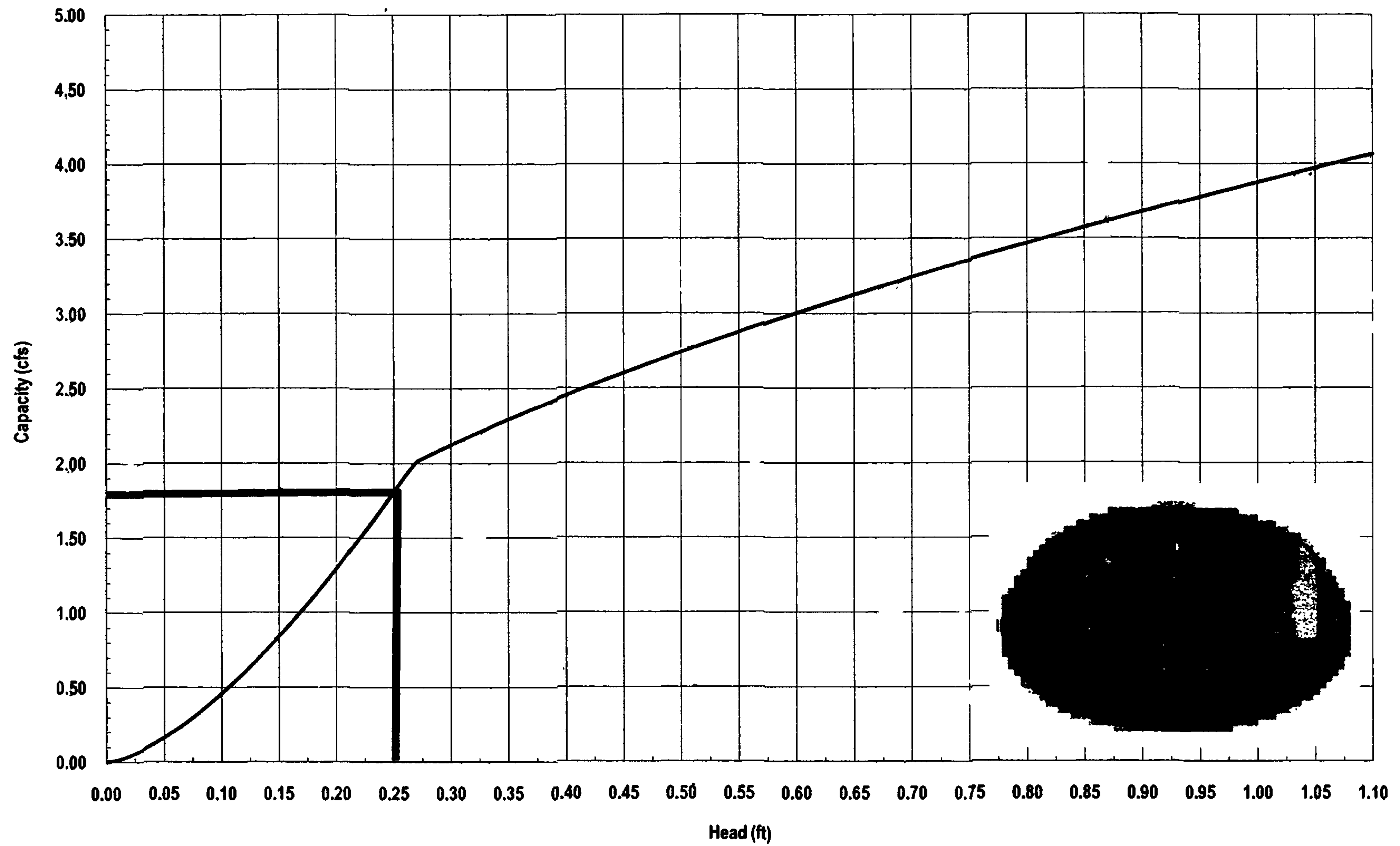
• • •

## **APPENDIX C**

### **HYDRAULIC CALCULATIONS**



Nyloplast 18" Standard Grate Inlet Capacity Chart



3130 Verona Avenue • Buford, GA 30518  
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490  
© Nyloplast Inlet Capacity Charts June 2012

