CITY OF ALBUQUERQUE

ALBUQUERQUE
Making History

November 3, 2005

Mr. Mark Goodwin, PE
MARK GOODWIN & ASSOCIATES
P.O. Box 90606
Albuquerque, NM 87119

RE: OAKLAND ESTATES SUBDIVISION (C-18/D66)
Engineers Certification for Release of Financial Guaranty
Approved Engineers Stamp dated 04/02/2004
Submitted Engineers Stamp dated 08/09/2004
Engineers Certification dated 10/29/2005

Dear Mark:

Based upon the information provided in your Engineer's Certification Submittal dated 11/03/2005, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

If you have any questions, you can contact me at 924-3982

Sincerely,

Arlene V. Portillo

Arlene V. Portillo
Plan Checker, Planning Dept.- Hydrology
Development and Building Services
BLB

C: Marilyn Maldonado, COA# 742481
File

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 9, 2004

Mark Goodwin, PE
Mark Goodwin & Associates
P.O. Box 90606,
Albuquerque, NM 87199

Re: Oakland Estates Revised Grading Plan
Engineer's Stamp dated 4-2-04, (C18/D66)

Dear Mr. Goodwin,

Based upon the information provided in your submittal dated 4-7-04, the above referenced plan is approved for Grading Permit. This is now the plan that must be certified for release of SIA and Financial Guarantees.

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

Sincerely,

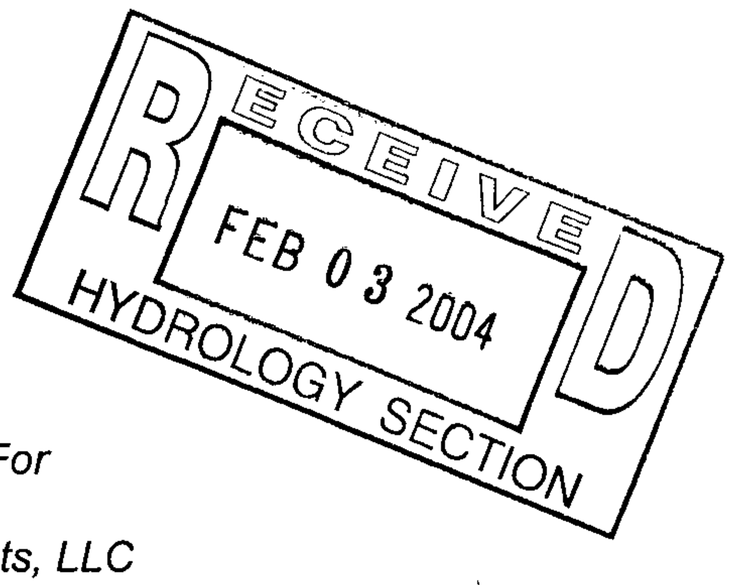
Bradley L. Bingham, PE
Principal Engineer, Planning Dept.
Development and Building Services

C: ~~Chuck Caruso, CoA~~
file

DRAINAGE REPORT

for

OAKLAND ESTATES



Prepared For

STV Investments, LLC
1015 Tijeras NW, Suite 210
Albuquerque, NM 87102
(505) 338-2286

Prepared By

Mark Goodwin & Associates, PA
PO Box 90606
Albuquerque, NM 87199
(505) 828-2200

January 2004

PROJECT DESCRIPTION

The proposed Oakland Estates Subdivision comprises approximately 10.66 acres and is located between Eagle Rock Ave and Oakland Ave, roughly 600 feet west of Louisiana Blvd. The site is to be developed into 68 single-family homes at a density of 7 DU/AC.

DRAINAGE DESIGN CRITERIA

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the City of Albuquerque Development Process Manual (DPM), Volume 2, Design Criteria, January 1993. The 100-year 6-hour storm event was analyzed to determine street capacities using P(1 hr) = 2.15 in., P(6 hr) = 2.50 in., P(24 hr) = 2.90 in. The on-site Land Treatment values used were Treatment D=60, Treatment C\25 and Treatment B=15, as determined using "Table A-5 Percent Treatment D" in the DPM. AHYMO printouts are provided in Appendix A.

EXISTING DRAINAGE CONDITIONS

The site is presently undeveloped with sparse desert-type vegetation. The topographical fall is to the west at approximately 3.0% Flow primarily sheet flows to the west with some minor arroyos near the north side of the site conveying small flows to Eagle Rock Ave. On the south side of the site a small portion of the basin contributes flows to the Oakland Ave right-of-way. With Eagle Rock, Unit 3 Subdivision developed immediately east of the site, no off-site storm flows presently impact this site.

