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File **1994-0146** Name: Willow Ridge Subdivision – Preliminary Plan - NW Of 25 Road And Highway 340

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		A few items are denoted with an asterisk (*), which means they are to be scanned for permanent record on the ISYS retrieval system. In some instances, items are found on the list but are not present in the scanned electronic development file because they are already scanned elsewhere on the system. These scanned documents are denoted with (**) and will be found on the ISYS query system in their designated categories. Documents specific to certain files, not found in the standard checklist materials, are listed at the bottom of the page. Remaining items, (not selected for scanning), will be listed and marked present. This index can serve as a quick guide for the contents of each file.
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X		Reduction of assessor's map.
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X	X	***Mailing list to adjacent property owners**
		Public notice cards
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		Other bound or non-bound reports
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DOCUMENT DESCRIPTION:

X	X	Correspondence			
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X	X	Revised Preliminary Plan – Sheet 1			
X		Colorado Dept. of Transportation State Hwy Access Permit-#394033			
X	X	Power of Attorney – annexation – scanned with file			
X		Commitment for Title Ins. – Security Union – 12/6/93			
X	X	Subsurface Soils Exploration – 8/29//94			
X	X	Preliminary Drainage Report – 8/31/94			
X	X	Petition – 10/94			
X		Posting of Public Notice Signs Sheet – 9/19/94, 2/24/95			

DEVELOPMENT APPLICATION

Community Development Department
250 North 5th Street Grand Junction, CO 81501
(303) 244-1430

Receipt 1548
Date 9-2-94
Rec'd By MP

File No. 146 94

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We, the undersigned, being the owners of property situated in Mesa County, State of Colorado, as described herein do hereby petition this:

PETITION	PHASE	SIZE	LOCATION	ZONE	LAND USE
[X] Subdivision Plat/Plan	[ ] Minor [X] Major [ ] Resub		Hwy 340 & Redlands Canal	PR-?	Residential
[ ] Rezone				From: To:	
[ ] Planned Development	[ ] ODP [ ] Prelim [ ] Final				
[ ] Conditional Use					
[ ] Zone of Annex					
[ ] Text Amendment					
[ ] Special Use					
[ ] Vacation					[ ] Right-of-Way [ ] Easement

[X] PROPERTY OWNER [X] DEVELOPER [X] REPRESENTATIVE CFM

Oliver E. Frascona	Kenneth L. Schmohe	Craig Roberts
Name	Name	Name
1910 Stony Hill Rd.	c/o Design Affiliates, LLC 2690 Regis Dr.	Ciavonne & Associates 844 Grand Ave.
Address	Address	Address
Boulder, CO 80303	Boulder, CO 80303	Grand Junction, CO 81501
City/State/Zip	City/State/Zip	City/State/Zip
(303) 494-3000	(303) 494-1721	(303) 241-0745
Business Phone No.	Business Phone No.	Business Phone No.

NOTE: Legal property owner is owner of record on date of submittal.

We hereby acknowledge that we have familiarized ourselves with the rules and regulations with respect to the preparation of this submittal, that the foregoing information is true and complete to the best of our knowledge, and that we assume the responsibility to monitor the status of the application and the review comments. We recognize that we or our representative(s) must be present at all hearings. In the event that the petitioner is not represented, the item will be dropped from the agenda, and an additional fee charged to cover rescheduling expenses before it can again be placed on the agenda.

X _____ 8/31/94
Signature of Person Completing Application — Date

X _____
Signature of Property Owner(s) - Attach Additional Sheets if Necessary

SUBMITTAL CHECKLIST

MAJOR SUBDIVISION: PRELIMINARY

Location: Hwy 340 & Redlands Canal Project Name: Willow Ridge

ITEMS		DISTRIBUTION
DESCRIPTION 146 94 Original Do NOT Remove From Office Separate check payable to Colorado Biological Study for $595.00	SSID REFERENCE	● City Community Development ● City Dev. Eng. ● City Utility Eng. ● City Property Agent ● City Parks/Recreation ● City Fire Department ● City Attorney ● City G.J.P.C. (8 sets) ○ City Downtown Dev. Auth. ● City Police ● County Planning ○ Walker Field ● School Dist. #51 ● Irrigation District Redlands Water & Power ○ Drainage District ● Water District UV ○ Sewer District ● U.S. West ● Public Service ○ GVMP ○ CDOT ● Corps of Engineers ● Colorado Geological Survey $595.00 ○ U.S. Postal Service ○ Persigo WWTF
● Application Fee $610 plus $15/acre	VII-1	1
● Submittal Checklist*	VII-3	1
● Review Agency Cover Sheet*	VII-3	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
● Application Form*	VII-1	1 1 1 1 1 1 1 1 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
● Assessor's Map	VII-1	1 1 1 1 1 1 1 1 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
● Evidence of Title	VII-2	1 1 1 1
● Names and Addresses	VII-3	1
● Legal Description	VII-2	1 1
● General Project Report	X-7	1 1 1 1 1 1 1 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
● Location Map	IX-21	1
● Preliminary Plan	IX-26	1 2 1 1
● 11"x17" Reduction of Prelim. Plan	IX-26	1 1 1 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
● Preliminary Drainage Report	X-12	1 2
● Geotechnical Report	X-8	1 1 1
● POA for annexation	attached	1
● Major Activity Notice 10 acres or more	attached	1

NOTES:
1) An asterisk in the item description column indicates that a form is supplied by the City.
2) Required submittal items and distribution are indicated by filled in circles, some of which may be filled in during the pre-application conference. Additional items or copies may be subsequently requested in the review process.
3) Each submitted item must be labeled, named, or otherwise identified as described above in the description column.

PRE-APPLICATION CONFERENCE

Date: 7/21/94
Conference Attendance: Kathy P., Craig R.
Proposal: Subdivision - 18-19 lots -
Location: NW4 340 - Redlands Water & Power Canal

Tax Parcel Number: 2945-164-00-238
Review Fee: $610 plus $15/acre
(Fee is due at the time of submittal. Make check payable to the City of Grand Junction.)

Additional ROW required? ~~Staff~~ appears that ROW width on 340 is sufficient
Adjacent road improvements required? TCP required
Area identified as a need in the Master Plan of Parks and Recreation? NO
Parks and Open Space fees required? yes Estimated Amount: $225/unit
Recording fees required? yes - 1st sheet Estimated Amount:
Half street improvement fees required? TCP Estimated Amount:
Revocable Permit required?
State Highway Access Permit required? yes

Applicable Plans, Policies and Guidelines

Located in identified floodplain? FIRM panel #
Located in other geohazard area? ? steep slope

Located in established Airport Zone? Clear Zone, Critical Zone, Area of Influence? NO
Avigation Easement required? NO

While all factors in a development proposal require careful thought, preparation and design, the following "checked" items are brought to the petitioner's attention as needing special attention or consideration. Other items of special concern may be identified during the review process.

● Access/Parking	O Screening/Buffering	O Land Use Compatibility
● Drainage	O Landscaping	O Traffic Generation
O Floodplain/Wetlands Mitigation	O Availability of Utilities	O Geologic Hazards/Soils

O Other
Related Files:

It is recommended that the applicant inform the neighboring property owners and tenants of the proposal prior to the public hearing and preferably prior to submittal to the City.

PRE-APPLICATION CONFERENCE

WE RECOGNIZE that we, ourselves, or our representative(s) must be present at all hearings relative to this proposal and it is our responsibility to know when and where those hearings are.

In the event that the petitioner is not represented, the proposed item will be dropped from the agenda, and an additional fee shall be charged to cover rescheduling expenses. Such fee must be paid before the proposed item can again be placed on the agenda. Any changes to the approved plan will require a re-review and approval by the Community Development Department prior to those changes being accepted.

WE UNDERSTAND that incomplete submittals will not be accepted and submittals with insufficient information, identified in the review process, which has not been addressed by the applicant, may be withdrawn from the agenda.

WE FURTHER UNDERSTAND that failure to meet any deadlines as identified by the Community Development Department for the review process may result in the project not being scheduled for hearing or being pulled from the agenda.

X _____ X _____
Signature(s) of Petitioner(s) Signature(s) of Representative(s)

2945-164-08-022
Russell D. & Agnes F. Wiseman
403 Mayfield Drive
Grand Junction, CO 81503-1521

2945-164-0-234
William R. & Betty Lou Jarvis
2491 S. Broadway
Grand Junction, CO 81503-2782

2945-164-05-004
Wyenona L. Hawkes
419 E. Mayfield Dr.
Grand Junction, CO 81503-1519

2945-153-01-001
Sharon L. Edris
2503 Broadway
Grand Junction, CO 81503

2945-164-08-002
Harold P. & Shirley G. Stocker
408 E. Mayfield Dr.
Grand Junction, CO 81503

2945-164-08-004
James E. & Catherine D. Nasalroad
416 E. Mayfield Dr.
Grand Junction, CO 81503

2945-164-08-007
John W. & Vera L. Creagar
422 E. Mayfield Dr.
Grand Junction, CO 81503

2945-164-08-026
Ann P. Jacobs
405 W. Mayfield Drive
Grand Junction, CO 81503-1521

2945-164-00-946
Redlands Water & Power
1043 North Avenue
Grand Junction, CO 81501-3141

2945-164-05-005
Steve & Thea R. Morrison
415 E. Mayfield Dr.
Grand Junction, CO 81503-1519

2945-164-00-146
Scott P. Smith
1591 N. Sheridan Rd.
Lake Forest, IL 60045-1350

2945-164-08-009
Michael J. & Karen L. Bales
426 Bayfield Dr.
Grand Junction, CO 81503

2945-164-08-005
Everett E. Reece
418 E. Mayfield Dr.
Grand Junction, CO 81503

2945-164-08-008
Howard & B.R. Hottes
424 E. Mayfield Dr.
Grand Junction, CO 81503

2945-164-05-008
Robert L. & Karen K. Haggerty
413 E. Mayfield Dr.
Grand Junction, CO 81503-1519

2945-164-05-001
C. Leonard & E. Kay Russell
423 E. Mayfield Dr.
Grand Junction, CO 81501-1519

2945-153-00-018
Pioneer Park Partnership
444 E. Scenic Dr.
Grand Junction, CO 81503

2945-164-00-289
Pioneer Park Partnership
444 E. Scenic Dr.
Grand Junction, CO 81503

2945-164-08-003
Lloyd R. & Susan M. Mabrey
412 E. Mayfield Dr.
Grand Junction, CO 81503

2945-164-08-006
Larry S. & Nancy J. Mason
420 E. Mayfield Dr.
Grand Junction, CO 81503

14 6 94

2945-164-08-026
Ann P. Jacobs
405 W. Mayfield Drive
Grand Junction, CO 81503-1521

2945-164-05-008
Robert L. & Karen K. Haggerty
413 E. Mayfield Dr.
Grand Junction, CO 81503-1519

2945-164-08-022
Russell D. & Agnes F. Wiseman
403 Mayfield Drive
Grand Junction, CO 81503-1521

Oliver E. Frascona
1910 Stony Hill Road
Boulder, CO 80303

146 94

Kenneth L. Schmohe
c/o Design Affiliates, LLC
2690 Regis Drive
Boulder, CO 80303

Craig Roberts
Ciavonne & Associates
844 Grand Avenue
Grand Junction, CO 81501

City of Grand Junction
Community Development Dept.
250 North 5th Street
Grand Junction, CO 81501

146 94

Willow Ridge Preliminary Subdivision Submittal

Project Narrative

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PROPERTY LOCATION

The parcel is located immediately north of Highway 340, and east of the Mayfield Drive on a bluff above the Redlands Power canal. This lot lies in the southeast quarter of the southeast quarter of Section 16, Township 1 South, Range 1 West, of the Ute Principal Meridian.

EXISTING SITUATION

The existing zoning is Mesa County zone PR-4. The parcel is 4.65 acres. The request coincides with a petition of annexation with the zoning to remain PR-4.

THE PROPOSED DEVELOPMENT

The owner proposes a planned development for 19 single family lots with access from Highway 340. The project includes open space, a surface drainage system and detention pond, streets, sidewalks, a link to the existing bike trail system, major utilities and other infrastructure requirements. The lots are designed as zero lot lines with a 10' side yard setback on the opposite side. A 25' front yard setback and a 15' rear yard setback are included.

PUBLIC BENEFIT

This project is proposed to allow the development of this parcel as single family residences in response to need shown by recent depletion of residential lots available in this area. The property has no value as an agricultural use.

ADOPTED PLANS AND POLICIES

Multi-Modal Transportation Plan - the adjacent bike path on Highway 340 is a link in the area's commuter bike system, allowing residents of this development direct access to the existing Colorado River Trail, and subsequently the entire system.

THE IMPACTS

Surrounding Land Use - The Mayfield subdivision immediately west of the parcel and the Mesa Vista and Country Club Park subdivisions across Highway 340 to the south are established medium density housing developments. To the north is the Redlands Water and Power generating plant and canal. Below the canal is the Audubon Section of the Colorado Riverfront Trail. Retail and commercial development exist in the Pioneer Village South development a quarter of a mile to the east along Highway 340.

Site Access & Traffic Patterns - The parcel is accessible from the adjacent Highway 340 Right Of Way. The requirements of the State Highway Access Permit will be met by adding an acceleration lane to Highway 340 as described by the Permit.

Availability of Utilities - The development lies within the boundaries of the Ute Water Conservancy District. Water service to the project will be from an existing 8" water main located 1000' northeast of the project at Brach's Market on Highway 340, adequate to provide drinking water and fire protection for the development. Two fire hydrants are proposed. The service will be extended with an 8" main to serve homes and fire hydrants. The development is within the boundaries of the 201 sanitation district. A sanitary sewer system will be provided to all units in the development.

Effects on Public Facilities - In general, the development of this site will incrementally increase the use of roads, fire protection, police protection, schools, sanitation facilities, parks, and irrigation. In some cases, the expanded use is planned for and will increase the efficiency of existing facilities, such as sanitation (plant was designed for population of the 201 district), and fire protection (within the existing district service area). In other cases, the developer is paying for the proposed improvements such as the acceleration lane and parks (Parks & Open Space Fees). The remaining services, schools and police protection, are property tax funded.

A $225 per lot Parks and Open Space Fee will be paid in lieu of open space development or dedication.

The site is within 1-1/2 miles of Scenic Elementary School, 3 miles from Redlands Middle School, and within 2 miles of Grand Junction High School. With 19 lots being developed, any additional burden to the schools from this development will be minimal.

Fire protection in this area is served by the Grand Junction Fire Protection District. Initial response to this site would be served from Station #1, located at Pitkin and 6th.

Site Soils and Geology - See enclosed Geology Report.

In summary, this proposal meets the intent of the policies established by The City of Grand Junction, the desires of the landowner, and the home buyer market which we believe this project addresses.

Original given to City Clerk for recording

POWER OF ATTORNEY

OWNER(S) *Oliver E. Frascona*

ADDRESS OF PROPERTY *N/A (metes and bounds legal description)*

TAX PARCEL # *2945-164-00-232*

LEGAL DESCRIPTION OF PROPERTY *(metes and bounds) see attached Exhibit "A"*

BE IT KNOWN THAT:

I, (We), do hereby designate and appoint the City Clerk of the City of Grand Junction as my (our) Attorney in Fact granting said City Clerk full power and authority for me (us) and in my (our) stead to: sign such documents and instruments as are necessary to cause the above described land(s) to be annexed to the City of Grand Junction; and to sign any petition(s) for annexation of the described land(s) to the City, when eligible; and to do and perform any and all acts which the said City Clerk shall deem necessary, convenient, or expedient to accomplish said annexation, as fully as I (we) might do if personally present.

