

REVISION
to the
COTTONWOOD CREEK DRAINAGE BASIN PLANNING STUDY
for the
NOR'WOOD EAST DEVELOPMENT AREA

Prepared for:

Development Management, Inc.
4065 N. Sinton Road, Suite 200
Colorado Springs, CO 80907

Prepared By:

Rockwell-Minchow Consultants, Inc.
2928 Straus Lane, Suite 100
Colorado Springs, CO 80918
Project #97-038

DRAINAGE PLAN STATEMENTS

ENGINEER'S STATEMENT

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City/County for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Kent D. Rockwell, P.E.
Kent D. Rockwell, P.E.



DEVELOPER'S STATEMENT

I, the developer, have read and will comply with all the requirements specified in this drainage report and plan.

Development Management, Inc.

BY: [Signature] DATE _____
Kent Petre

TITLE: President

ADDRESS: 4065 N. Sinton Road, Suite 200
Colorado Springs, CO 80907

CITY OF COLORADO SPRINGS

Filed in accordance with Section 15-3-906 of the code of the City of Colorado Springs, 1980, as amended.

[Signature]
CITY ENGINEER

February 20, 1998
DATE

RESTUDY
of the
COTTONWOOD CREEK DRAINAGE BASIN PLANNING STUDY
for the
NOR'WOOD EAST DEVELOPMENT AREA

PURPOSE

The purpose of this "Revision to the Cottonwood Creek Drainage Basin Planning Study for the Nor'Wood East Development Area" is to refine the Cottonwood Creek Drainage Basin Planning Study (DBPS) to determine runoff quantities along Tributary 1 of Cottonwood Creek at the Oakwood Boulevard crossing based on more specific information than what was available at the time of the DBPS. Tributary 1 consists of the drainageway extending south and east from Cottonwood Creek at a point just upstream of Rangewood Drive to the east side of Powers Boulevard.

The specific drainage facility to be analyzed as part of this report is the Oakwood Boulevard crossings located approximately 500 feet north of Balsam Street.

GENERAL DESCRIPTION

The confluence of Tributary 1 and Cottonwood Creek is located just upstream of Rangewood Drive (see enclosed Exhibit 1). The tributary extends from the confluence with Cottonwood Creek to the south under Dublin Boulevard and then to the east under Austin Bluffs Boulevard. From this point, the tributary continues along the east side of Austin Bluffs Boulevard to the north side of Balsam Drive and then parallel to Balsam Drive to Oakwood Drive. From Oakwood Drive, the tributary continues easterly under Powers Boulevard.

The lower portion of this tributary from Cottonwood Creek to Dublin Boulevard has dense trees lining the banks. From Dublin Boulevard upstream, native grasses cover the banks of the tributary. Along much of this tributary, underlying bedrock is exposed.

METHODOLOGY

The Cottonwood Creek Drainage Basin Planning Study originally prepared by URS Consultants (URS Study) is being revised by Ayres and Associates. The Ayres Study uses the Prudent Line Concept along with a different hydrological method for computing runoff quantities. This method utilizes the same drainage basins and same land use as the URS Study; however, the Ayres Study presents different routing patterns which results in runoff quantities which are lower than the runoff quantities presented in the URS Study. At the present time, the Ayres Study has not been adopted; however, the City Engineer has allowed the use of the Ayres hydrology.

This report further refines the Ayres Study by analyzing in more detail the land use in the areas contributing flows to Tributary 1. Land uses were determined for these contributing areas based on existing development, existing Master Plans, existing physical constraints, existing development and anticipated development. Exhibit 2 depicts the land uses and the drainage basins for the areas east of Oakwood Boulevard. The land uses shown on the enclosed maps are less dense than the land uses presented in the URS study resulting in runoff quantities which are less than the flows presented in both the URS study and the original Ayres Study. El Paso County has basically agreed with the proposed land uses presented in this report (see attached letter).

DEVELOPED RUNOFF QUANTITIES

Ayres and Associates has utilized the hydrology and basin configuration presented in their original report and the revised land uses to determine 100 year runoff quantities reaching individual Design Points along Tributary 1. The specific Design Point analyzed as part of this study is the crossing of Tributary 1 at Oakwood Boulevard (Design Point 13B).

The table below lists the existing facilities, the URS runoff quantities and URS's proposed facilities at this point.