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
12HDPE	12	2.75	0.79	0.25	5.13	1.85	2.36

Manning's Equation:

$Q = 1.49/n * A * R^{(2/3)} * S^{(1/2)}$

- A = Area
- R = D/4
- S = Slope
- n = 0.015

## Channel Capacity

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
swale	3	0.25	1	1.63	3.65	0.4451606	2	6.65	5.73	3.53

### Manning's Equation:

$$Q = 1.49/n * A * R^{(2/3)} * S^{(1/2)}$$

A = Area

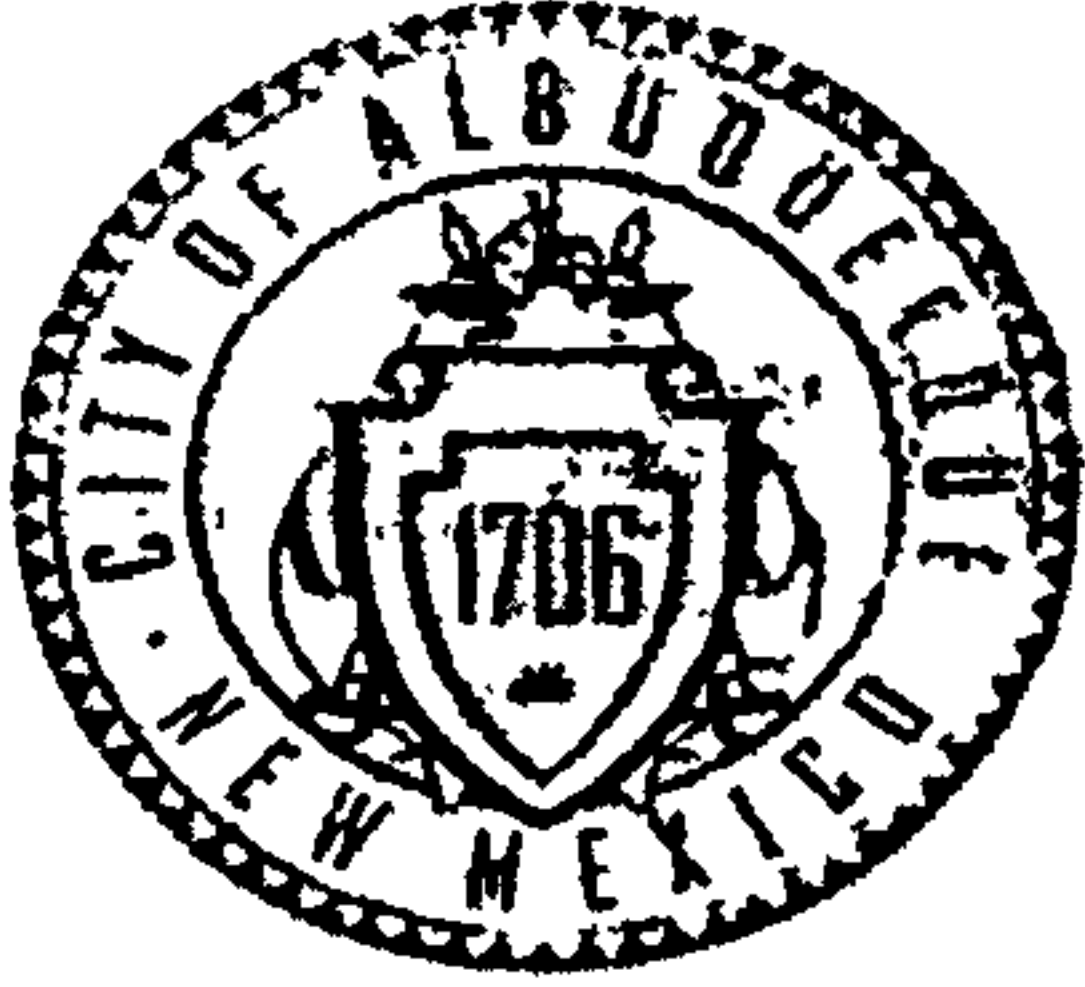
R = D/4

S = Slope

n = 0.03

-1.7  
5.25  
OK





# City of Albuquerque

Planning Department

Development & Building Services Division

## DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

K22D057  
~~K22D003~~

Project Title: LOMAS TOWNHOMES Building Permit #: \_\_\_\_\_ City Drainage #: \_\_\_\_\_  
DRB# \_\_\_\_\_ EPC# \_\_\_\_\_ Work Order#: \_\_\_\_\_  
Legal Description: LOTS 2D1 AND 2E1 BLOCK 2A CHELWOOD PARK  
City Address: 12844 LOMAS NE