The property described herein may be annexed to the City of Grand Junction in part or parts, at any time. Consent is hereby given to annex portions of tracts and parcels even if the annexation has the effect of dividing tracts or parcels into separate parts or parcels.

The authority granted by this instrument shall be a covenant running with the land(s), shall be binding upon successors in interest and shall not cease upon my (our) death(s) or the dissolution of marriage, partnership, corporation or other form of association which may hold title or claim an interest to the property described herein.

As a further covenant to run with the land, I (we) agree that in the event a counter-petition to a proposed annexation of the land is prepared, any signature on such petition purporting to affect the land herein described may be ignored as of no force and effect by the City under annexation requirements.

IN WITNESS WHEREOF, I (we) have hereunto set my (~~our~~) hand(~~s~~) and seal this 9th day of August, 19 94

146 94

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STATE OF COLORADO)
) ss:
COUNTY OF BOULDER)

The foregoing instrument was acknowledged before me this 9th day of August, 1994 by Oliver E. Frascona

WITNESS my hand and official seal:

Sharon E. Reichman
Notary Public

January 24, 1994
My Commission expires:

EXHIBIT "A"

Beginning at a point on the East Section line of Section 16, Township 1 South, Range 1 West of the U.M. that is North 02° 16'30" West 900 feet from the Southeast corner of said Section 16, thence South 69°13'00" West 184.3 feet, thence South 65° 37'30" West 487.2 feet, thence North 0°28'00" East 663.07 feet to the South line of the right of way of the Redlands Irrigation and Power Company's Power Canal, thence South 57°00'00" East 728.15 feet to the Point of Beginning, Mesa County, Colorado.

146 94

SUBSURFACE SOILS EXPLORATION

Willow Ridge Subdivision

Grand Junction, CO

Prepared For:

Design Affiliates, LCC
2960 Regis Drive
Boulder, CO 80303

Prepared By:

LINCOLN-DeVORE, INC.
1441 Motor Street
Grand Junction, CO 81505

August 29,1994

Lincoln DeVore, Inc.
Geotechnical Consultants
1441 Motor St.
Grand Junction, CO 81505
TEL: (303) 242-8968
FAX: (303) 242-1561

August 29, 1994

Design Affiliates, LCC
2690 Regis Drive
Boulder, CO 80303

Re: SUBSURFACE SOILS EXPLORATION

Willow Ridge Subdivision

Fruita, CO

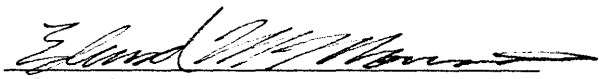
Dear Sir:

Transmitted herein are the results of a Subsurface Soils Exploration for the proposed Old Villas West Residential Subdivision, located in the Redlands area of Grand Junction, CO.

If you have any questions after reviewing this report, please feel free to contact this office at any time. This opportunity to provide Geotechnical Engineering services is sincerely appreciated.

Respectfully submitted,

LINCOLN-DeVORE, INC.

By: 

Edward M. Morris, E.I.T.
Western Slope Branch Manager
Grand Junction, Office

Reviewed by: _____

George D. Morris, P.E.
Colorado Springs Office

LDTL Job No. 81352-J

EMM/bh

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INTRODUCTION

PROJECT DESCRIPTION

This report presents the results of our geotechnical evaluation performed to determine the general subsurface conditions of the site applicable to construction of approximately 19 single family residences. A vicinity map is included in the Appendix of this report.

This report is the result of a field investigation and laboratory testing conducted in August of 1994 to supplement an original Subsurface Soils Investigation for the Villas West Subdivision, originally accomplished for Robert P. Gerlofs, dated March 23, 1977, Lincoln DeVore job #15268-GS.

To assist in our exploration, we were provided with a site schematic plan of the Willow Ridge Subdivision, prepared by Ciavonne and Associates of Grand Junction. The Boring Location Plan attached to this report is based on that plan provided to us.

We understand that the proposed structure will probably consist of one and two story, wood framed structures with the possibility of a full basement and concrete floor slab on grade. Lincoln DeVore has not seen a full set of building plans, but structures of this type typically develop wall loads on the order of 700-1900 plf and column loads on the order of 6-18 kips.

The characteristics of the subsurface materials encountered were evaluated with regard to the type of construction described above. Recommendations are included herein to match the described construction to the soil character-

istics found. The information contained herein may or may not be valid for other purposes. If the proposed site use is changed or types of construction proposed, other than noted herein, Lincoln DeVore should be contacted to determine if the information in this report can be used for the new construction without further field evaluations.

PROJECT SCOPE

The purpose of our exploration was to evaluate the surface and subsurface soil and geologic conditions of the site and, based on the conditions encountered, to provide recommendations pertaining to the geotechnical aspects of the site development as previously described. The conclusions and recommendations included herein are based on an analysis of the data obtained from our field explorations, laboratory testing program, and on our experience with similar soil and geologic conditions in the area.

The exploration borings accomplished in August of 1994 are to supplement the original exploration borings accomplished in 1977. The 1977 report was originally accomplished over 17 years ago, under the Geo-technical standards applicable at that time. The purpose of the 1994 borings was to determine if substantial changes in the subsurface soils or ground water conditions had occurred since the original report. In addition, laboratory testing for the possible presence of metastable soils was conducted. The original field and laboratory investigation results were utilized to produce this report, which contains recommendations appropriate to the present Geo-

technical standards, the broadening of knowledge and from recent legislation.

This report provides site specific information for the construction of a single family residential subdivision. Included in this report are recommendations regarding general site development and foundation design criteria.

The scope of our geotechnical exploration consisted of a surface reconnaissance, a geophoto study, subsurface exploration, obtaining representative samples, laboratory testing, analysis of field and laboratory data, and a review of geologic literature.

Specifically, the intent of this study is to:

1. Explore the subsurface conditions to the depth expected to be influenced by the proposed construction.
2. Evaluate by laboratory and field tests the general engineering properties of the various strata which could influence the development.
3. Define the general geology of the site including likely geologic hazards which could have an effect on site development.
4. Develop geotechnical criteria for site grading and earthwork.
5. Identify potential construction difficulties and provide recommendations concerning these problems.
6. Recommend an appropriate foundation system for the anticipated structure and develop criteria for foundation design.

FIELD EXPLORATION AND LABORATORY TESTING

A field evaluation was performed on 8-1-94 ,and consisted of a site reconnaissance by our geotechnical personnel and the drilling of 2 exploration borings. These

shallow exploration borings were drilled within the proposed building envelopes, near the locations indicated on the Boring Location Plan. The exploration borings were located to obtain a reasonably good profile of the subsurface soil conditions. All exploration borings were drilled using a CME 45V, truck mounted drill rig with continuous flight auger to depths of approximately 8 feet. Samples were taken with a thin wall Shelby Tube and by bulk methods. Logs describing the subsurface conditions are presented in the attached figures.

Laboratory tests were performed on representative soil samples to determine their relative engineering properties. Tests were performed in accordance with test methods of the American Society for Testing and Materials or other accepted standards. The results of our laboratory tests are included in this report. The in-place moisture content and the standard penetration test values are presented on the attached drilling logs.

FINDINGS

SITE DESCRIPTION

The project site is located in the Southeast Quarter of the Southeast Quarter of Section 16, Township One South, Range 1 West of the Ute Principal Meridian, Mesa County, Colorado. More specifically the site is located on the extreme East end of the Redlands, North of Broadway (Colorado highway 340) and is bordered on the North by the Redlands Power Canal and on the West by East Mayfield Drive.

The topography of the site is relatively flat, being located at the top of a small tariff/bluff which overlooks the Redlands Power Canal. The flat portion with a slight overall gradient to the East Northeast, with rather steep slopes at the bluff edge overlooking the Redlands Power Canal. The exact direction of surface runoff on this site will be controlled by the proposed construction and therefore will be variable. In general, surface runoff is expected to travel to the Redlands Power Canal drainage , eventually entering the Colorado River. Surface and subsurface drainage on this site would be described as fair to good.

On-site erosion can be a significant problem neat the bluff edge overlooking the Redlands Power Canal and the smaller bluff on the South side of the property, overlooking the bike path and Highway 340, if drainage and vegetation are not carefully controlled. Vegetation will probably be maintained in the immediate area around the building site, but special care should be taken to maintain vegetation on the steeper

slopes. We recommend that runoff from these slopes be carefully controlled to prevent erosion caused by irrigation practices, sheetwash or seepage. It may be necessary to provide culverts or drainage ways to prevent excessive erosion along steeper slopes.

GENERAL GEOLOGY AND SUBSURFACE DESCRIPTION

The geologic materials encountered under the site consist of the Dakota formation as bedrock, overlain by relatively recent Alluvial soils. The geologic and engineering properties of the materials found in our 2 shallow exploration borings will be discussed in the following sections.

The soils on this site consist of an Alluvial deposit placed by the action of the ancient Colorado River, covered with Alluvium and Coluvium transported from the hills of the Colorado National Monument to the Southwest. The upper soils are quite stratified, resulting in a layered system of Sandy Silts and Sandy Gravels and Cobbles, with thin interbedded Sand and Silt lenses, overlying the Dakota formation. Generally, the Alluvial Soils are firm, slightly moist to dry and of medium density. Soil density increases and the moisture content decreases with increasing depth. The upper one to three feet of the soil profile is generally quite dry due to surface desiccation.

The surface soils consist of a stratified sequence of very Sandy Silts and Silty Sands. These soils are quite stratified and the precise location of samples obtained in the soil profile will determine the actual laboratory classification. For purposes of this report, the majority of the soil

were considered to be very Sandy Silts with many sand strata. This soil type is designated Soil Type I for purposes of this report.

This Soil Type is classified as a very Sandy Silt (ML) of fine grain size under the Unified Classification System. This soil type is very low to non plastic and of low to medium density. This soil will have virtually no tendency to expand upon the addition of moisture. Settlement will be minimal under the recommended foundation loads. This soil will undergo elastic settlement upon application of static foundation pressures. Such settlement is characteristically rapid and should be virtually complete by the end of construction. The soils were carefully sampled and tested to determine if any metastable or collapsible properties were evident. No metastable or collapsible properties were observed in the laboratory testing. If the recommended allowable bearing values are not exceeded, and if all other recommendations are followed, differential movement will be within tolerable limits. At shallow foundation depths this soil was found to have an average allowable bearing capacity of 2200 psf.

A thick sequence of coarse grained gravels and cobbles, of the Ancient Colorado River terrace was encountered on this site. The actual contact between the upper fine grained Alluvial soils and these gravels can be difficult to determine due to inter-bedding between the finer grained soils of Soil Type I and these coarse grained soils, which are designated Soil Type II for this report.

This Soil Type is classified as a poorly graded Silty, Sandy gravel and cobble (GP/GM) of coarse grain size under the Unified Classification System. This soil type is non plastic and of medium density. This soil will have virtually no tendency to expand upon the addition of moisture. Settlement will be minimal under the recommended foundation loads. This soil will undergo elastic settlement upon application of static foundation pressures. Such settlement is characteristically rapid and should be virtually complete by the end of construction. If the recommended allowable bearing values are not exceeded, and if all other recommendations are followed, differential movement will be within tolerable limits. At shallow foundation depths this soil was found to have an average allowable bearing capacity of 4500 psf.

The surface soils are deposited over the dense formational material of the Dakota Formation. The Dakota Formation was not encountered during this exploration program and, based upon previous drilling on this site, believe to be 13 to in excess of 15 feet below the present ground surface across the flatter portion of this site. The Dakota Formation is out cropping along the Redlands Power Canal. The Dakota Formation can broadly be described as a series of thin to thick bedded Sand Stones with beds of Silt Stone, Mud Stone, Clay Stone, Shale and occasional Lignite and Coal. The Dakota Formation does contain significant amounts of expansive clays. The majority of the Dakota Formation, however, exhibits only a moderate expansion potential. It is anticipated that the expansive clay within the Dakota Formation will not effect the construction and the per-

formance of the foundations on this site.

The lines defining the change between soil types or rock materials on the attached boring logs and soil profiles are determined by interpolation and therefore are approximations. The transition between soil types may be abrupt or may be gradual.

The boring logs and related information show subsurface conditions at the date and location of this exploration. Soil conditions may differ at locations other than those of the exploratory borings. If the structure is moved any appreciable distance from the locations of the borings, the soil conditions may not be the same as those reported here. The passage of time may also result in a change in the soil conditions at the boring locations.

GROUND WATER:

No free water was encountered during drilling on this site. In our opinion the true free water surface is fairly deep in this area, and hence, should not affect construction. Seepage moisture may affect construction if surface drainage is not properly controlled.

Due to the proximity of the Dakota Formation, there exists a possibility of a perched water table developing in the alluvial soils which overlie the Dakota Formation. This perched water would probably be the result of increased irrigation due to the presence of lawns and landscaping and roof runoff. The exploration holes and surface out crops in-

dicate that the weathered upper surface of the Dakota Formation is relatively flat and that subsurface drainage would probably be quite slow. While it is believed that under the existing conditions at the time of this exploration the construction process would not be effected by any free-flow waters, it is very possible that several years after development is initiated, a troublesome perched water condition may develop which will provide construction difficulties. In addition, this potential perched water could create some problems for existing or future foundations on this tract. Therefore it is recommended that the future presence of a perched water table be considered in all design and construction of both the proposed residential structures and any subdivision improvements.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL DISCUSSION

No geologic conditions were apparent during our reconnaissance which would preclude the site development as planned, provided the recommendations contained herein are fully complied with. Based on our investigation to date and the knowledge of the proposed construction, the site condition which would have the greatest effect on the planned development is the possibility of isolated perched water tables developing in the vicinity of some of the basements.

Since the exact magnitude and nature of the foundation loads are not precisely known at the present time, the following recommendations must be somewhat general in nature. Any special loads or unusual design conditions should be reported to Lincoln DeVore so that changes in these recommendations may be made, if necessary. However, based upon our analysis of the soil conditions and project characteristics previously outlined, the following recommendations are made.

OPEN FOUNDATION OBSERVATION

Since the recommendations in this report are based on information obtained through random borings, it is possible that the subsurface materials between the boring points could vary. Therefore, prior to placing forms or pouring concrete, an open excavation observation should be performed by representatives of Lincoln DeVore. The purpose of this observa-

tion is to determine if the subsurface soils directly below the proposed foundations are similar to those encountered in our exploration borings. If the materials below the proposed foundations differ from those encountered, or in our opinion, are not capable of supporting the applied loads, additional recommendations could be provided at that time.

EXCAVATION & STRUCTURAL FILL:

Subgrade Site preparation in all areas to receive structural fill should begin with the removal of all topsoil, vegetation, and other deleterious materials. Prior to placing any fill, the subgrade should be observed by representatives of Lincoln DeVore to determine if the existing vegetation has been adequately removed and that the subgrade is capable of supporting the proposed fills. The subgrade should then be scarified to a depth of 10 inches, brought to near optimum moisture conditions and compacted to at least 90% of its maximum modified Proctor dry density [ASTM D-1557]. The moisture content of this material should be within + or - 2% of optimum moisture, as determined by ASTM D-1557.