Design Point	Existing Facility	URS Study Runoff w/ Detention (cfs)	Proposed Structure per URS Study
Oakwood (Design Pt 13B)	None	1,556	3 - 12' X 6' CBC

Ayres revised runoff quantities and proposed structures for this location are presented below.

Design Point	Ayres Study Runoff w/ Revised Land Use (cfs)	Proposed Structure
Oakwood (Design Pt 13B)	581	Twin 7' x 4' Box Culvert (or 2 - 72" Concrete Pipes)

The revised runoff quantities indicate that the proposed facility at Oakwood Boulevard can be reduced in size.

COST ESTIMATE

The costs of the drainage facilities at Design Points 13B (Oakwood Boulevard) are presented below. Two 72" reinforced concrete pipes (RCP) will be utilized instead of the twin 7' x 4' box culvert presented in the Ayres Study.

Design Point 13B
(Oakwood)

Item	Quantity	Unit Cost	Extended Cost
1. 72" Dia. RCP or Equivalent	240 L.F.	\$110.00/L.F.	\$ 26,400.00
2. Concrete Headwall	50 C.Y.	\$275.00/C.Y.	\$ 13,750.00
3. Grouted Rip-Rap Aprons	150 C.Y.	\$ 70.00/C.Y.	<u>\$ 10,500.00</u>
	Sub-Total		\$ 50,650.00
	15% Engineering and Contingency		<u>\$ 7,597.50</u>
	Grand Total		\$ 58,247.50

DRAINAGE FEES

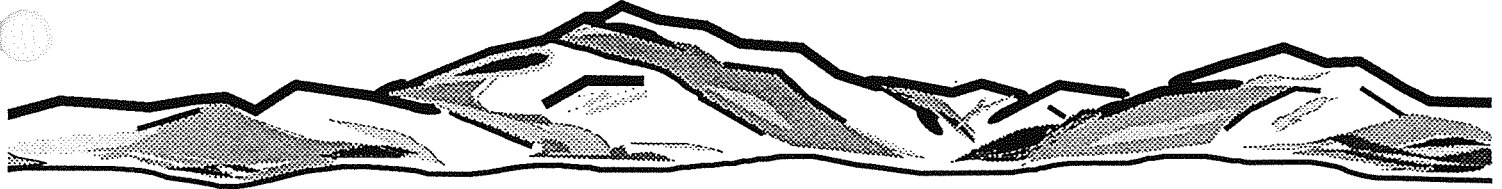
The Oakwood crossing is considered a drainage facility and included in the drainage fee calculation. The original cost estimate presented in the URS Study was \$81,749.00. The revised cost estimate for the drainage facility at this location is \$58,247.50. This reduces the Capital Basin Fee by \$23,501.50 or \$3.85 per acre based on 6100 unplatted acres in the basin.

Fee adjustment must be approved by Drainage Board.
[Signature]

Kenneth G. Rowberg
Planning Director

Carl Schueler
Assistant Director - Comprehensive Planning
Rick O'Connor
Assistant Director - Current Planning

El Paso County Planning Department



Tim Mitros
City of Colorado Springs
Stormwater and Subdivision
101 W. Costilla
Colorado Springs, CO 80903

CITY ENGINEER FOR STORMWATER

JAN 20 1998

RECEIVED

RE: Development Potential in Upper Cottonwood Creek Drainage Basin

Dear Mr. Mitros:

This is to generally confirm the land use assumptions provided by Jim Nass in his attached letter to me.

The bottom line is that not much other than "transitional uses" are likely to occur in most of this area until and unless it is annexed. The area has no access to legal structural fire protection, central water or central sewer until it is annexed. I would note that there was a sketch plan approved for a trash transfer facility just east of the landfill, although the approval expired quite some time ago.

One possibility for development in the unincorporated county is mini storage units or various other types of storage. These uses can occur with a limited amount of services. They can have an extremely high per acre drainage impact which is not fully addressed in our current fee structure.

Sincerely,

Carl F. Schueler, Assistant Director
El Paso County Planning Department

Attachments

cc: Kenneth G. Rowberg
Jim Nass, 111 S. Tejon, Suite 301, Colorado Springs, CO 80903

facsimile
TRANSMITTAL

RECEIVED

DEC 4 1997

to: Carl Schueler, El Paso County Planning Dept.
fax #: 520-6322
re: Cottonwood Creek Drainage Basin Bdy. Land Use
date: December 3, 1997
pages: 2, including this cover sheet.