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE  
Address: PO BOX 93924, ALBUQUERQUE, NM 87199  
Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: WORQUE LLC Contact: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Architect: \_\_\_\_\_ Contact: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Other Contact: \_\_\_\_\_ Contact: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Check all that Apply:

### DEPARTMENT:

- ☒ HYDROLOGY/ DRAINAGE  
☐ TRAFFIC/ TRANSPORTATION  
☐ MS4/ EROSION & SEDIMENT CONTROL

### TYPE OF SUBMITTAL:

- ☐ ENGINEER/ ARCHITECT CERTIFICATION  
☐ CONCEPTUAL G & D PLAN  
☒ GRADING PLAN  
☐ DRAINAGE MASTER PLAN  
☐ DRAINAGE REPORT  
☐ CLOMR/LOMR  
☐ TRAFFIC CIRCULATION LAYOUT (TCL)  
☐ TRAFFIC IMPACT STUDY (TIS)  
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)

☐ OTHER (SPECIFY) \_\_\_\_\_

IS THIS A RESUBMITTAL? ☐ Yes ☒ No

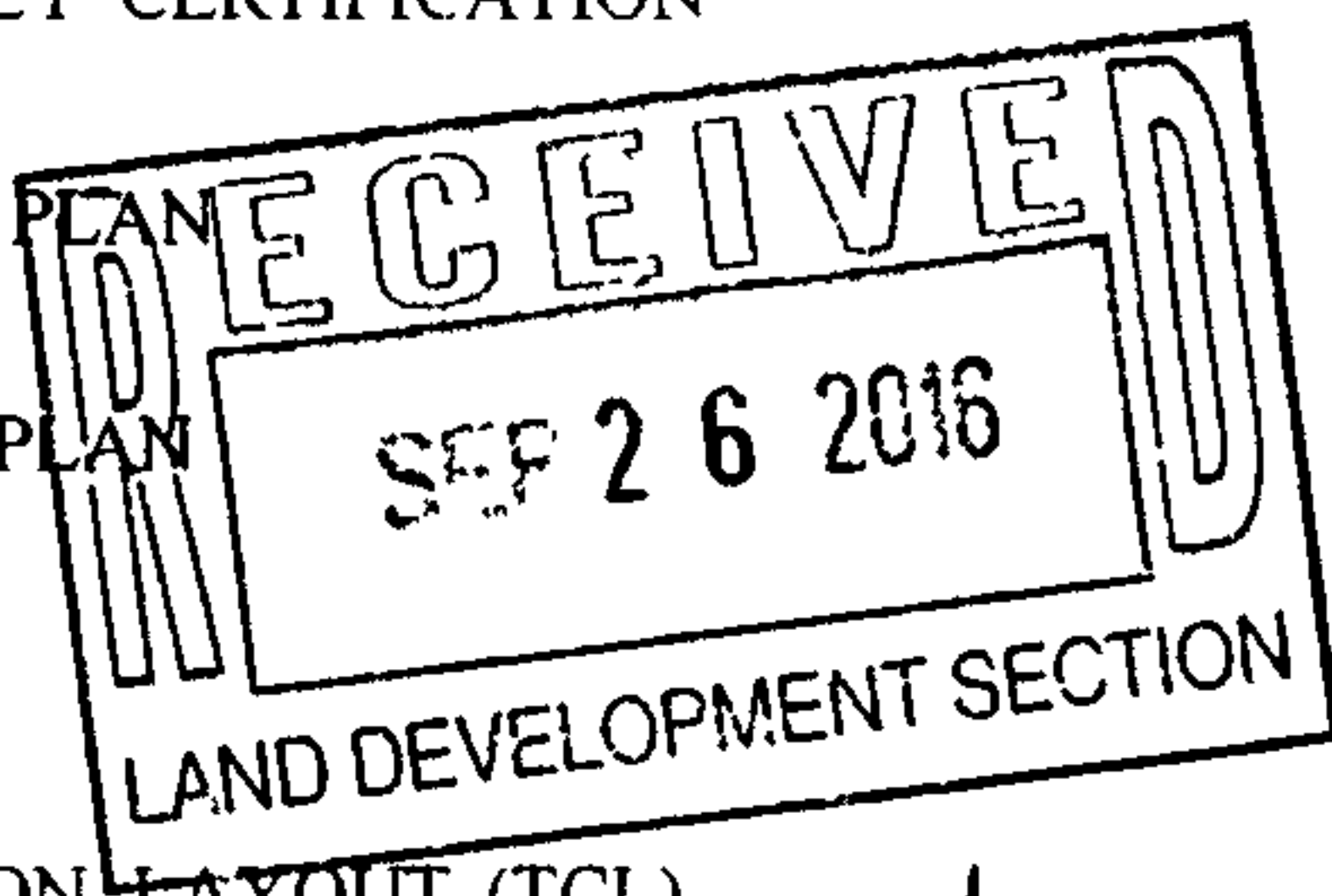
### CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ☒ BUILDING PERMIT APPROVAL  
☐ CERTIFICATE OF OCCUPANCY  
☐ PRELIMINARY PLAT APPROVAL  
☐ SITE PLAN FOR SUB'D APPROVAL  
☐ SITE PLAN FOR BLDG. PERMIT APPROVAL  
☐ FINAL PLAT APPROVAL  
☐ SIA/ RELEASE OF FINANCIAL GUARANTEE  
☐ FOUNDATION PERMIT APPROVAL  
☒ GRADING PERMIT APPROVAL  
☒ SO-19 APPROVAL  
☐ PAVING PERMIT APPROVAL  
☐ GRADING/ PAD CERTIFICATION  
☐ WORK ORDER APPROVAL  
☐ CLOMR/LOMR