DEVELOPED DRAINAGE CONDITIONS

Eagle Rock Drainage Allocation Plan

Following the procedures outlined in the City of Albuquerque Storm Drainage Infrastructure Allocation Procedure, May 2003, this office recently submitted an allocation plan to the City for the Eagle Rock Drainage Basin. That plan established the limits of the future developed drainage basin, sized a drainage system that will allow for free discharge for all developed properties within the basin, and provided a preliminary engineer's estimate of the associated costs. The allocation plan further defined an equitable cost sharing breakdown for all benefitted properties within the drainage basin.

The drainage system identified in the Eagle Rock allocation plan includes a 54"-30" storm main in Eagle Rock Ave that will extend from San Pedro Blvd east where it will tie into an existing line roughly 600 feet west of Louisiana Blvd. An extension from that line is shown on the allocation plan running south from Eagle Rock Ave to Oakland Ave, across the western edge of the Oakland Estates site. Once in Oakland Ave the line continues to the east to a terminus point near the eastern boundary of this site. Per that plan, the associate allocation costs to the Oakland Estates site is $100,261.14.

Oakland Estates Drainage Plan

This drainage plan proposes that as a part of the Oakland Estates infrastructure improvements, the entire reach of trunk line within Eagle Rock Ave be constructed at this time. This plan further proposes that the lateral main line shown crossing this site to Oakland Ave be constructed as well. Given that, and since no developed flows from this site will impact Oakland Ave (see below), it is proposed that the allocation plan system shown in Oakland Ave be constructed, and funded, by future development within the drainage basin.

On-Site Drainage

As shown on the Grading and Drainage Plan, located in Plate 1, in the developed state, 2 separate drainage basins have been identified.

- *Basin B-1: Contains 33 developed lots on 5.2 acres and is expected to generate 22.1 cfs during a 100-year 6-hour event. Flows will be routed primarily in Glenturret Street to double grated Type 'A' drop inlets located in a sump condition just east of the Lochside Drive intersection.*
- *Basin B-2: Contains 35 developed lots on 5.37 acres. The 22.8 cfs of flow generated during the 100-year 6-hour event will be routed via Glenlochy Street and Lochside Drive to 2 double grated Type 'A' inlets located just south of the Lochside/Glenturret intersection. Any flows bypassing these drop inlets will enter the sump area within Glenturret where it will be intercepted by those inlets.*