Planning Dept.

Carl,

Attached is a portion of our land use map for this tributary section of the drainage basin. I explained to the Tim Mitros at City of C.S. Stormwater, that in our discussion, you had mentioned that you didn't feel that there would be a change from the current land use characteristics for this area until such a time when the parcels in this area were annexed into the city. After annexation this area would be a transitional area which would most likely contain a variety of land use types obviously some parcels more intense than the existing 5 ac. lots. This sounded reasonable to the city and will allow them to address future drainage issues on the annexed sites at the time of annexation agreements. The attached map shows my best guess at future land uses for the area. I based my land use projections for this area as being mainly residential uses, on the fact that the access to major arterial roadways in this area will be somewhat difficult. The new church site at T-Gap(Dublin) and Powers will remain. Any commercial or industrial uses would have to be planned north of this 10 acre site, with no direct access onto Future Dublin Blvd. or Powers. Also evident is the fact that over 200 acres of industrial and commercial uses are already master planned and zoned directly west of Powers between Dublin and Woodmen Rd., which hampers the marketability of new industrial and commercial land considerably. The new Stetson Hills Master plan which lies directly south of the church site at Dublin, east of Powers is proposing only 8 ac. of commercial at this location even with direct access to Dublin Blvd., and multi-family residential south of the commercial, and single family residential uses continuing east of this intersection. The old landfill which is zoned currently as an industrial use will most likely never be built on due to the problems inherent with building any structure on a landfill. Most landfills are usually converted to park or open space uses and some have been built on for golf courses, but I can't think of any developed for industrial, commercial or residential uses. I'm sorry to bore you with this analogy, but I thought that it might be helpful in explaining our thinking for this area.

The city is basically looking for a letter from you which confirms what was discussed in the beginning of this memo. That any transition of land use from the existing will most likely happen when the land in this area is annexed into the city. Thanks for your time and your letter of response. Please address your letter to:

Tim Mitros
City of Colorado Springs, Stormwater and Subdivision
101 W. Costilla
Colorado Springs, CO 80903

From the desk of...

Jim Nass

Nass Design Associates
111 South Tejon St. Suite 301
Colorado Springs, CO 80903

If you have any questions please call me at your convenience.