☐ PRE-DESIGN MEETING  
☐ OTHER (SPECIFY) \_\_\_\_\_

DATE SUBMITTED: 9/23/16 By: DAVID SOULE

COA STAFF ELECTRONIC SUBMITTAL RECEIVED \_\_\_\_\_



\$100.00

**Carrillo, Abiel X.**

---

**From:** Carrillo, Abiel X.  
**Sent:** Tuesday, November 15, 2016 10:32 AM  
**To:** David Soule  
**Subject:** K22D057 - Lomas Townhomes

David,

This email is being sent in lieu of a formal letter attached, to help expedite the review of initial submittals. A reply to this email will not replace a resubmittal.

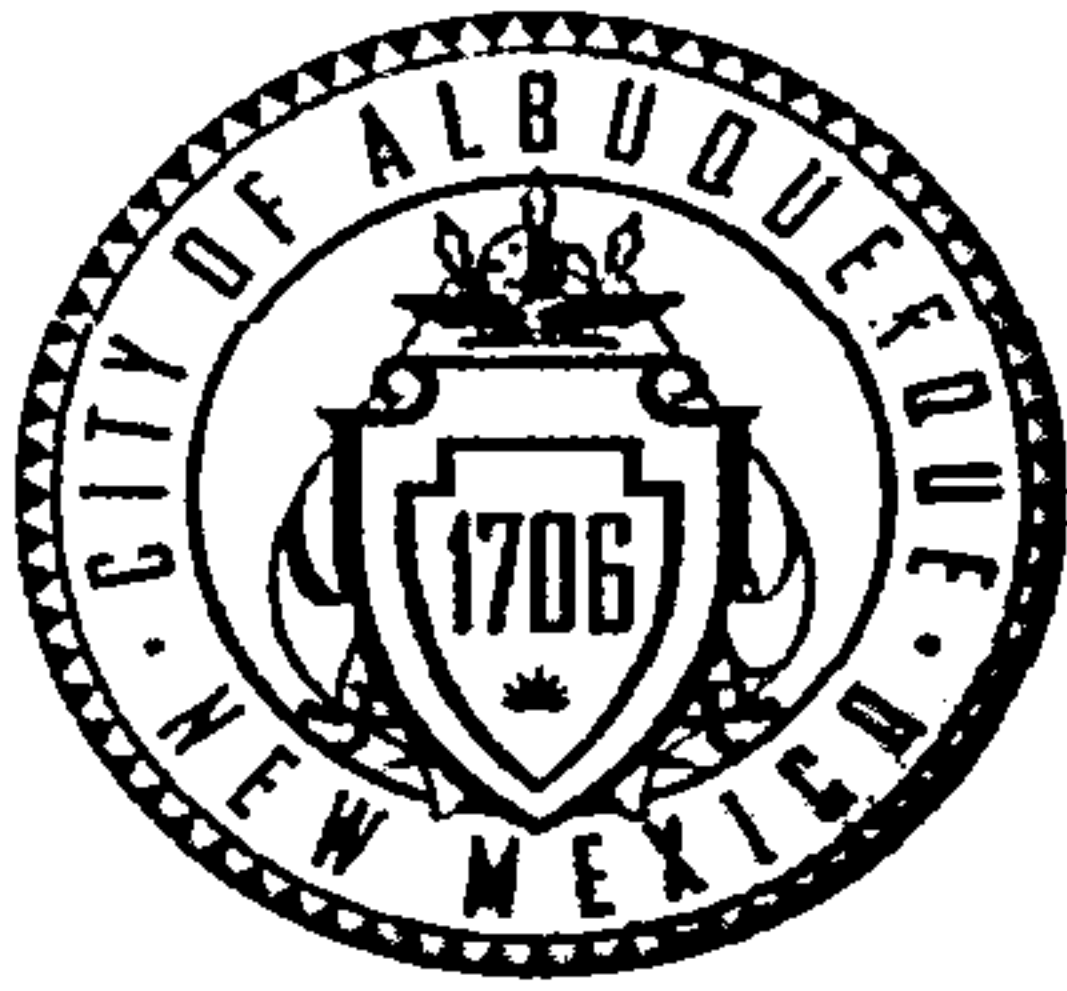
Based on the information provided in your submittal, the above-referenced Grading and Drainage plan cannot be approved for Building/Grading Permit, or SO-19 Permit until the following comments are addressed:

1. The Grading Plan exhibit in the Report is different from the full size Plan submitted.
2. Since the alley is being utilized to drain a portion of the developed flows, it will need to be improved, at a minimum, with a shaped roadway section with a concrete alley gutter that extends to the Nakomi Dr pavement. Currently, the "alley" does not appear to be physically aligned or shaped to accept flows from this development. Erosion control would also need to be added to the outfall into Nakomi Dr.
3. Specify the size of the rock to be used. If larger rock is proposed, we recommend that it is placed over filter fabric.