Structural Fill In general, we recommend all structural fill in the area beneath any proposed structure or roadway be compacted to a minimum of 90% of its maximum modified Proctor dry density (ASTM D1557). We recommend that fill be placed and compacted at approximately its optimum moisture content (+/-2%) as determined by ASTM D 1557. Structural fill should be a granular, coarse grained, non-free draining, non-expansive soil. This

structural fill should be placed in the overexcavated portion of this site in lifts not to exceed 6 inches after compaction. This Structural Fill must be brought to the required density by mechanical means. No soaking, jetting or puddling techniques of any type should be used in placement of fill on this site.

Non-Structural Fill We recommend that all backfill placed around the exterior of the building, and in utility trenches which are outside the perimeter of the building and not located beneath roadways or parking lots, be compacted to a minimum of 80% of its maximum modified Proctor dry density (ASTM D-1557).

Fill Limits To provide adequate lateral support, we recommend that the zone of overexcavation extend at least 3 feet beyond the perimeter of the building on all sides.

Field Observation & Testing: During the placement of any structural fill, it is recommended that a sufficient amount of field tests and observation be performed under the direction of the geotechnical engineer. The geotechnical engineer should determine the amount of observation time and field density tests required to determine substantial conformance with these recommendations. It is recommended that surface density tests be taken at maximum 2 foot vertical interval.

The opinions and conclusions of a geotechnical report are based on the interpretation of information obtained by random borings. Therefore the actual site conditions

may vary somewhat from those indicated in this report. It is our opinion that field observations by the geotechnical engineer who has prepared this report are critical to the continuity of the project.

Slope Angles Allowable slope angle for cuts in the native soils is dependent on soil conditions, slope geometry, the moisture content and other factors. Should deep cuts be planned for this site, we recommend that a slope stability analysis be performed when the location and depth of the cut is known.

No major difficulties are anticipated in the course of excavating into the surficial soils on the site. It is probable that safety provisions such as sloping or bracing the sides of excavations over 4 feet deep will be necessary. Any such safety provisions shall conform to reasonable industry safety practices and to applicable OSHA regulations. The OSHA Classification for excavation purposes on this site is Soil Class B.

DRAINAGE AND GRADIENT:

Adequate site drainage should be provided in the foundation area both during and after construction to prevent the ponding of water and the saturation of the subsurface soils. We recommend that the ground surface around the structure be graded so that surface water will be carried quickly away from the building. The minimum gradient within 10 feet of the building will depend on surface landscaping. We recommend

that paved areas maintain a minimum gradient of 2%, and that landscaped areas maintain a minimum gradient of 8%. It is further recommended that roof drain downspouts be carried across all backfilled areas and discharged at least 10 feet away from the structure. Proper discharge of roof drain downspouts may require the use subsurface piping in some areas. Planters, if any, should be so constructed that moisture is not allowed to seep into foundation areas or beneath slabs or pavements.

If adequate surface drainage cannot be maintained, or if subsurface seepage is encountered during excavation for foundation construction, a full perimeter drain is recommended for this building. It is recommended that this drain consist of a perforated drain pipe and a gravel collector, the whole being fully wrapped in a geotextile filter fabric. We recommend that this drain be constructed with a gravity outlet. If sufficient grade does not exist on the site for a gravity outlet, then a sealed sump and pump is recommended. Under no circumstances should a dry well be used on this site.

Should an automatic lawn irrigation system be used on this site, we recommend that the sprinkler heads be installed no less than 5 feet from the building. In addition, these heads should be adjusted so that spray from the system does not fall onto the walls of the building and that such water does not excessively wet the backfill soils.

It is recommended that lawn and landscaping irrigation be reasonably limited, so as to prevent complete saturation of subsurface soils. Several methods of irrigation water control are possible, to include, but not limited to:

FOUNDATIONS

We recommend the use of a conventional shallow foundation system consisting of continuous spread footings beneath all bearing walls and isolated spread footings beneath all columns and other points of concentrated load. Such a shallow foundation system, resting on the Alluvial Sandy Silts or Sandy Gravels, may be designed on the basis of an allowable bearing capacity of 2200 psf maximum for soil type I and 4500 psf maximum for soil type II.

Contact stresses beneath all continuous walls should be balanced to within + or - 200 psf at all points. Isolated interior column footings should be designed for contact stresses of about 150 psf less than the average used to balance the continuous walls. The criterion for balancing will depend somewhat upon the nature of the structure. Single-story, slab on grade structures may be balanced on the basis of dead load only. Multi-story structures may be balanced on the basis of dead load plus 1/2 live load, for up to 3 stories.

* Metering the Irrigation water.
* Sizing the irrigation distribution service piping to limit on-site water usage.
* Encourage efficient landscaping practices.
* Enforcing reasonable limits on the size of high water usage landscaping for each lot and any park areas.

It should be noted that the term "footings" as used above includes the wall on grade or "no footing" type of foundation system. On this particular site, the use of a more conventional footing, the use of a "no footing", or the use of voids will depend entirely upon the foundation loads exerted

by the structure. We would anticipate the use of on this site. Stem walls for a shallow foundation system should be designed as grade beams capable of spanning at least 10 feet. These "grade beams" should be horizontally reinforced both near the top and near the bottom. The horizontal reinforcement required should be placed continuously around the structure with no gaps or breaks. A foundation system designed in this manner should provide a rather rigid system and, therefore, be better able to tolerate differential movements associated with minor differential settlement due to variations in the natural soil density.

If the design of the upper structure is such that loads can be balanced reasonably well, a floating structural slab type of foundation could be used on this site. Such a slab would require heavy reinforcing to resist differential bending along the rim wall. It is possible to design such a slab either as a thickened edge only, a solid or a ribbed slab. A rim wall must be used for confinement purposes. Any such slab must be specifically designed for the anticipated loading.

Such a foundation system may settle to some degree however, the use of a structural fill beneath the slab and rim wall will help reduce settlement and hold differential movement to a minimum. Relatively large slabs will tend to experience minor cracking and heave of lightly loaded interior portions, unless the slabs are specifically designed with this movement in mind.

Any existing low density, soils should

be removed from the proposed bottom footing or rimwall elevation. Once it is felt that adequate soil removal has been achieved, it is recommended that the excavation be closely examined by a representative of Lincoln-DeVore to ensure that an adequate overexcavation depth has indeed occurred and that the exposed soils are suitable to support the proposed structural man-made fill.

Once this examination has been completed, it is recommended that a coarse-grained, non-expansive, non-free draining man-made structural fill be imported to the site. The native soils may be utilized as structural fill, if specifically approved by the Geotechnical Engineer. This imported fill should be placed in the overexcavated portion of this site in lifts not to exceed 6 inches after compaction. A minimum of 90% of the soils maximum Modified Proctor dry density (ASTM D-1557) must be maintained during the soil placement. These soils should be placed at a moisture content conducive to the required compaction (usually Proctor optimum moisture content $\pm$ 2%). The granular material must be brought to the required density by mechanical means. No soaking, jetting or puddling techniques of any type should be used in placement of fill on this site. To ensure adequate lateral support, we must recommend that the zone of overexcavation extend at least 2 feet around the perimeter of the proposed footing. To confirm the quality of the compacted fill product, it is recommended that surface density tests be taken at maximum 2 foot vertical intervals.

When The structural fill is completed,

an allowable bearing capacity of 2200 psf maximum may be assumed for proportioning the footings.

The placement of the structural fill a minimum of two feet beyond the edge of the structural slab should provide additional support for the eccentrically placed wall loads on the slab edges.

SETTLEMENT:

We anticipate that total and/or differential settlements for the proposed structures may be considered to be within tolerable limits, provided the recommendations presented in this report are fully complied with. In general, we expect total settlements for the proposed structure to be less than 1 inch.

FROST PROTECTION

We recommend that the bottom of all foundation components rest a minimum of 1-1 1/2 feet below finished grade or as required by the local building codes. Foundation components must not be placed on frozen soils.

Monolithic slab-on-grade foundation systems typically have an effective soil cover of less than 12 inches. Under normal use, the building and foundation system radiates sufficient heat that frost heave from the underlying soils is not normally a problem. However, additional protection can be provided by applying an insulation board to the exterior of the foundation and extending this board to approximately 18

inches below the final ground surface grade. This board may be applied either prior to or after the concrete is cast and it is very important that all areas of soil backfill be compacted. Local building officials should be consulted for regulatory frost protection depths.

CONCRETE SLABS ON GRADE

Slabs could be placed directly on the natural soils or on a structural fill. We recommend that all non structural slabs on grade be constructed to act independently of the other structural portions of the building. One method of allowing the slabs to float freely is to use expansion material at the slab- structure interface.

It is recommended that floor slabs on grade be constructed with control joints placed to divide the floor into sections not exceeding 360 square feet, maximum. Also, additional control joints are recommended at all inside corners and at all columns to control cracking in these areas.

Problems associated with slab 'curling' are usually minimized by proper curing of the placed concrete slab. This period of curing usually is most critical within the first 5 days after placement. Proper curing can be accomplished by continuous water application to the concrete surface or by the placement of a 'heavy' curing compound, formulated to minimize water evaporation from the concrete. Curing by continuous water application must be carefully undertaken to prevent the wetting or saturation of the subgrade soils.

EARTH RETAINING STRUCTURES

The active soil pressure for the design of earth retaining structures may be based on an equivalent fluid pressure of 42 pounds per cubic foot. The active pressure should be used for retaining structures which are free to move at the top (unrestrained walls). For earth retaining structures which are fixed at the top, such as basement walls, an equivalent fluid pressure of 54 pounds per cubic foot may be used. It should be noted that the above values should be modified to take into account any surcharge loads, sloping backfill or other externally applied forces. The above equivalent fluid pressures should also be modified for the effect of free water, if any.

The passive pressure for resistance to lateral movement may be considered to be 318 pcf per foot of depth. The coefficient of friction for concrete to soil may be assumed to be 0.35 for resistance to lateral movement. When combining frictional and passive resistance, the latter must be reduced by approximately 1/3.

We recommend that the backfill behind any retaining wall be compacted to a minimum of 85% of its maximum modified Proctor dry density, ASTM D-1557. The backfill material should be approved by the Soils Engineer prior to placing and a sufficient amount of field observation and density tests should be performed during placement. Placing backfill behind retaining walls before the wall has gained sufficient

strength to resist the applied lateral earth pressures is not recommended.

Drainage behind retaining walls is considered critical. If the backfill behind the wall is not well drained, hydrostatic pressures are allowed to build up and lateral earth pressures will be considerably increased. Therefore, we recommend a vertical drain be installed behind any impermeable retaining walls. Because of the difficulty in placement of a gravel drain, we recommend the use of a composite drainage mat similar to Exxon Battledrain or Tensar MD Series NS-1100. An outfall must be provided for this drain.

REACTIVE SOILS

Since groundwater in the Grand Junction area typically contains sulfates in quantities detrimental to a Type I cement, a Type II or Type I-II or Type II-V cement is recommended for all concrete which is in contact with the subsurface soils and bedrock. Calcium chloride should not be added to a Type II, Type I-II or Type II-V cement under any circumstances.

PAVEMENTS

Samples of the surficial native soils at this property that may be required to support pavements have been evaluated using the Hveem-Carmany method (ASTM D-2844) to determine their support characteristics. The results of the laboratory testing are as follows:

AASHTO Classification - A-4(6) Unified Classification - ML

R =	22
Expansion @ 300 psi =	0.0
Displacement @ 300 psi =	3.61

No estimates of traffic volumes have been provided to Lincoln DeVore. However, we assume that the roads will be classified as residential. The design procedures utilized are those recognized by the Colorado Department of Highways and the 1986 AASHTO design procedure.

Based upon the existing topography, the anticipated final road grades and the anticipated future irrigation practices in the local area, a Drainage Factor of 0.8 (1986 AASHTO procedure) has been utilized for the section analysis.

PROPOSED PAVEMENT SECTIONS

Based on the soil support characteristics outlined above, the following pavement sections are recommended:

Residential Roadway, 18k EAL = 5 :

The terminal Serviceability Index of 2.0, a Reliability of 70 and a design life of 20 years have been utilized, based on recommendations by the Highway Department. An 18 kip EAL of 5, also recommended by the Highway Department, was used for the analysis.

Asphalt-Base Coarse

3 inches of asphaltic concrete pavement
on 6 inches of aggregate base coarse
on 8 inches of recompacted native material

Full Depth Asphalt:

5 inches of asphaltic concrete pavement
on 12 inches of recompacted native material

Rigid Concrete:
Doweled, not tied to shoulder slabs or curbing

5 inches of portland cement pavement
on 4 inches of aggregate base coarse
on 8 inches of recompacted native material

PAVEMENT SECTION CONSTRUCTION

We recommend that any asphaltic concrete pavement meet the State of Colorado requirements for a Grade C mix. In addition, the asphaltic concrete pavement should be compacted to a minimum of 95% of its maximum Hveem density. The aggregate base coarse should meet the requirements of State of Colorado Class 5 or Class 6 material, and have a minimum R value of 78. We recommend that the base coarse be compacted to a minimum of 95% of its maximum Modified Proctor dry density (ASTM D-

1557), at a moisture content within + or -2% of optimum moisture. The native subgrade shall be scarified and recompacted to a minimum of 90% of their maximum Modified Proctor day density (ASTM D-1557) at a moisture content within + or -2% of optimum moisture.

All pavement should be protected from moisture migrating beneath the pavement structure. If surface drainage is allowed to pond behind curbs, islands or other areas of the site and allowed to seep beneath pavement, premature deterioration or possibly pavement failure could result.

Concrete Pavement

We recommend that any rigid concrete pavement have a minimum flexural strength (F_t) of 650 psi at 28 days. This strength requirement can be met using Class P or AX or A or B Concrete as defined in Section 600 of the Standard Specifications for Road and Bridge Construction, Colorado DOT. It is recommended that field control of the concrete mix be made utilizing compressive strength criteria.

Flexural Strength should only be used for the design process. Concrete with a lower flexural strength may be allowed by the agency having jurisdiction however, the design section thicknesses should be confirmed. In addition, the final durability of the pavement should be carefully considered.

Control joints should be placed at a minimum distance of 12 feet in all directions. If it is desired to increase the spacing of control joints, then 66-66 welded wire

fabric should be placed in the mid-point of the slab. If the welded wire fabric is used, the control joint spacing can be increased to 40 feet. Construction joints designed so that positive joint transfer is maintained by the use of dowels is recommended.

The concrete should be placed at the lowest slump practical for the method of placement. In all circumstances, the maximum slump should be limited to 4 inches. Proper consolidation of the plastic concrete is important. The placed concrete must be properly protected and cured.

LIMITATIONS

This report is issued with the understanding that it is the responsibility of the owner, or his representative to ensure that the information and recommendations contained herein are brought to the attention of the individual lot purchasers for the subdivision. In addition, it is the responsibility of the individual lot owners that the information and recommendations contained herein are brought to the attention of the architect and engineer for the individual projects and the necessary steps are taken to see that the contractor and his subcontractors carry out the appropriate recommendations during construction.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in acceptable or appropriate standards may occur or may result from legislation or the broadening of engineering knowledge. Accordingly, the findings of this report may be invalid, wholly or partially, by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of 3 years.

The recommendations of this report pertain only to the site investigated and are based on the assumption that the soil conditions do not deviate from those described in this report. If any variations or undesirable

conditions are encountered during construction or the proposed construction will differ from that planned on the day of this report, Lincoln DeVore should be notified so that supplemental recommendations can be provided, if appropriate.