CONCLUSION

In constructing the drainage infrastructure improvements identified in this report, not only will the development of this site pose no adverse impacts downstream, it will also provide the necessary drainage infrastructure for further development within the Eagle Rock Drainage Basin.

```
START                   TIME=0.0
*****                   OAKLAND ESTATES SUBDIVISION
*****                   CALCULATE & ROUTE STORM FLOWS
*****                   USE 100 YEAR 24 HOUR STORM EVENT
*****                   FILE:  OAKLANDEST.DAT     1-22-04  JSD
**********************************************************************
RAINFALL                TYPE=1 RAIN QUARTER=0.0 IN
                        RAIN ONE=2.15 IN RAIN SIX=2.50 IN
                        RAIN DAY=2.90 IN DT=0.03333 HR
**********************************************************************
*****FIRST LOOK AT EXISTING CONDITIONS
**********************************************************************
COMPUTE NM HYD          ID=1 HYD NO=101.1 AREA=0.0167 SQ MI
                        PER A=100 PER B=0 PER C=0 PER D=0
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=1 CODE=1
**********************************************************************
*****NEXT LOOK AT DEVELOPED CONDITIONS
**********************************************************************
*****
*****DEVELOPED BASIN B-1
*****
COMPUTE NM HYD          ID=2 HYD NO=100.B1 AREA=0.00813 SQ MI
                        PER A=0 PER B=15 PER C=25 PER D=60
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=2 CODE=1
*****
*****DEVELOPED BASIN B-2
*****
COMPUTE NM HYD          ID=3 HYD NO=100.B2 AREA=0.00839 SQ MI
                        PER A=0 PER B=15 PER C=25 PER D=60
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=3 CODE=1
FINISH
```

```
          AHYMO PROGRAM (AHYMO_97) -                              - Version:
1997.02d
               RUN DATE (MON/DAY/YR) = 01/28/2004
               START TIME (HR:MIN:SEC) = 09:38:07     USER NO.= AHYMO-I-
9702dGoodwinM-AH
               INPUT FILE = C:\PROGRA~1\AHYMO_97\OAKLAN~1.DAT


     START                          TIME=0.0
     *****                          OAKLAND ESTATES SUBDIVISION
     *****                          CALCULATE & ROUTE STORM FLOWS
     *****                          USE 100 YEAR 24 HOUR STORM EVENT
     *****                          FILE:  OAKLANDEST.DAT     1-22-04  JSD
     ********************************************************************
     RAINFALL                  TYPE=1 RAIN QUARTER=0.0 IN
                                    RAIN ONE=2.15 IN RAIN SIX=2.50 IN
                                    RAIN DAY=2.90 IN DT=0.03333 HR

                         COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.
                         DT =    .033330 HOURS       END TIME =     5.999400
HOURS
                            .0000   .0016   .0032   .0049   .0066   .0083
.0101
                            .0119   .0138   .0157   .0177   .0197   .0218
.0239
                            .0261   .0284   .0307   .0331   .0356   .0381
.0408
                            .0436   .0464   .0494   .0525   .0558   .0592
.0627
                            .0665   .0705   .0746   .0806   .0869   .0937
.1083
                            .1409   .1911   .2632   .3617   .4910   .6560
.8613
                           1.1120  1.3447  1.4418  1.5239  1.5969  1.6632
1.7243
                           1.7811  1.8341  1.8838  1.9306  1.9747  2.0164
2.0558
                           2.0932  2.1286  2.1623  2.1942  2.2245  2.2314
2.2378
                           2.2438  2.2496  2.2550  2.2603  2.2653  2.2702
2.2748
                           2.2794  2.2837  2.2879  2.2920  2.2960  2.2998
2.3036
                           2.3072  2.3108  2.3142  2.3176  2.3209  2.3242
2.3273
                           2.3304  2.3334  2.3364  2.3393  2.3422  2.3450
2.3478
                           2.3505  2.3531  2.3557  2.3583  2.3608  2.3633
2.3658
                           2.3682  2.3706  2.3729  2.3752  2.3775  2.3797
2.3820
                           2.3841  2.3863  2.3884  2.3905  2.3926  2.3947
2.3967
                           2.3987  2.4007  2.4026  2.4046  2.4065  2.4084
2.4103
                           2.4121  2.4139  2.4158  2.4176  2.4193  2.4211
2.4228
                           2.4246  2.4263  2.4280  2.4296  2.4313  2.4330
2.4346
```

2.4362 2.4378 2.4394 2.4410 2.4425 2.4441
2.4456
2.4472 2.4487 2.4502 2.4517 2.4531 2.4546
2.4561
2.4575 2.4589 2.4604 2.4618 2.4632 2.4646
2.4659
2.4673 2.4687 2.4700 2.4714 2.4727 2.4740
2.4753
2.4766 2.4779 2.4792 2.4805 2.4818 2.4831
2.4843
2.4856 2.4868 2.4880 2.4893 2.4905 2.4917
2.4929
2.4941 2.4953 2.4965 2.4976 2.4988 2.5000

****
*****FIRST LOOK AT EXISTING CONDITIONS
****
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.0167 SQ MI
PER A=100 PER B=0 PER C=0 PER D=0
TP=0.1333 HR MASS RAINFALL=-1

K = .158528HR TP = .133300HR K/TP RATIO = 1.189257
SHAPE CONSTANT, N = 2.985794
UNIT PEAK = 35.162 CFS UNIT VOLUME = .9994 B =
280.66 P60 = 2.1500
AREA = .016700 SQ MI IA = .65000 INCHES INF =
1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = .62813 INCHES = .5594 ACRE-FEET
PEAK DISCHARGE RATE = 19.35 CFS AT 1.533 HOURS BASIN
AREA = .0167 SQ. MI.