(719) 475-2406
Fax: (719) 475-2406

WOODSMEN RD

BASIN BOY

LAND FILL
UNDEVELOPABLE
67.6 ACRES

RESIDENTIAL
1 - 5 DU/AC

OFFICE/
COMMERCIAL
ACRES

OPEN SPACE
DRAINAGE
8.0 ACRES

RESIDENTIAL
1 - 5 DU/AC
18.8 ACRES

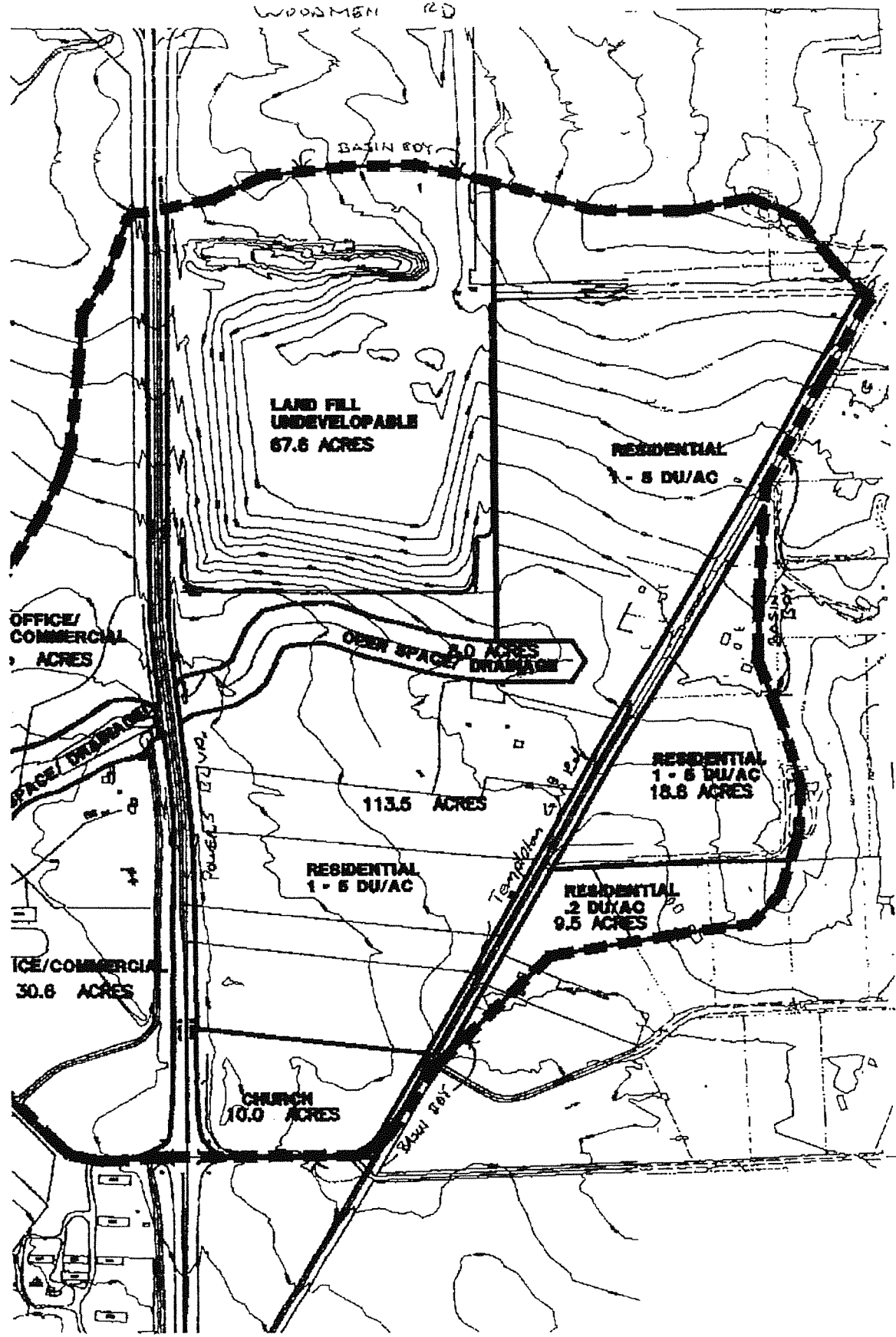
113.5 ACRES

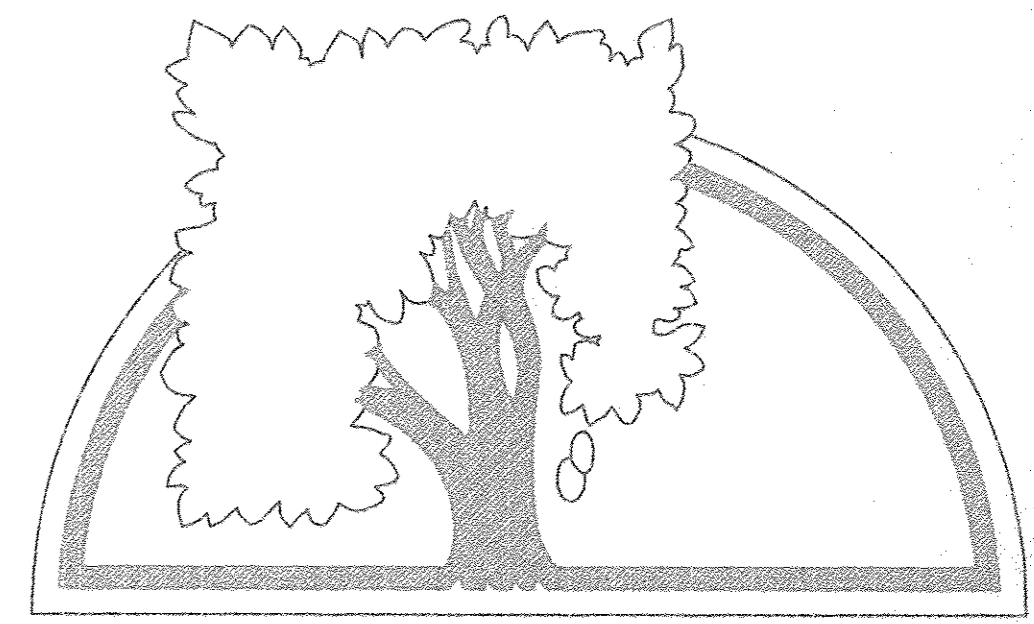
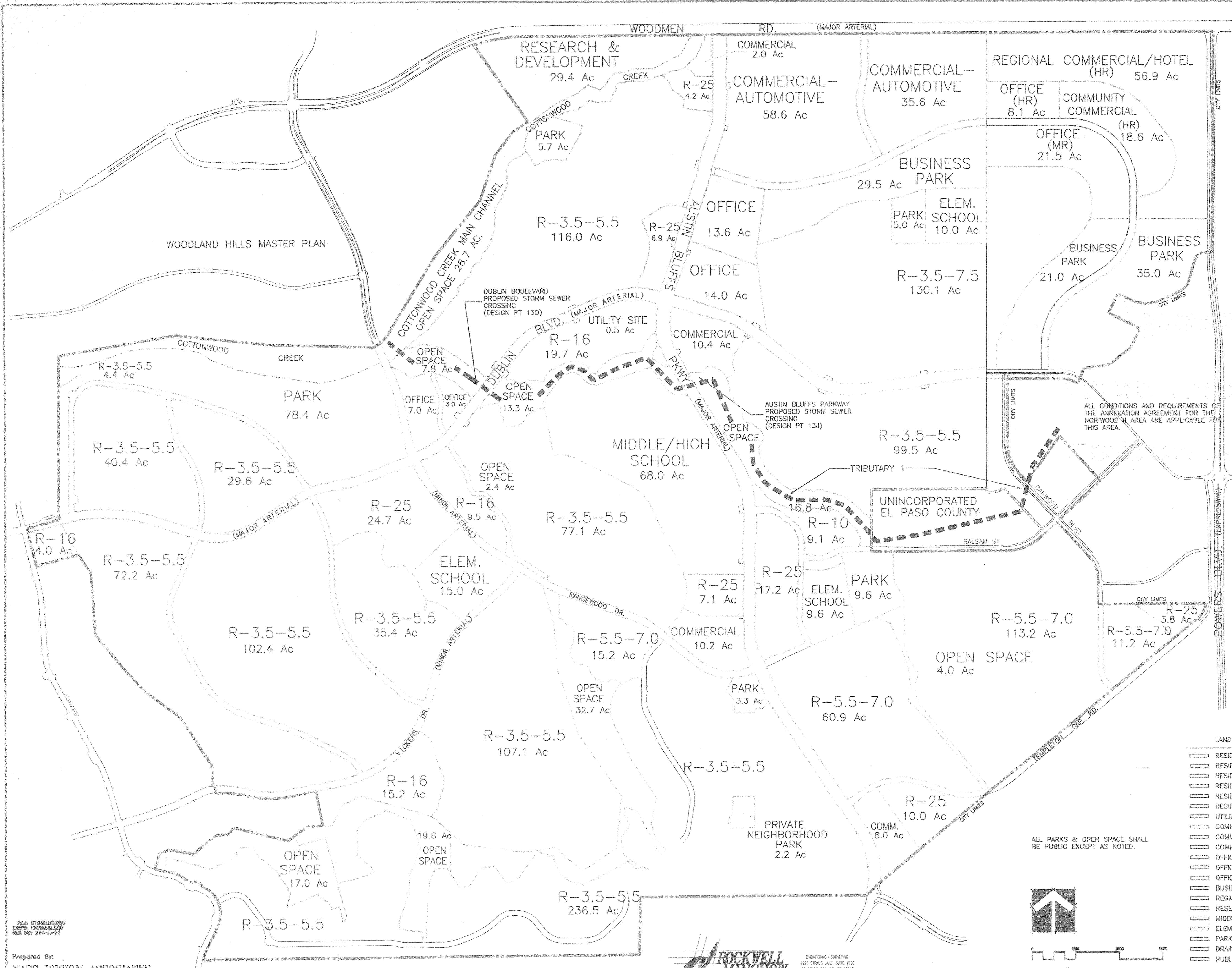
RESIDENTIAL
1 - 5 DU/AC