Lincoln DeVore makes no warranty, either expressed or implied, as to the findings, recommendations, specifications or professional advice, except that they were prepared in accordance with generally accepted professional engineering practice in the field of geotechnical engineering.

SOILS DESCRIPTIONS:

SYMBOL	USCS	DESCRIPTION
		Topsoil
		Man-made Fill
	GW	Well-graded Gravel
	GP	Poorly-graded Gravel
	GM	Silty Gravel
	GC	Clayey Gravel
	SW	Well-graded Sand
	SP	Poorly-graded Sand
	SM	Silty Sand
	SC	Clayey Sand
	ML	Low-plasticity Silt
	CL	Low-plasticity Clay
	OL	Low-plasticity Organic Silt and Clay
	MH	High-plasticity Silt
	CH	High plasticity Clay
	OH	High-plasticity Organic Clay
	Pt	Peat
	GW/GM	Well-graded Gravel, Silty
	GW/GC	Well-graded Gravel, Clayey
	GP/GM	Poorly-graded Gravel, Silty
	GP/GC	Poorly-graded Gravel, Clayey
	GM/GC	Silty Gravel, Clayey
	GC/GM	Clayey Gravel, Silty
	SW/SM	Well-graded Sand, Silty
	SW/SC	Well-graded Sand, Clayey
	SP/SM	Poorly-graded Sand, Silty
	SP/SC	Poorly-graded Sand, Clayey
	SM/SC	Silty Sand, Clayey
	SC/SM	Clayey Sand, Silty
	CL/ML	Silty Clay

ROCK DESCRIPTIONS:

SYMBOL	DESCRIPTION
	SEDIMENTARY ROCKS
	CONGLOMERATE
	SANDSTONE
	SILTSTONE
	SHALE
	CLAYSTONE
	COAL
	LIMESTONE
	DOLOMITE
	MARLSTONE
	GYPSUM
	Other Sedimentary Rocks
	IGNEOUS ROCKS
	GRANITIC ROCKS
	DIORITIC ROCKS
	GABBRO
	RHYOLITE
	ANDESITE
	BASALT
	TUFF & ASH FLOWS
	BRECCIA & Other Volcanics
	Other Igneous Rocks
	METAMORPHIC ROCKS
	GNEISS
	SCHIST
	PHYLLITE
	SLATE
	METAQUARTZITE
	MARBLE
	HORNFELS
	SERPENTINE
	Other Metamorphic Rocks

SYMBOLS & NOTES:

SYMBOL	DESCRIPTION
	9/12 Standard penetration drive. Numbers indicate 9 blows to drive the spoon 12" into ground.
	ST 2-1/2" Shelby thin wall sample
W_0	Natural Moisture Content
W_X	Weathered Material
Free water	Free water table
γ^0	Natural dry density
	T.B. – Disturbed Bulk Sample
②	Soil type related to samples in report
15' W_X Form.	Top of formation
	Test Boring Location
	Test Pit Location
	Seismic or Resistivity Station. Lineation indicates approx. length & orientation of spread (S = Seismic, R = Resistivity)

Standard Penetration Drives are made by driving a standard 1.4" split spoon sampler into the ground by dropping a 140 lb. weight 30". ASTM test des. D-1586.

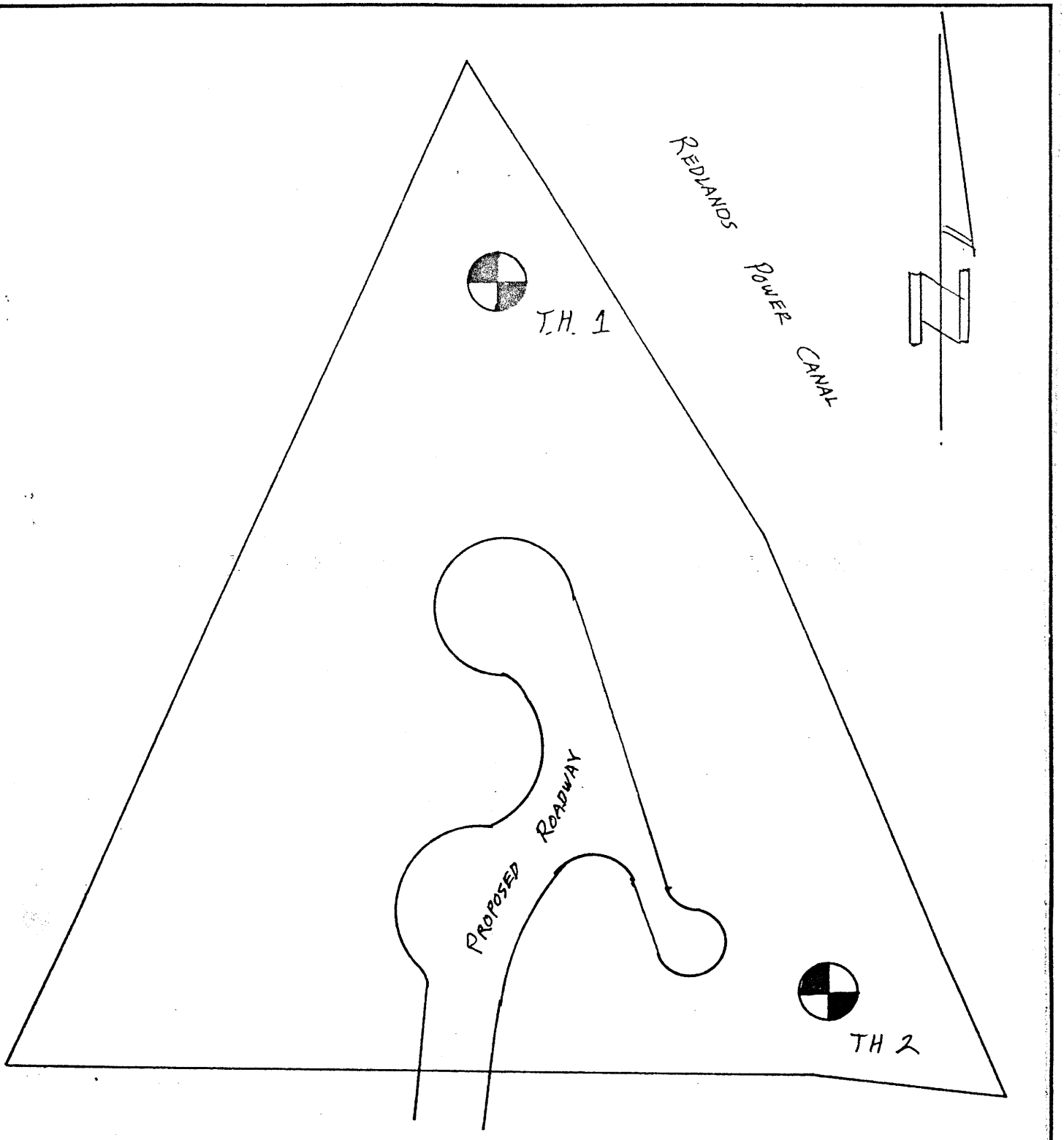
Samples may be bulk, standard split spoon (both disturbed) or 2-1/2" I.D. thin wall ("undisturbed") Shelby tube samples. See log for type.

The boring logs show subsurface conditions at the dates and locations shown, and it is not warranted that they are representative of subsurface conditions at other locations and times.

LINCOLN DeVORE TESTING LABORATORY

COLORADO: Colorado Springs, Pueblo, Glenwood Springs, Montrose, Gunnison, Grand Junction. – WYO. – Rock Springs

EXPLANATION OF BOREHOLE LOGS AND LOCATION DIAGRAMS



Lincoln DeVore, Inc.
Geotechnical Consultants

WILLOW RIDGE SUB. REDLANDS, C.J.

DATE 8-26-94

JOB NO. 81357-J

DRAWN EMM

BORING NO. 1

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION				BLOW COUNT	SOIL DENSITY pcf	WATER %
		Scattered Gravels with Sandy Silts						
		Low Density	Sl. Moist	Sulfates				
		ML Sandy silt	Non-plastic	Red - pink	ST		99.3	7.2%
		GM Sandy, Silty Gravel	Alluvial					
5		River Terrace Deposit		Sulfates	5			
			Medium Density					
		Large Cobbles and Gravels		Non-Expansive				
		GM Sandy, Silty Gravel			BULK			2.5%
		River Terrace Deposit		Slightly Moist				
10					10			
		T.D. @ 8'						
15					15			
20					20			
25					25			
30					30			

Blow Counts are cumulative for each 6 inches of sampler penetration.

NO Free Water During Drilling 8-1-94

LOG OF SUBSURFACE EXPLORATION

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

Willow Ridge Subdivision
Grand Junction, Colorado

Design Affiliates, LCC

Clavonne & Associates

Date: **8-26-94**

Job No.: **81352-J**

Drawn: **EMM**

BORING NO. 2

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION					BLOW COUNT	SOIL DENSITY pcf	WATER %
		Scattered Gravels with Sandy Silts							
		Medium Density	Sl. Moist	Alluvial	Sulfates				
		ML Sandy silt	Non-plastic			ST		110.0	7.1%
		GM Sandy, Silty Gravel	Red - pink	Sulfates					
5		River Terrace Deposit		Very Sandy Strata		5			
			Medium Density						
		Large Cobbles and Gravels		Non-Expansive					
		GM Sandy, Silty Gravel		Slightly Moist		BULK			1.4%
		River Terrace Deposit							
10						10			
		T.D. @ 8'							
15						15			
						20			
25						25			
30						30			

Blow Counts are cumulative for each 6 inches of sampler penetration.

NO Free Water During Drilling 8-1-94

LOG OF SUBSURFACE EXPLORATION

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

Willow Ridge Subdivision
Grand Junction, Colorado

Design Affiliates, LCC

Clavonne & Associates

Date: 8-26-94

Job No.: 81352-J

Drawn: EMM

SUMMARY SHEET

Soil Sample SANDY SILT (ML) Test No. 81352-J

Location WILLOW RIDGE SUB. REDLANDS G.J. Date 8-1-94

Boring No. 1 Depth 3

Sample No. I Test by RL

Natural Water Content (w) 7.2 %

Specific Gravity (Gs) 2.66 In Place Density (γ_o) 99.3 pcf

SIEVE ANALYSIS:

Sieve No.	% Passing
1 1/2"	
1"	
3/4"	
1/2"	100
4	97
10	95
20	94
40	93
100	85
200	72.1

HYDROMETER ANALYSIS:

Grain size (mm)	%
.02	48
.005	30

Plastic Limit P.L. N.P. %

Liquid Limit L. L. 18.3 %

Plasticity Index P.I. -0- NP %

Shrinkage Limit ____ %

Flow Index ____

Shrinkage Ratio ____ %

Volumetric Change ____ %

Lineal Shrinkage ____ %

MOISTURE DENSITY: ASTM METHOD

Optimum Moisture Content - w_o ____ %

Maximum Dry Density - γ_d ____ pcf

California Bearing Ratio (av) ____ %

Swell: ____ Days ____ %

Swell against ____ psf Wo gain ____ %

BEARING:

Housel Penetrometer (av) 2200+ psf

Unconfined Compression (qu) ____ psf

Plate Bearing: ____ psf

Inches Settlement ____

Consolidation 1.2 % under 2042 psf

PERMEABILITY:

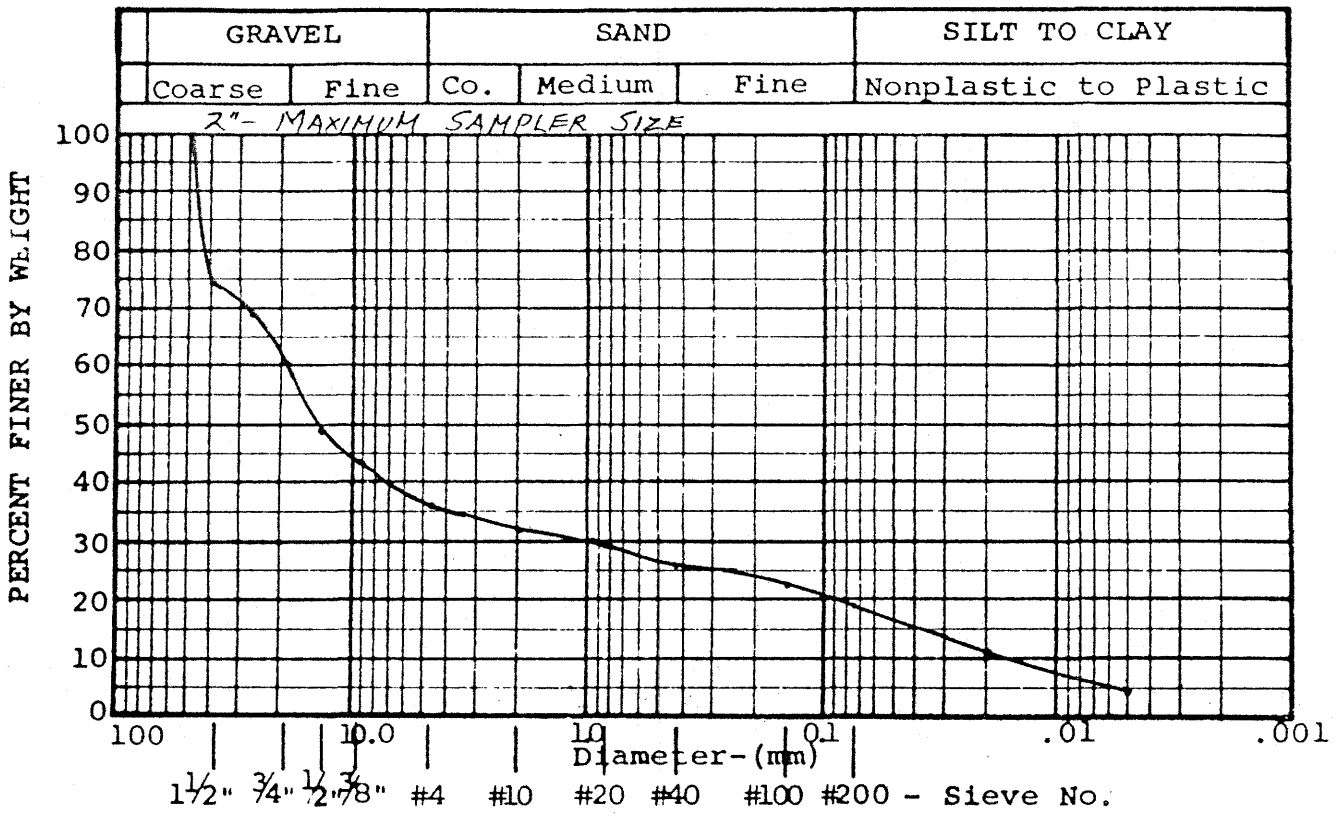
K (at 20°C) ____

Void Ratio ____

Sulfates 1000 ppm.