****
*****NEXT LOOK AT DEVELOPED CONDITIONS
****
*****
*****DEVELOPED BASIN B-1
*****
COMPUTE NM HYD ID=2 HYD NO=100.B1 AREA=0.00813 SQ MI
PER A=0 PER B=15 PER C=25 PER D=60
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 19.259 CFS UNIT VOLUME = .9988 B =
526.28 P60 = 2.1500
AREA = .004878 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

```
          K =    .118307HR    TP =    .133300HR    K/TP RATIO =    .887524
SHAPE CONSTANT, N =  3.996892
          UNIT PEAK =   8.6597    CFS   UNIT VOLUME =    .9989       B =
354.96      P60 = 2.1500
          AREA =       .003252 SQ MI    IA =    .40625 INCHES    INF =
.98750 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD                ID=2 CODE=1

                                                HYDROGRAPH FROM AREA
100.B1

          RUNOFF VOLUME =     1.80280 INCHES     =         .7817 ACRE-FEET
          PEAK DISCHARGE RATE =      22.08 CFS  AT   1.500 HOURS   BASIN
AREA =    .0081 SQ. MI.


     *****
     *****DEVELOPED BASIN B-2
     *****
     COMPUTE NM HYD           ID=3 HYD NO=100.B2 AREA=0.00839 SQ MI
                                   PER A=0 PER B=15 PER C=25 PER D=60
                                   TP=0.1333 HR MASS RAINFALL=-1

          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =   19.875    CFS   UNIT VOLUME =    .9988       B =
526.28      P60 = 2.1500
          AREA =       .005034 SQ MI    IA =    .10000 INCHES    INF =
.04000 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330


          K =    .118307HR    TP =    .133300HR    K/TP RATIO =    .887524
SHAPE CONSTANT, N =  3.996892
          UNIT PEAK =   8.9367    CFS   UNIT VOLUME =    .9989       B =
354.96      P60 = 2.1500
          AREA =       .003356 SQ MI    IA =    .40625 INCHES    INF =
.98750 INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT =    .033330

     PRINT HYD                ID=3 CODE=1

                                                HYDROGRAPH FROM AREA
100.B2

          RUNOFF VOLUME =     1.80280 INCHES     =         .8067 ACRE-FEET
          PEAK DISCHARGE RATE =      22.78 CFS  AT   1.500 HOURS   BASIN
AREA =    .0084 SQ. MI.


     FINISH
```

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 09:38:07

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

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

Glenturret St. & Glenlochy St. have some sections and similar flows, Q = 22.08 & 22.78 respectively.
46'ROW, 28'FF, S = 2.8%, n = .017

a) d = 0.38'

$A = 2[\frac{1}{2}(.28)(14) + .10(14)] = 6.725F$

$R = 6.72/28.76 = 0.234$

$V = 1.49 \cdot (.234)^{.67} \cdot (.0281)^{1/2}/.017 = 5.54$ fps

$Q = VA = 5.54 \cdot 6.72 = 37.23$

$d + V^2/2g = .38 + (5.54)^2/64.4 = .86 > .56$ X

b) d = .28'

$A = 2[\frac{1}{2}(.28)(14)] = 3.29$

$R = .137$

$V = 1.49 \cdot (.137)^{.67} \cdot (.028)^{1/2}/.017 = 3.87$

$Q = 3.87(3.92) = 15.17$

$d + V^2/2g = .28 + (3.87)^2/64.4 = .51 < .56$ OK

∴ Roll curb for Q ≤ 15.17 cfs

Lochside Drive:
44'ROW, 26'FF, S = 0.6%, n = .017

a) d = .67

$A = 2[\frac{1}{2}(.26)(13) + .41(13)] = 14.04$

$R = 14.04/27.34 = 0.513$

$V = 1.49 \cdot (.513)^{.67} \cdot (.006)^{.5}/.017 = 4.34$

$Q = 4.34 \cdot 14.04 = 61$

$d = .67 + (4.34)^2/64.4 = .96$

∴ d @ B-2 design Q of 22.8 cfs is d = .36'

CITY OF ALBUQUERQUE

LOMR
#199

May 26, 2006

D Mark Goodwin
PO Box 90606
Albuquerque, NM 87199

Re: Letter of Map Revision for Oakland Estates Subdivision
Engineer's Stamp date 5-15-06 C-18/D66

Dear Mr. Goodwin,

Based on information contained in your submittal dated 5-9-06, the above referenced LOMR cannot be endorsed by the floodplain administrator until the following comments are addressed.

- This LOMR uses the cost allocation plan as the justification to remove floodplain from the project. FEMA can only grant revisions based on existing conditions. This submittal must contain the as-builts of the storm drains built in Eagle Rock and Lockside Dr. (your project) and excerpts from the Vista del Aguila LOMR. Please use the FEMA reference number with the excerpts.

- The revised map incorrectly shows removing floodplain on property south of Oakland but the Oakland Estates project was completely north of Oakland.

- There was no floodplain accidentally left within the Vista del Aguila LOMR.

- Please revise the forms to show that we are not revising the regulated floodway. Provide all electronic files (AHYMO, HGL) needed to support this request.

If you have any questions, you can contact me at (505) 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE, CFM
City Floodplain Administrator

C: file

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