RESIDENTIAL
2 DU/AC
9.5 ACRES

ICE/COMMERCIAL
30.6 ACRES

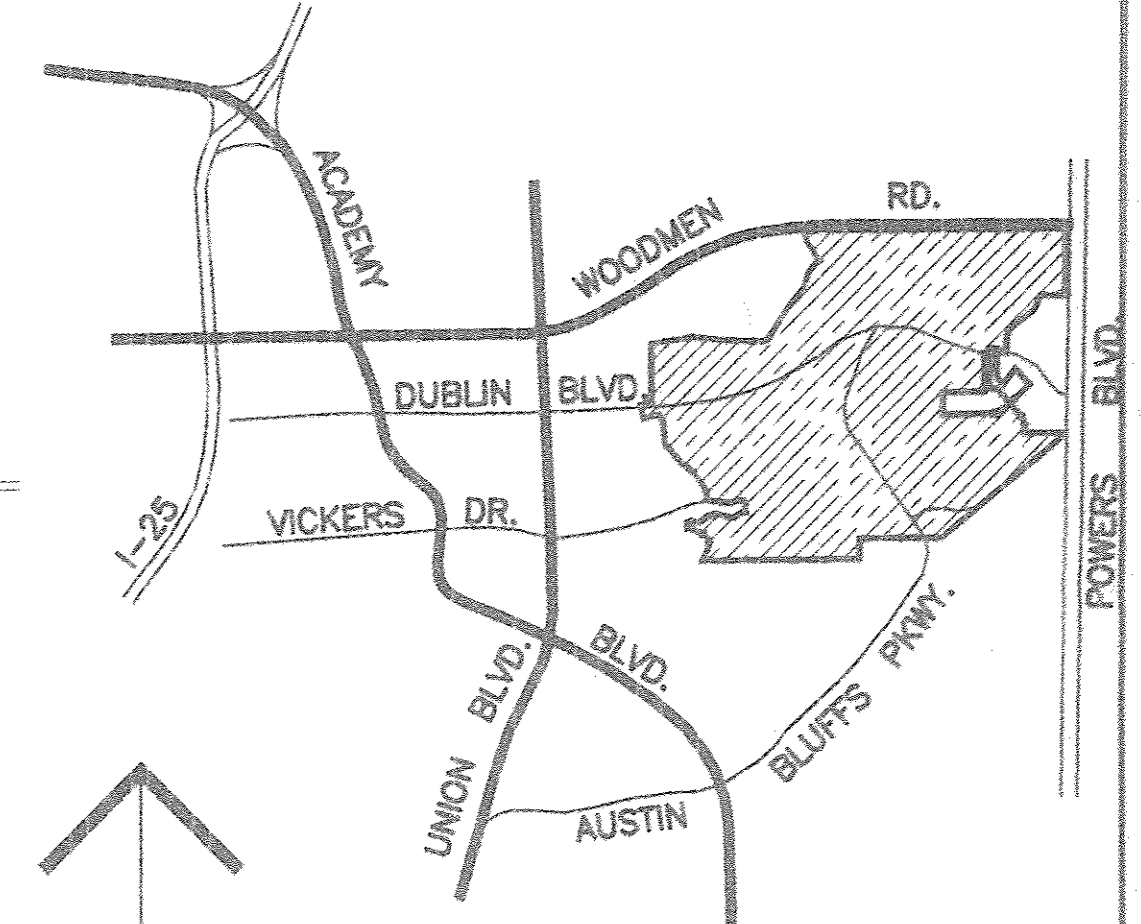
CHURCH
10.0 ACRES





NOR'WOOD MASTER PLAN

NOR'WOOD DEVELOPMENT CORP.
 4065 N. Sinton Rd. Suite 200
 Colorado Springs, CO 80907
 (719) 593-2600



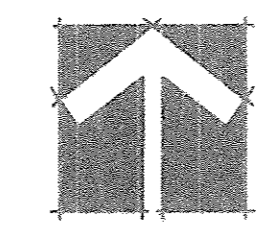
VICINITY MAP

NO SCALE

LEGAL DESCRIPTION:
 PORTIONS OF SECTIONS 10 THRU 15, TOWNSHIP 13 SOUTH,
 RANGE 66 WEST OF THE 6TH P.M., IN THE CITY OF COLORADO
 SPRINGS, EL PASO COUNTY, COLORADO, AND CONTAINING
 2244.7 ACRES MORE OR LESS.