SOIL ANALYSIS

LINCOLN-DeVORE TESTING LABORATORY
COLORADO SPRINGS, COLORADO



Soil Sample GP/GM Silty GRAVEL Sample Location TH 1 @ 7'

Sample No. II

Specific Gravity 2.66

Moisture Content 2.5

Effective Size .016 mm

Cu 1125.0

Cc 3.5

Fineness Modulus

L.L. ____ % P.I. NP %

Bearing 4500 psf

Sulfates 250 ppm

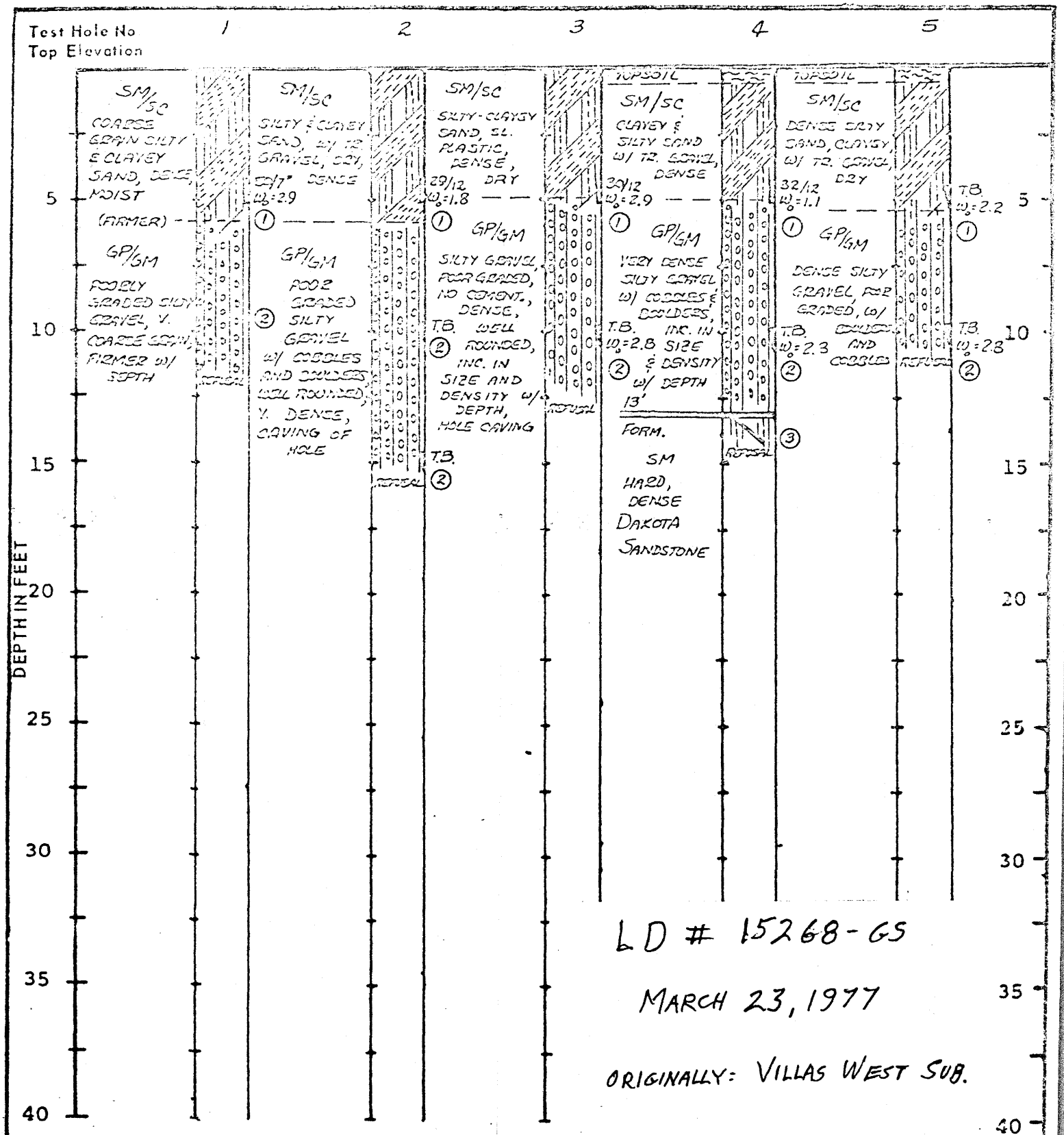
Sieve Size -2" material only	% Passing
1-1/2"	74
1"	69
3/4"	60
1/2"	49
3/8"	43
#4	36
#10	32
#20	29
#40	26
#100	22
#200	18.7
0.0200	10.4
0.0050	4.1

Lincoln DeVore, Inc.
Geotechnical Consultants

WILLOW RIDGE SUB. REDLANDS, G.J.

DATE

JOB NO. DRAWN



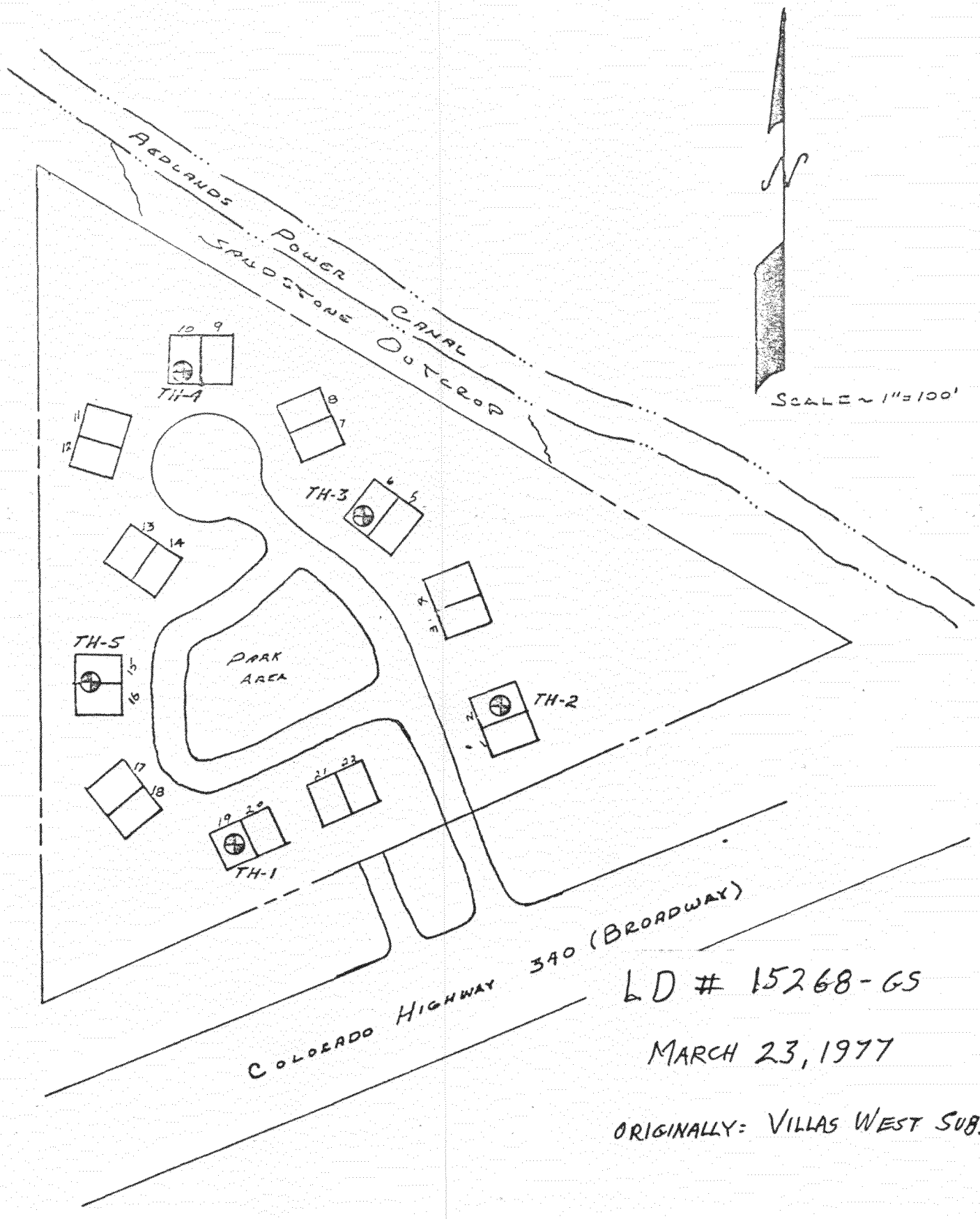
LD # 15268-GS

MARCH 23, 1977

ORIGINALLY: VILLAS WEST SUB.

DRILLING LOGS

LINCOLN-DeVORE TESTING LABORATORY
COLORADO SPRINGS-PUEBLO, COLORADO



LD # 15268-GS

MARCH 23, 1977

ORIGINALLY: VILLAS WEST SUB.

TEST BORING LOCATION DIAGRAM
VILLAS WEST
GRAND JUNCTION ~ COLORADO

THE LINCOLN-DeVORE TESTING LABORATORY
COLORADO: Colorado Springs, Pueblo, Glenwood Springs, Montrose, Gunnison. WYOMING: Rock Springs

PRELIMINARY
DRAINAGE REPORT
FOR
WILLOW RIDGE SUBDIVISION

PREPARED FOR:
DESIGN AFFILIATES, LLC

PRESENTED TO:
CITY OF GRAND JUNCTION

ROLLAND ENGINEERING

405 RIDGES BLVD., SUITE A, GRAND JUNCTION, CO 81503

AUGUST 31, 1994

WILLOW RIDGE SUBDIVISION

GENERAL LOCATION AND DESCRIPTIONS

Willow Ridge Subdivision is an approximate 4.6 acres site located at Section 16, Township 1 South, Range 1 West of the U. M. , Mesa County, Colorado. The project site lies immediately east of May's Subdivision, north of Highway 340 (Broadway) and south of the Redlands Irrigation and Power Company's Power Canal (Redlands Canal). Access to the site is from Highway 340 (Broadway). The proposed area is a triangle with sides of 660 feet, 672 feet and 725 feet long. The ground is covered with short dry grasses.

The site has soils consisting of a Hinman Clay Loam (Hc) and a Mesa Gravelly Clay loam (Me).

EXISTING DRAINAGE CONDITIONS

The site lies at the north end of a major drainage basin which drains toward the north and northeast. There is a average slope of 5.6% toward the north on the southwest of the property and a relatively steep slope of 16% toward the Redlands Canal on the northeast of the property. There are no previously determined 100-Year floodplains on this site. Eventually the whole site drains north into the Redlands Canal.

PROPOSED DRAINAGE CONDITIONS

The proximity of the Redlands Canal to the site and a relatively natural steep slope toward the Redlands Canal make runoff directly into the Canal without on-site detention a very viable option. City Engineering also has indicated in its Stormwater Management Manual (June, 1994) that a drainage fee instead of site detention is a acceptable option for a site less than 5 acres.

Our preliminary drainage plan for this site would be to follow the natural slope on the site to drain the site directly to the Redlands Canal.

DESIGN CRITERIA AND APPROACH

We are not aware of any Master Plan or any other limitations on this site.

The Hydrology and Hydraulic computations conducted for this site will utilize the **STORMWATER MANAGEMENT MANUAL** (June, 1994) for the City of Grand Junction, Colorado. The Rational Method will be used to perform the analysis for the 2 and 100 Year Design Events.

REVIEW COMMENTS

FILE #146-94 **TITLE HEADING:** Preliminary Plan - Willow Ridge Subdivision

LOCATION: Highway 340 & Redlands Canal

PETITIONER: Oliver Frascona

PETITIONER'S ADDRESS/TELEPHONE: 1910 Stony Hill Road
Boulder, CO 80303

PETITIONER'S REPRESENTATIVE: Craig Roberts, Ciavonne & Associates

STAFF REPRESENTATIVE: Tom Dixon

NOTE: THE PETITIONER IS REQUIRED TO SUBMIT FOUR (4) COPIES OF WRITTEN RESPONSE AND REVISED DRAWINGS ADDRESSING ALL REVIEW COMMENTS ON OR BEFORE 5:00 P.M., SEPTEMBER 26, 1994.

CITY ATTORNEY **9/6/94**
Dan Wilson **244-1505**

Access permit states 16 lots.

GRAND JUNCTION FIRE DEPARTMENT **9/6/94**
Hank Masterson **244-1414**

Submit a complete utility composite showing locations of all lots. Include water main size and all hydrant locations. Hydrants to be located at all intersections, no more than 500' apart and within 250' of all lots. Minimum water main size is 6" and must meet the minimum fire flow requirement of 500 gallons per minute.

CITY UTILITY ENGINEER **9/6/94**
Bill Cheney **244-1590**

WATER - no comment

SEWER

1. Show proposed sewer profile since it appears Lots 8-13 may have a problem with gravity flow to the main.
2. Sewer junctions this much in excess of 90° are not allowed unless a steeper gradient can be achieved.
3. Additional information will be required at time of final submittal.

GRAND JUNCTION POLICE DEPARTMENT **9/7/94**
Dave Stassen **244-3587**

1. I'm curious about potential conflict between the driveways of Lots 2, 3 and 4 as well as Lot 6 through 11.
2. There are no obvious police problems presented by this project.

U.S. WEST **9/7/94**
Leon Peach **244-4964**

New or additional telephone facilities necessitated by this project may result in a "contract" and up-front monies required from developer, prior to ordering or placing of said facilities. For more information, please call Leon Peach, 244-4964.

CITY PARKS & RECREATION DEPARTMENT **9/7/94**
Don Hobbs **244-1542**

Open space fee based upon 19 units @ $225 = $4,275.00 due in fees.

REDLANDS WATER & POWER **9/12/94**
Gregg Strong **243-2173**

1. **"NO" drainage of any kind will be returned to our canal. It is absolutely forbidden!!**
2. There will be no drainage pipes of any kind across our canal.
3. There will be no foot bridge, bike path, pedestrian path on or over our canal.
4. Owner, developer, engineer will provide to Redlands a hold harmless clause on any drainage that may happenstance get into our canal from subdivision, now & forever.
5. Redlands will not be responsible nor tolerate any trash, weeds, grass clippings, etc. on or along Redlands right-of-way within 50 foot of our canal.
6. Redlands has a 100 foot deeded right-of-way from center line of our canal.
7. Redlands needs to know what steps will be taken and assurances that landowner will not cause adverse impacts to our facilities during and after development of property.
8. No encroachment of any kind on Redlands right-of-way, including spoil from upslope excavation.
9. Redlands reserves the right to remove any canal crossings, domestic water, irrigation water or sewer lines over, under, across or along our canal and right-of-way.
10. No pumps, pumping stations, seep pumps, holding tanks, water reservoirs, ponds, etc. will be allowed on, in, along or around Redlands right-of-way and canal.
11. There will be no pumps or pumping directly out of Redlands Canal.
12. Owner will be responsible for, and pay all costs associated with, delivery of 5 shares of Redlands water.
13. No fences, gates, trees, shrubs, etc. are to be put across, along or on Redlands right-of-way.
14. Redlands reserves the right to remove any and all fences, gates, trees, shrubs, etc. at landowners expense.

15. Redlands adamantly refuses to accept responsibility for the safety of people or property of pedestrian or any other forms of traffic on or along our canal bank, riverfront trail or right-of-way.
16. Canal banks and right-of-ways are strictly for the use of Redlands Water & Power Company employees for the official business of Redlands Water & Power Company ONLY!!

UTE WATER **9/12/94**
Gary R. Mathews **242-7491**

1. The proposed 8" main for Willow Ridge must run to the far West side of this project. The 8" main will enter at Willow Ridge Court not through the easement as shown.
2. All fire hydrants and intersections are valved. Stub outs are required for each lot.
3. Policies and fees in effect at the time of application will apply.
4. Construction plans required before approval.

SCHOOL DISTRICT #51 **9/13/94**
Lou Grasso **242-8500**

See attached comments.