4. Although cross-lot drainage is discouraged, it appears that the grading of the back yards drains away from the building and towards the retaining walls that will feature turned blocks that discharge to the alley. The plan includes a note to address any future walls that might be constructed by townhome owners, but those notes are not often referenced once the project is constructed. Will the turn blocks in the southern wall serve as an overflow if the side yard walls are not constructed to allow cross lot flows?
5. It's not clear if the main inlet in the center of the parking lot will be set at the bottom of the pond or elevated. If it is set at the bottom of the landscaped area, it should be surrounded with rip-rap.
6. An ESC Plan will need to be approved prior to Hydrology's approval (if one has already been submitted you can disregard this comment).

Any question just let me know.

**Abiel Carrillo, PE, CFM**

**Principal Engineer - Hydrology**  
**Planning Department**  
Development Review Services Division  
City of Albuquerque  
505-924-3986  
[acarrillo@cabq.gov](mailto:acarrillo@cabq.gov)  
600 2<sup>nd</sup> Street NW  
Albuquerque, NM 87102



# City of Albuquerque

Planning Department

Development & Building Services Division

## DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Townhouses for WORQUE, L.L.C. Building Permit #: \_\_\_\_\_ City Drainage #: K22D057  
DRB#: \_\_\_\_\_ EPC#: \_\_\_\_\_ Work Order#: \_\_\_\_\_  
Legal Description: LOT 2D1A, BLOCK 2A, CHELLWOOD PARK SUBD.  
City Address: 12,844 LOMAS BLVD. N.E.