LAND USE	ACRES	GROSS DENSITY (du/ac)	DWELLING UNITS
RESIDENTIAL 3.5-5.5	920.6 Ac	3.5-5.5	3222-5063
RESIDENTIAL 5.5-7.0	200.6 Ac	5.5-7.0	1103-1404
RESIDENTIAL 3.5-7.5	130.1 Ac	3.5-7.5	455-976
RESIDENTIAL 10	9.1 Ac	10	91
RESIDENTIAL 16	48.3 Ac	16	773
RESIDENTIAL 25	74.0 Ac	25	1850
UTILITY SITE	0.5 Ac		
COMMERCIAL	30.7 Ac		
COMMERCIAL-AUTOMOTIVE	94.1 Ac		
COMMUNITY-COMMERCIAL (HR)	18.6 Ac		
OFFICE	37.6 Ac		
OFFICE (HR)	8.0 Ac		
OFFICE (MR)	21.5 Ac		
BUSINESS PARK	85.5 Ac		
REGIONAL COMMERCIAL/HOTEL (HR)	56.9 Ac		
RESEARCH & DEVELOPMENT	29.4 Ac		
MIDDLE/HIGH SCHOOL	68.0 Ac		
ELEMENTARY SCHOOL	34.7 Ac		
PARK/OPEN SPACE	217.9 Ac		
DRAINAGE/OPEN SPACE	28.7 Ac		
PUBLIC ROAD	129.9 Ac		
TOTAL	2244.7 Ac		

ALL PARKS & OPEN SPACE SHALL BE PUBLIC EXCEPT AS NOTED.



SCALE 1"=500'

DATE OF PREPARATION: 11-22-96
 REVISED: 10-15-97

MIN. 7494
 MAX. 10157

Prepared By:
NASS DESIGN ASSOCIATES
 111 S. Tejon St. Suite 301
 Colorado Springs, CO 80903
 (719) 475-2406

ROCKWELL MINCHOW
 CONSULTANTS, INC.
 ENGINEERING • SURVEYING
 2929 STRAUS LANE, SUITE #102
 COLORADO SPRINGS, CO 80907
 (719) 435-2535 • FAX (719) 435-8234



LEGEND
 - - - - - EXISTING CONTOUR
 - - - - - LAND FILL BOUNDARY
 - - - - - DRAINAGE MAIN ROAD

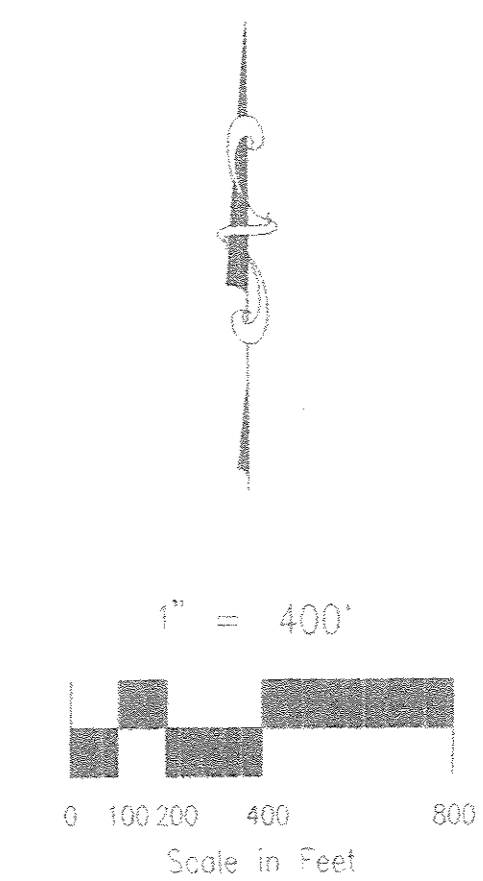


EXHIBIT 2

FILE: 97038LU.DWG 11/1/97
 KRF:SS

		Kent Rockwell DIRECTOR OF DESIGN 2020 STANLEY LANE, SUITE #100 COLORADO SPRINGS, CO 80907 (719) 475-2575 • FAX (719) 475-8223	
TITLE :	SCALE :	DRAWN BY :	JOB NO. :
	1"=400'	KDR	97-038
DATE :	CHECKED BY :		
11/1/97	KDR		