CITY DEVELOPMENT ENGINEER **9/15/94**
Jody Kliska **244-1591**

See attached comments.

COMMUNITY DEVELOPMENT DEPARTMENT **9/16/94**
Tom Dixon **244-1447**

See attached comments.

LATE COMMENTS

PUBLIC SERVICE COMPANY **9/19/94**
Dale Clawson **244-2695**

Electric and Gas: Developer needs to contact Public Service Company about pedestal and transformer locations, water meter pits, etc. on the small front lot lines.

STAFF REVIEW (Preliminary comments)

FILE: 146-94

DATE: September 16, 1994

STAFF: Tom Dixon

REQUEST: Preliminary plat and plan approval for 19-lot subdivision

LOCATION: North side of Highway 340 between East Mayfield Drive and the Redlands Canal

APPLICANT: Kenneth L. Schmohe

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Single-family Residential

SURROUNDING LAND USE:
NORTH: Single-family Residential
SOUTH: Single-family Residential
EAST: Vacant
WEST: Single-family Residential

EXISTING ZONING: PR-4 (Mesa County)

PROPOSED ZONING: PR-4

SURROUNDING ZONING:
NORTH: R-2, Single-family Residential (Mesa County)
SOUTH: R-2, Single-family Residential (Mesa County)
EAST: C-1, Light Commercial
WEST: R-2, Single-family Residential (Mesa County)

RELATIONSHIP TO COMPREHENSIVE PLAN/POLICIES/GUIDELINES:

This site is subject to the adopted Redlands Goals and Policies. This document encourages developments on visually prominent areas, such as bluffs and hilltops, to be designed with colors, textures, and architecture which blends in with the surrounding landscape. For new development along the bluffs overlooking the Colorado River, there is a 150-foot minimum setback from the edge of the bluffline east of the Redlands Parkway.

STAFF ANALYSIS:

This proposal is for a 19-lot subdivision on a 4.64-acre parcel. This undeveloped site is

presently located in unincorporated Mesa County and has a zoning designation of PR-4. The petitioner is proposing annexation into the City and approval for a zone of annexation of PR-4.

A previous development on this site was considered by Mesa County in 1977. C26-77, known as Broadway Townhouses, approval was granted for up to 22 units in eleven separate structures. Since no platting was ever finalized for that development, the approval was reverted by the Mesa County Commissioners on August 23, 1988.

The site is a portion of a small bluff overlooking the Redlands Canal. The top of the bluff is relatively flat but has steep slopes on the northern and northeastern sides. There is also a steep drainage channel or gully on the upper southwest portion of the site leading down to the canal. This gully contains heavy vegetative growth, has been a repository for tree and yard trimmings, and has been used as a dumping area for excess construction materials. Due to the topographic features of the site, approximately 20% of the site area is totally unbuildable by any reasonable means.

There are numerous problems or deficiencies with this proposal that must be addressed before this proposal can go before the Planning Commission. These are listed below:

1) The access permit to Highway 340 is limited to 16 single-family residences.

2) The proposed number of individual lots (19) is a significant departure from the townhouse development (C26-77) which clustered development and had less impact on site development.

3) Several lots have street frontages of less than 20 feet which is the standard in the straight zones. In the Planned Residential zone, the petitioner is obligated to justify this substandard width. As proposed, the physical appearance of lots with these widths would create an ugly and wasteful appearance of a street frontage with solid driveways. The City will not accept such a development pattern.

4) The petitioner proposes zero side yard setbacks on many of the lots. This seems inappropriate and is really a function of poor lot layout. A decrease in the number of lots would solve this problem. The petitioner has not justified the zero side yard setback nor is it supported by staff. Zero setbacks are mostly appropriate for attached units. They do not work well for detached units because of maintenance requirements, property line disputes, privacy needs, and other factors that relate to putting too much development on a site not capable of accommodating it.

5) The site was zoned in Mesa County under a townhouse development. These attached units could better fit on this restricted site than 19 detached residences on individual lots. The PR-4 zone is not appropriate with this type of development. Staff will likely recommend a rezone to RSF-4, a straight zone, in order to ensure a better development than the poorly conceived one proposed. An RSF-4 zone would require more regular parcels, more realistic building footprints, setbacks that would not create invasions of privacy, and a

better quality of development. The petitioner has not justified the need for retaining the PR-4 zone, especially since it was applied to the site for a development incorporating attached housing construction, not separate, detached residences.

6) The substandard cul-de-sac does not meet City standards. The cul-de-sac is described as an "auto court". It isn't clear what an "auto court" is. However, it is clear that what is being proposed in a substandard cul-de-sac. The proposed street configuration for the Broadway Townhouses project was a looped road with a cul-de-sac terminus on its north end. This type of roadway may work for a subdivision but not if 19 lots are envisioned. The proposed "auto court" clearly does not meet established City standards for street widths and turn-around radii. Problems with this width are restricted access by service vehicles (trash collection, delivery trucks, moving vans, emergency vehicles, etc.), maintenance of the road as a private street, and driveway locations, particularly with proposed Lot 15.

7) The severe slopes on the north and east portions of the property limit the carrying capacity of the site. The number of units that can reasonably fit on the property as individual lots is closer to 10 or 12. Evidence of over density are the odd lot configurations, narrow street frontages, need for zero side yard setbacks and the inclusion of a substandard private street section. Safety of residents on proposed Lots 9 through 12, especially for children, is a concern because of the precipitous drop from the cliff to the Redlands Canal.

8) Drainage is a concern on the site. It appears from comments from the Redlands Water and Power Company that discharge will not be permitted into the canal as the petitioner has proposed. This issue should be determined and clarified with certainty before the petitioner proceeds with any proposal on the site.

9) Site development may be compounded from the Redland Water and Power's claim of a 100-foot deeded right-of-way from the centerline of the canal and the Redlands Goals and Policies setback of 150 feet from the edge of the bluffline.

STAFF RECOMMENDATION:

Staff will recommend denial of this proposal unless the petitioner re-submits a new design which illustrates the desired density with a townhouse layout OR a proposal which reduces the number of lots for detached residences on individual lots to 10 or 12. Staff may elect to recommend a rezone to RSF-4.

File #146-94

September 23, 1994

Mr. Tom Dixon
Community Development Department
City of Grand Junction
250 North 5th St.
Grand Junction, CO. 81501

Dear Mr. Dixon,

The following is a response o the review Agency Comments concerning the Willow Ridge Preliminary Plan submittal, File #146-94.

City Attorney
1. The State Highway Access Permit permit was issued to Dale Cole, who subsequently sold the property to Oliver Frascona. Mr. Frascona desired the additional density as allowed by the zoning.

Grand Junction Fire Department
1. Full utility composite will be submitted at final as required.

Grand Junction City Utility Engineer
1. Full utility composite, including the sewer profile will be submitted at final as required.

Grand Junction Police Department
1. Lots with narrow access points to the roadway are configured to allow the home to be set back far enough to enable the drive to be narrowed to 10' without restricting parking or garage access. The lot width will be enlarged to a minimum of 20', allowing 5' on either side of a 10' drive to be landscaped.

U.S. West
Contract negotiations for telephone service will begin following Preliminary approval.

City Parks and Recreation Department
1. Open space fees of $225 per lot for the 19 lots would be $4,275.00, and will be paid at Final.

Redlands Water & Power
1. The drainage into the canal will be discussed with Redlands Water & Power representatives immediately following preliminary approval.
2. No improvements have been proposed near the canal. A 15' building setback adjacent to the canal has been proposed.

Ute Water
1. Mains will be located with Ute water approval.

City Development Engineer

1. The developer is willing to work with Redlands Water and power to address the erosion control and historic runoff issues with site drainage. This may involve a detention facility and/or filtration methods acceptable to both parties.
2. The auto court is being proposed to eliminate the need for multiple parallel drives. The developer felt a consolidated drive o auto court, similar to those proposed and approved for Alpine Village Subdivision, would minimize pavement. Mail delivery and trash pickup can be handled in the same fashion as someone with a long drive, namely the delivery person drives up the auto court, or walks to the front door, and the trash is brought to the curb. Maneuvering room will be provided in the same dimensions as allowed for Alpine Village.
3. Issues concerning the State Highway Access Permit have been addressed through Colorado Department of Transportation. Any proposed change in the permit will be addressed through Colorado Department of Transportation permit process.

Community Development Staff

1. Issues concerning any proposed change in State Highway Access Permit will be addressed through Colorado Department of Transportation.
2. Reducing the density by 3 units from the original townhouse development (C26-77) Should be looked at as a less impact. Individual units require less concentration of drainage than do multi-unit structures which form dams across the natural slope of the property. The additional parking and access required by 3 additional units should be considered when evaluating the impacts.
3. Street frontage of 20' can be achieved in the final plan.
4. Zero lot line development avoids the 5' side yard setback (part of the bulk requirements for RSF-5, RSF-8) and allows its use as a 10' usable area for the homeowner. Maintenance easements can allow the adjacent property to be maintained and will be designated on the final plan. Neighbors now address this issue with building and maintaining fences without the designated easement in nieghborhoods throught the valley.
5. The auto court is being proposed to eliminate the need for multiple parallel drives. The developer felt a consolidated drive, or auto court, similar to those proposed and approved for Alpine Village Subdivision, would minimize pavement. Mail delivery and trash pickup can be handled in the same fashion as someone with a long drive, namely the delivery person drives up the auto court or walks to the front door, and the trash is brought to the curb. Maneuvering room will be provided in the same dimensions as allowed for Alpine Village.
6. Limits to the carrying capacity of the site are only limited by the imagination of the developer. Units proposed for this site use the elevation change to provide multiple deck levels, walkout levels, and multi-story walkouts. Creatively developed units add interest, variety and unique living environments.
7. The drainage into the canal will be discussed with Redlands Water & Power representatives immediately following preliminary approval.
8. Redlands Goals and Policies state that "New development along the bluffs overlooking the Colorado River..." This project does not overlook the Colorado River. Reference to hilltop development only concerns architectural style and color, not setback.

Sincerely,

Craig Roberts
Secretary/Treasurer
Ciavonne & Associates, Inc.

STAFF REVIEW (Final)

FILE: 146-94

DATE: September 27, 1994

STAFF: Tom Dixon

REQUEST: Preliminary plat and plan approval for 19-lot subdivision

LOCATION: North side of Highway 340 between East Mayfield Drive and the Redlands Canal

APPLICANT: Kenneth L. Schmohe

EXISTING LAND USE: Undeveloped

PROPOSED LAND USE: Single-family Residential

SURROUNDING LAND USE:

NORTH: Single-family Residential
SOUTH: Single-family Residential
EAST: Vacant
WEST: Single-family Residential

EXISTING ZONING: PR-4 (Mesa County)

PROPOSED ZONING: PR-4.1

SURROUNDING ZONING:

NORTH: R-2, Single-family Residential (Mesa County)
SOUTH: R-2, Single-family Residential (Mesa County)
EAST: C-1, Light Commercial
WEST: R-2, Single-family Residential (Mesa County)

RELATIONSHIP TO COMPREHENSIVE PLAN/POLICIES/GUIDELINES:

This site is subject to the adopted Redlands Goals and Policies. This document encourages developments on visually prominent areas, such as bluffs and hilltops, to be designed with colors, textures, and architecture which blends in with the surrounding landscape. For new development along the bluffs overlooking the Colorado River, there is a 150-foot minimum setback from the edge of the bluff line east of the Redlands Parkway.

STAFF ANALYSIS:

This proposal is for a 19-lot subdivision on a 4.64-acre parcel. This undeveloped site is

presently located in unincorporated Mesa County and has a zoning designation of PR-4. The petitioner is proposing annexation into the City and approval for a zone of annexation of PR-4.1.

A previous development on this site was considered by Mesa County in 1977. Reviewed as C26-77 (Broadway Townhouses), approval was granted for up to 22 units in eleven separate structures. Since no platting was ever finalized for that development, the approval was reverted by the Mesa County Commissioners on August 23, 1988.

The site is a portion of a small bluff overlooking the Redlands Canal. The top of the bluff is relatively flat but has steep slopes on the northern and northeastern sides. There is also a steep drainage channel or gully on the upper southwest portion of the site leading down to the canal. This gully contains heavy vegetative growth, has been a repository for tree and yard trimmings, and has been used as a dumping area for excess construction materials. Due to the topographic features of the site, approximately 25% of the site area is totally unbuildable by any desirable means. Although engineering techniques could be employed to create foundations on the very steep lots, this would be contrary at one of the purposes of the Planned Residential zones which " relates the type, design and layout of residential ... development to the particular site, thereby encouraging preservation of the site's natural characteristics". The proposed subdivision does not achieve this.

FINDINGS:

1) The access permit to Highway 340 is limited to 16 single-family residences. Evidence that more than 16 residences can safely access the highway needs to be provided by the petitioner. This should be provided prior to any preliminary plat/plan approval. Access permits for state highways are issued by the Colorado Department of Transportation.

2) The proposed number of individual lots (19) is a significant departure from the townhouse development (C26-77) which clustered development and had less impact on site development. Actual development density is not as much an issue as the allocation of that density. The creation of 19 separate lots on 19 individual parcels is a strain on this site. This is based on the need for individual driveways, separate building footprints, variations in how yards are landscaped and watered, utility extensions, etc. A clustered development would alleviate many of these impacts. For example, driveways could be shared, site disturbance for attached structures would be more limited, and common open space could be maintained in a more coordinated manner. The only manner to appropriately develop this property at the proposed density would be to re-submit a new plan with attached units and a clustered arrangement of buildings set away from the bluff edge by at least 25 feet.

3) Several lots have street frontages of less than 20 feet which is the standard in the straight zones. In the Planned Residential zone, the petitioner is obligated to justify this substandard width. As proposed, the physical appearance of lots with these widths would create an ugly appearance of a street frontage with solid driveways and would not be an efficient use of land. The City will expect at least 20 feet of frontage for each lot. There is no clear rationale presented by the petitioner for allowing less than this standard.

4) The petitioner proposes zero side yard setbacks on many of the lots. This seems inappropriate and is really a function of poor lot layout. A decrease in the number of lots would solve this problem. The petitioner has not justified the zero side yard setback nor is it supported by staff. Zero setbacks are mostly appropriate for attached units. They do not work well for detached units because of maintenance requirements, property line disputes, privacy needs, and other factors that relate to putting too much development on a site not capable of accommodating it. If zero side yard setbacks are allowed, it should be limited to attached residential units.

5) The site was zoned in Mesa County under a townhouse development. These attached units could better fit on this restricted site than 19 detached residences on individual lots. The PR-4 zone is not appropriate with the proposed type of development. In the absence of an acceptable plan, staff recommends that a rezone to RSF-4, a standard zone, be assigned to this site upon annexation. An RSF-4 zone would more likely ensure a better development than the poorly conceived one proposed. An RSF-4 zone would require more regular parcels, more realistic building footprints, setbacks that would not create invasions of privacy, and a better quality of development. The petitioner has not justified the need for retaining the PR-4 zone, especially since it was applied to the site for a development incorporating attached housing construction, not separate, detached residences.