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID  
Address: 1606 CENTRAL AVE S.E., SUITE 201, ALBUQUERQUE, NEW MEXICO  
Phone#: 505-872-0999 Fax#: - E-mail: david@riograndeengineering.com

Owner: WORQUE, L.L.C. Contact: ROB  
Address: 25 FOREST VIEW DRIVE, ALBUQUERQUE, NEW MEXICO 87122  
Phone#: 505-220-1457 Fax#: - E-mail: rob@worque.net

Architect: ROGER CINELLI & ASSOCIATES INC Contact: ROGER  
Address: 2418 MANUEL TORRES LN N.W. ALBUQUERQUE, NEW MEXICO 87107  
Phone#: 505-243-8211 Fax#: 505-243-8196 E-mail: rcinelli@q.com

Other Contact: \_\_\_\_\_ Contact: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone#: \_\_\_\_\_ Fax#: \_\_\_\_\_ E-mail: \_\_\_\_\_

Check all that Apply:

### DEPARTMENT:

☐ HYDROLOGY/ DRAINAGE  
☒ TRAFFIC/ TRANSPORTATION  
☐ MS4/ EROSION & SEDIMENT CONTROL

### TYPE OF SUBMITTAL:

☐ ENGINEER/ ARCHITECT CERTIFICATION

☐ CONCEPTUAL G & D PLAN  
☐ GRADING PLAN  
☐ DRAINAGE MASTER PLAN  
☐ DRAINAGE REPORT  
☐ CLOMR/LOMR

☒ TRAFFIC CIRCULATION LAYOUT (TCL)  
☐ TRAFFIC IMPACT STUDY (TIS)  
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)

☐ OTHER (SPECIFY) \_\_\_\_\_

### CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

☒ BUILDING PERMIT APPROVAL  
☐ CERTIFICATE OF OCCUPANCY

☐ PRELIMINARY PLAT APPROVAL  
☐ SITE PLAN FOR SUB'D APPROVAL  
☐ SITE PLAN FOR BLDG. PERMIT APPROVAL  
☐ FINAL PLAT APPROVAL  
☐ SIA/ RELEASE OF FINANCIAL GUARANTEE  
☐ FOUNDATION PERMIT APPROVAL  
☐ GRADING PERMIT APPROVAL  
☐ PLATING PERMIT APPROVAL  
☐ GRADING/ PAD CERTIFICATION  
☐ WORK ORDER APPROVAL  
☐ CLOMR/LOMR

☒ PRE-DESIGN MEETING  
☐ OTHER (SPECIFY) \_\_\_\_\_

IS THIS A RESUBMITTAL?: ☐ Yes ☒ No

DATE SUBMITTED: 10/5/16 By: Roger Cinelli, Architect

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: \_\_\_\_\_



# CITY OF ALBUQUERQUE



October 14, 2016

Roger Cinelli & Associates Inc.  
Roger Cinelli  
2418 Manuel Torres Ln. N.W.  
Albuquerque, NM 87107

**Re: Townhouses for Worque, LLC**  
**12844 Lomas**  
**Traffic Circulation Layout**  
Engineer's/Architect's Stamp 10-05-2016 (K22-D057)

Dear Mr. Cinelli,

Based upon the information provided in your submittal received 10-14-16, the above referenced plan cannot be approved for Building Permit until the following comments are addressed:

1. Please show dimensions on the stairs from the public ROW to BLDG. "D".
2. Per the zoning code, a 6 ft. wide ADA accessible pedestrian pathway is required from the public sidewalk to the building entrances. Please clearly show this pathway and provide details.
3. Provide a min 6" or max 8" high concrete barrier curb or other acceptable barrier between landscaping, parking areas and sidewalks. Please call out detail and location of barrier curb.

Resubmit a revised plan along with fully completed Drainage Transportation Information Sheet to front counter personnel for log in and evaluation by Transportation. PDF copies of the plans and submittal package must be emailed to [PLNDRS@cabq.gov](mailto:PLNDRS@cabq.gov) at time of resubmittal. If you have any questions, please contact me at (505) 924-3630.

Sincerely,

Logan Patz  
Senior Engineer, Planning Dept.  
Development Review Services

LWP via: email  
C: File