6) The substandard cul-de-sac does not meet City standards. The cul-de-sac is described as an "auto court". It isn't clear what an "auto court" is. However, it is clear that what is being proposed in a substandard cul-de-sac. The proposed street configuration for the Broadway Townhouses project was a looped road with a cul-de-sac terminus on its north end. This type of roadway may work for a subdivision but not if 19 lots are envisioned. The proposed "auto court" clearly does not meet established City standards for street widths and turn-around radii. Problems with this width are restricted access by service vehicles (trash collection, delivery trucks, moving vans, emergency vehicles, etc.), maintenance of the road as a private street, and driveway locations, particularly with proposed Lot 15.

7) The severe slopes on the north and east portions of the property limit the carrying capacity of the site. The number of units that can reasonably fit on the property as individual lots is closer to 10 or 12. Evidence of over density are the odd lot configurations, narrow street frontages, need for zero side yard setbacks and the inclusion of a substandard private street section. Safety of residents on proposed Lots 9 through 12, especially for children, is a concern because of the precipitous drop from the cliff to the Redlands Canal. Approximately one quarter of the site has moderate to severe slopes (between 15-25%). This justifies limiting the number of developable lots to 10 or 12 in the absence of a plan that demonstrates how the proposed density can be effectively developed.

8) Drainage is a concern on the site. It appears from comments from the Redlands Water and Power Company that discharge will not be permitted into the canal as the petitioner has proposed. This issue should be determined and clarified with certainty before the petitioner proceeds with any proposal on the site. Since satisfaction of this critical issue remains unresolved, there is no basis for approval.

9) Site development may be compounded from the Redland Water and Power's claim of a 100-foot deeded right-of-way from the centerline of the canal and the Redlands Goals and Policies setback of 150 feet from the edge of the bluff line. In the absence of these restrictions, a setback of at least 25 feet from the bluff line should be required of any development in order to protect the natural characteristics of the site and to avoid causing erosion and/or bluff instability problems.

10) The three separate designated "open space" areas do not function in any coordinated manner. In fact, the open space area on the northwest corner of the site is really the drainage conduit for most of the lots and serves no other substantial value. The open space area on the southwest corner of the site is useless. A better design of any common open space areas should be included in a re-design of the project.

The petitioner's representative has responded to the comments raised. However, many issues and concerns remain which need to be responded to and satisfied before this proposal can be considered for anything other than denial.

CONCLUSIONS:

Petitioner should re-submit a new design which illustrates the desired density with a townhouse layout OR a proposal which reduces the number of lots for detached residences on individual lots to 10 or 12. Staff recommends consideration of a rezone to RSF-4 and development which substantially satisfies items 1 through 9, above.

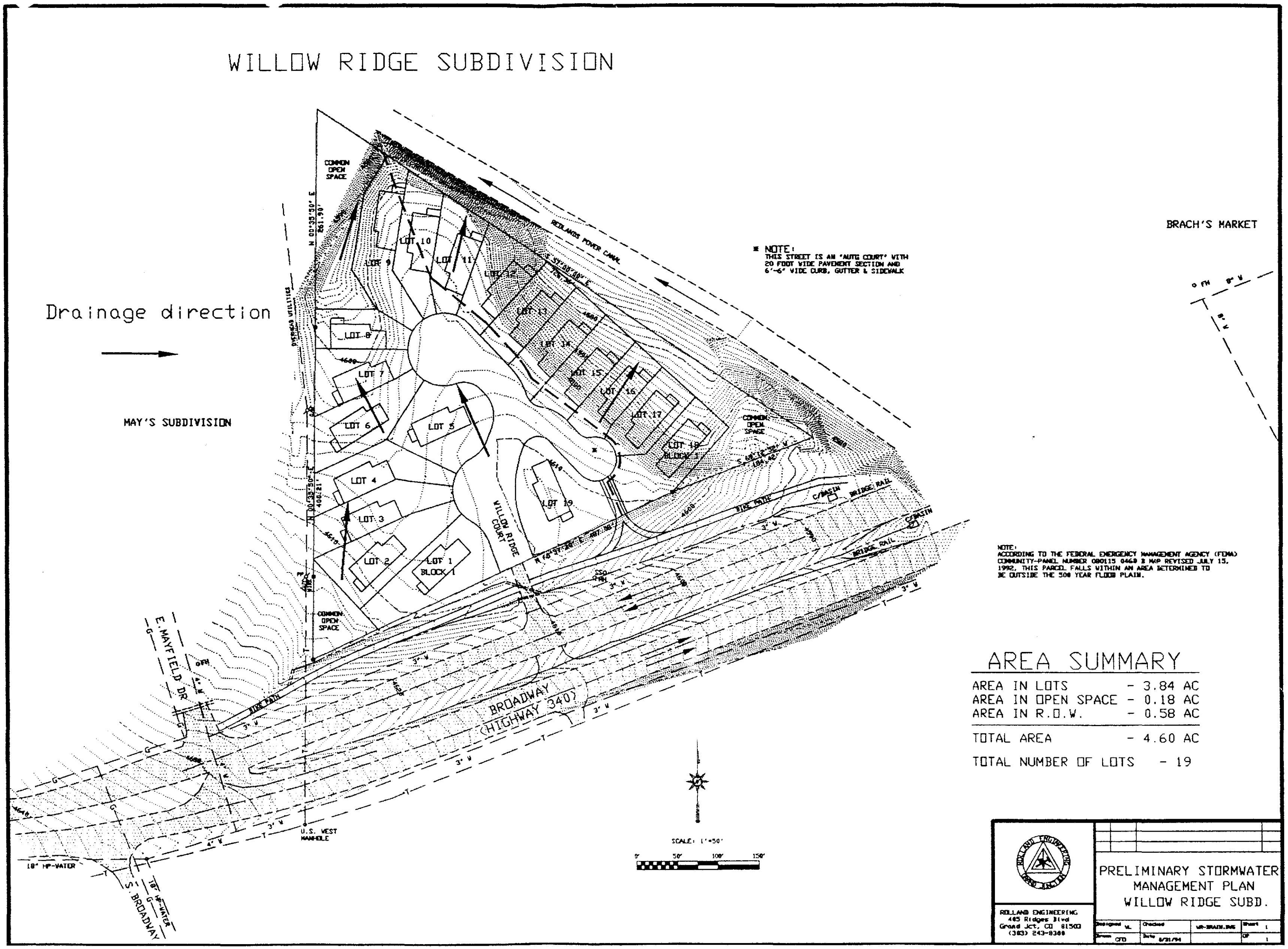
STAFF RECOMMENDATION:

Denial of the proposed Willow Ridge Subdivision.

PLANNING COMMISSION MOTION:

Mr. Chairman, on item #146-94, Willow Ridge Subdivision, I move that we approve the proposal.

"Note: Staff recommendation is to deny the motion."


WILLOW RIDGE SUBDIVISION
Drainage direction
MAY'S SUBDIVISION
BRACH'S MARKET
COMMON OPEN SPACE
LOT 1 BLOCK 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7
LOT 8
LOT 9
LOT 10
LOT 11
LOT 12
LOT 13
LOT 14
LOT 15
LOT 16
LOT 17
LOT 18 BLOCK 1
LOT 19
WILLOW RIDGE COURT
REDLANDS POWER CANAL
BROADWAY (HIGHWAY 340)
E. MAYFIELD DR
S. BROADWAY
BIKE PATH
BRIDGE RAIL
C/BASIN
U.S. WEST MANHOLE
18" HP-WATER
OVERHEAD UTILITIES
N 00°35'50" E 861.90'
N 00°35'50" E 400.21'
* NOTE:
THIS STREET IS AN 'AUTG COURT' WITH
20 FOOT WIDE PAVEMENT SECTION AND
6'-6" WIDE CURB, GUTTER & SIDEWALK
NOTE:
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)
COMMUNITY-PANEL NUMBER 080115 0460 B MAP REVISED JULY 15,
1992, THIS PARCEL FALLS WITHIN AN AREA DETERMINED TO
BE OUTSIDE THE 500 YEAR FLOOD PLAIN.
AREA SUMMARY
AREA IN LOTS - 3.84 AC
AREA IN OPEN SPACE - 0.18 AC
AREA IN R.O.W. - 0.58 AC
TOTAL AREA - 4.60 AC
TOTAL NUMBER OF LOTS - 19
SCALE: 1"=50'
0' 50' 100' 150'
ROLLAND ENGINEERING
405 Ridges Blvd
Grand Jct, CO 81503
(303) 243-8300
PRELIMINARY STORMWATER
MANAGEMENT PLAN
WILLOW RIDGE SUBD.
Designed VL
Checked
Drawn CFD
Date 8/31/94
Sheet 1
OF 1

PETITION TO:

PLANNING COMMISSION
COMMUNITY DEVELOPMENT DEPARTMENT
CITY OF GRAND JUNCTION

OCTOBER 1994

Dear Commissioners:

This petition categorically opposes the development of Willow Ridge Subdivision - Hwy 340 and Redlands Canal - adjacent to the May Subdivision on the West.

The opposition is based on the Multi-Facet impact of this development on the present established neighborhood and the surrounding areas in the Redlands. To wit:

A. Detrimental to traffic safety.

B. Drainage problems resulting in flooding and erosion.

C. Questionable soil stability and risky lot placement may lead to severe settling which negatively impacts the surrounding developments.

D. Imcompatibility with present neighborhood housing standards. The proposed compromises risk property value and appeal of the present established homes.

E. Near total opposition of the concept by the surrounding property owners.

F. Sewer capacity concerns due to the foul odor that currently exists.

G. Safety concerns of children pertaining to the Redlands Canal.

Therefore, we the undersigned property owners, whose property is within an influenceable distance of the aforementioned tract of land, do hereby formally affix our signatures in protest of the proposed development.

This petition is tendered for your conscientious consideration.

NAME	ADDRESS	PHONE
Nick A. Sabato	2489 S. Broadway	256-0633
[illegible]	2489 S Broadway	256-0633
[illegible]	2492 S Broadway	243-5699
[illegible]	2494 S Broadway	244.8914
Robert D. Ferguson	2496 S Broadway	241-6802
Sally Rivers	2498 S "	245-4786
Patrick Barrett	411-25 Rd & Gjct Across the road.	243-5100 W. 245-5706 H.
Harold Stocker	408 E. Mayfield Dr.	243-0608
Shirley Stocker	408 E. Mayfield Dr.	243-0608
Karen Haggerty	413 E Mayfield Dr	245-1637
Cindy Hickman	411 N. Mayfield Dr	245-6680
Ann Gibson	409 N. Mayfield Dr.	242-8916
Robert L. Haggerty	413 E. Mayfield Dr.	245-1637
E.F. Cartwright	414 W. Mayfield Dr	243-7185
Mary Jo Stratton	415 W. Mayfield Dr.	242-4834
Neil Bratton	415 W. Mayfield Dr.	242-4834
Arthur R Smith	409 W. Mayfield Dr.	242-8916

STATE OF COLORADO

COLORADO GEOLOGICAL SURVEY
Division of Minerals and Geology

Department of Natural Resources
1313 Sherman Street, Room 715
Denver, Colorado 80203
Phone (303) 866-2611
FAX (303) 866-2461

FAXED 10/24/94

DEPARTMENT OF NATURAL RESOURCES

Roy Romer
Governor

James S. Lochhead
Executive Director

Michael B. Long
Division Director

Vicki Cowart
State Geologist
and Director

October 24, 1994

MA-95-0013

REC'D OCT 27 1994

Community Development Department
City of Grand Junction
250 North 5th Street
Grand Junction, Colorado 81501

Re: Proposed Willow Ridge Subdivision -- Immediately West of the Intersection of Broadway (S.H. 340) and the Redlands Power Canal Alignment, Grand Junction

Gentlemen:

At your request, we have reviewed the materials submitted for and made a field inspection of the site of the proposed residential subdivision referenced above. The folowing comments summmarize our findings.

(1) The general geology of this site consists of younger gravel terrace alluvium which overlies sandstones and shales of the Dakota Formation. The parcel is bounded on its northeast side by the Redlands Power Canal and Lots 12 to 18 in this area for the most part slope steeply to the northeast toward the canal. This slope roughly demarcates the edge of the gravel terrace. Vegetation changes along this slope indicate that there is a shallow seasonal perched water table at or near the contact of the gravels with the Dakota Formation. In a few places on the site, native materials have been disturbed and some trash and uncontrolled fills are in evidence.

(2) The geologic conditions indicated above will present significant, but not insurmountable, constraints for this development as planned. The gravels possess good foundation-stability characteristics. However they may not be sufficiently thick in all places that houses with basements would not intercept the water table. The steeper slopes may be rendered unstable if deep cuts or fills are made or placed on them. This will effectively limit the buildable parts of Lots 12 to 18 to areas immediately adjacent to the proposed streets. The Dakota Formation sandstones are suitable for embedment of drilled piers, but a drilled-pier and

grade-beam foundation system is relatively expensive to construct and will not improve the stability of materials overlying bedrock on steeper slopes. For each lot, we recommend that the lot purchaser have a site specific soils and foundation investigation prepared by a qualified soils and foundation engineer prior to commencing construction on his lot. This should include, in addition to foundation recommendations, determination of the condition of fills, stability of the indicated slope, and determination if any of the refuse materials are hazardous and/or need a specialized clean up.

(3) Because of the permeability of surficial materials, on-lot drainage in this subdivision probably will be, for the most part, adequate. However the grades of the proposed streets and the proximity to Broadway will make runoff control during heavy rainstorms critical.

In summary, we think that this is an entirely feasible residential subdivision if good design and engineering preactices are followed. Although it is indicated in the cover sheet that a geologic report was sent, we did not receive it.

Sincerely,

James M. Soule

James M. Soule
Engineering Geologist

November 4, 1994

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (303) 244-1599

Mr. James Nall
Colorado Department of Transportation
222 South 6th Street, Room 317
Grand Junction, Colorado 81501-2769

Ref: CDOT Permit No. 394033

Dear Mr. Nall:

The proposed Willow Ridge Subdivision is currently under review by the City of Grand Junction. The access permit for this subdivision was issued by CDOT on March 31, 1994 and required construction of a left-turn acceleration lane on State Highway 340.

At the public hearing in October, residents of the Mays Subdivision immediately west of this proposed subdivision expressed concerns about the access and the lack of a requirement for a right turn deceleration lane. The point was made by one of the citizens that there are potential conflicts between turning vehicles and users of the bicycle path.

I am requesting you consider amending the permit requirements to include construction of a right turn deceleration lane based on the attached analysis and information. My analysis shows this access meets the criteria set forth in the State Highway Access Code. Also enclosed is a copy of comments made by the Highway Department in 1977 when this project was last proposed which would have required a right turn lane.

Thank you for your consideration and attention to this request.

Sincerely,

Jody Kliska, P.E.
Development Engineer

cc: Tom Dixon, Planning
Ciavonne & Associates
Oliver Frascona

Willow Ridge Subdivision Right Turn Lane Needs Analysis

16 Single Family Units

From Page 261 ITE Trip Generation, 5th Edition:
Average Trip Rate PM Peak Hour: 1.01 Trips/dwelling unit
65% entering, 35% exiting

This development:
16 PM peak hour trips
10.4 entering
5.6 exiting

From the continuous traffic counting state Hwy. 340:
Average October, 1994 westbound counts 5-6 p.m. - 1179
Average October, 1994 eastbound counts 5-6 p.m. - 658

Assuming trip distribution for the site is the same as the distribution of the highway, 64% of the entering traffic will be westbound, or right turn in.

10.4 x .64 = 6.7

Assume 50% of the westbound traffic is in the outside lane.

1179 x .5 = 589.5

Plotting these volumes on the attached chart indicate the right turn lane is required.

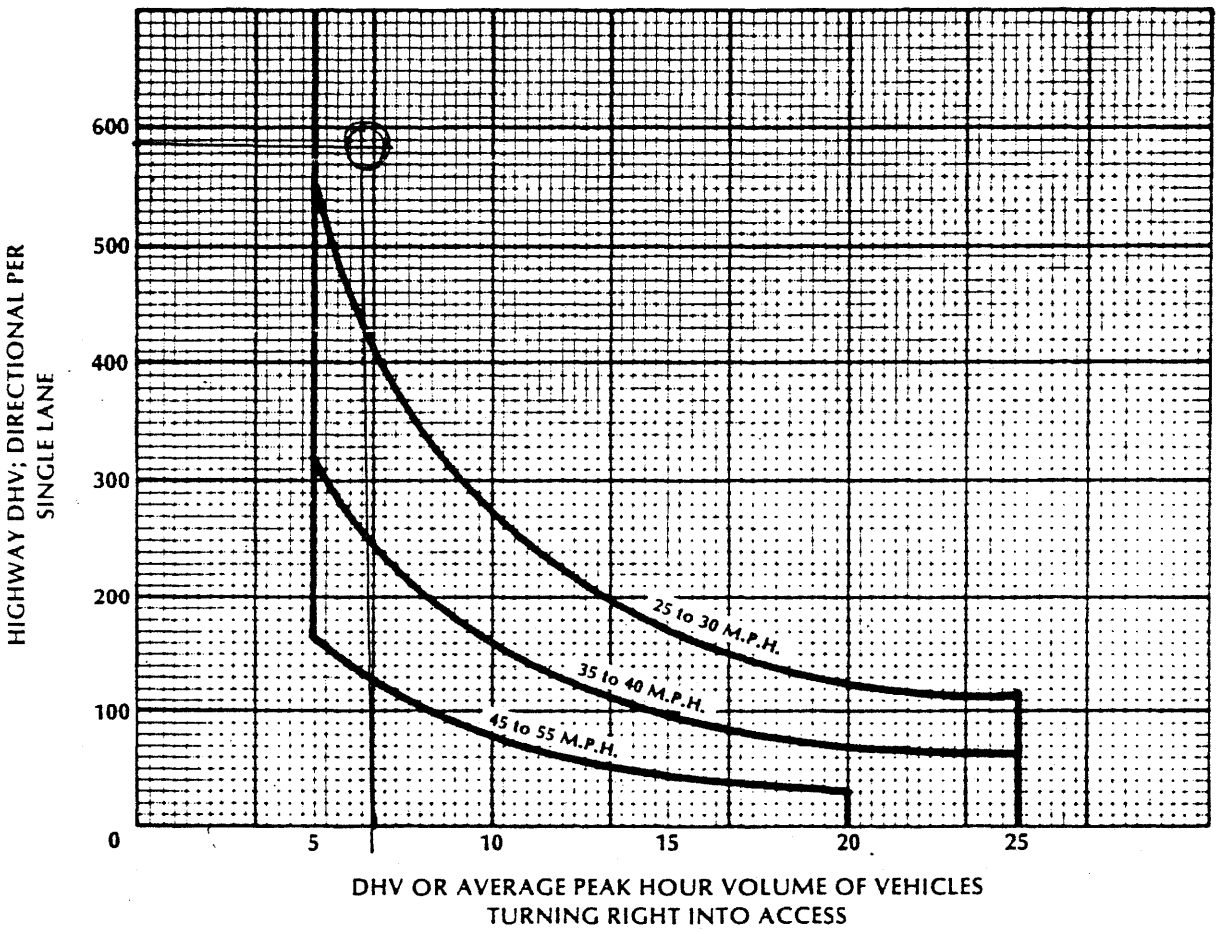
4.7.2 Deceleration Lanes for Right Turning Vehicles

a. A speed change lane for right turning deceleration movements is required for any access according to graph 4.7.2 when the DHV values of the highway single lane and the DHV of right turns intersect at a point on or above the curve for the posted speed.

b. Where the DHV of the right turn into the access is less than five DHV and the outside lane volume exceeds 250 DHV on 45 to 55 MPH highway, or 450 DHV on a 35 to 40 MPH highway, or 600 DHV on a 25 to 30 MPH highway, then a right turn lane may be required due to high traffic volumes or other unique site specific safety considerations.

c. When the access volume meets or exceeds 25 DHV with a highway posted speed of 25 to 40 MPH or 20 DHV above 40 MPH, a right turn deceleration lane is required.

GRAPH 4.7.2



copy
Mark A
Dan
David Varley
Larry Timm
Council

12/29/94
cc

James E Nasalroad
416 East Mayfield Drive
Grand Junction, CO 81503
December 22, 1994

RECEIVED GRAND JUNCTION
PLANNING DEPARTMENT
DEC 30 1994

Mr. R. T. Mantlo
Grand Junction City Council
250 N. 5th Street
Grand Junction, CO 81501

Dear Mr. Mantlo,

I am writing you regarding an upcoming appeal on January 4, 1995, of a decision made by the Grand Junction Planning Commission on December 13, 1994. I am referring to item #190-94, the preliminary plan for the **Willow Ridge Subdivision.**

I live at 416 East Mayfield and have resided there for the past 16 years. I knew when I purchased my home that some day some one would decide to build on the vacant lot that joins my property. Since 1977 local developers have tried to figure out how to best develop this property. Now an out of town developer thinks he can develop it as high density housing like they have in Boulder. I was born and raised in Boulder. I moved to Grand Junction to get away from that crowded living for a rural community life style. In looking at this crowded plan you might think it is a well-designed mobile home or modular home park. I am very concerned how this might affect my property value.

This developer started in October with a proposal for 19 units, which the Planning Commission denied. At that hearing they tried to get on the spot approval for a revised plan, of 16 units. During the hearing of December 13, Mr. Roberts, the representative for the developer, stated they have a plan for 12 units. The developer has little concerns for the neighborhood, only how he might profit. The only person that spoke in favor of the project was a representative for the Realtor that will be listing the properties and also stand to profit from the approval of this subdivision.

The City is currently doing a Sewer feasibility study for the Mays Subdivision that would include annexation into the city. We as a neighborhood are anxious to becoming part of The City of Grand Junction. We do oppose becoming part of a high density community when it is not necessary or warranted in this area.

I support the findings and recommendations of the Grand Junction Planning Commission and the Staff. I believe 12 homes is the maximum number that will reasonably fit on this parcel. The access to Broadway is a major concern and must be improved for the safety of everyone on the Redlands.

Sincerely Yours,

James E Nasalroad

James E Nasalroad

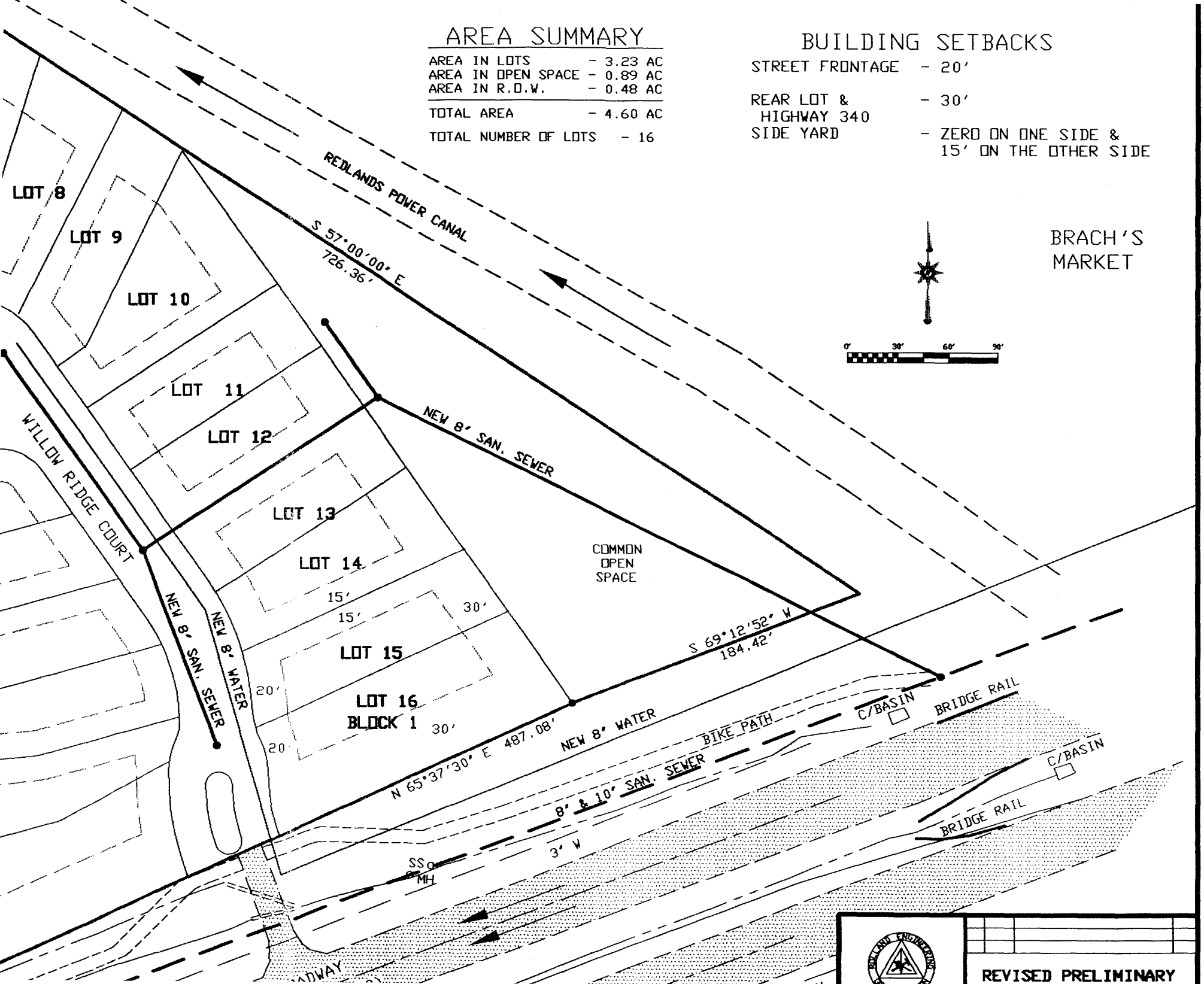
TYPE LEGAL DESCRIPTION(S) BELOW, USING ADDITIONAL SHEETS AS NECESSARY. USE SINGLE SPACING WITH A ONE INCH MARGIN ON EACH SIDE.

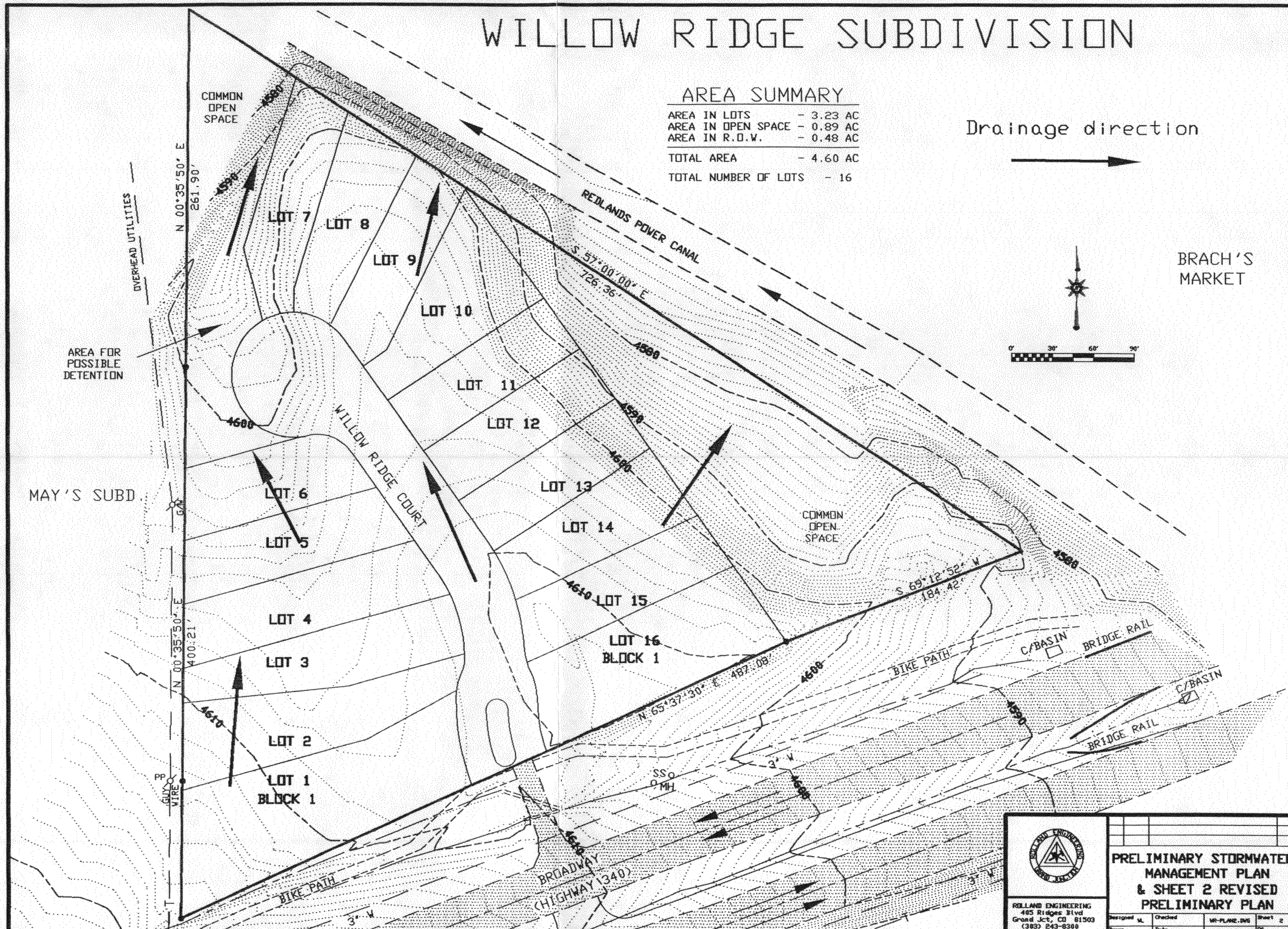
****

Beginning at a point on the East Section line of Section 16, Township 1 South, Range 1 West of the U.M. that is North 02° 16'30" West 900 feet from the Southeast corner of said Section 16, thence South 69°13'00" West 184.3 feet, thence South 65° 37'30" West 487.2 feet, thence North 0°28'00" East 663.07 feet to the South line of the right of way of the Redlands Irrigation and Power Company's Power Canal, thence South 57°00'00" East 728.15 feet to the Point of Beginning, Mesa County, Colorado.

1464 94

Original
Do NOT Remove
From Office


AREA SUMMARY
AREA IN LOTS - 3.23 AC
AREA IN OPEN SPACE - 0.89 AC
AREA IN R.O.W. - 0.48 AC
TOTAL AREA - 4.60 AC
TOTAL NUMBER OF LOTS - 16
BUILDING SETBACKS
STREET FRONTAGE - 20'
REAR LOT & HIGHWAY 340 - 30'
SIDE YARD - ZERO ON ONE SIDE & 15' ON THE OTHER SIDE
BRACH'S MARKET
REDLANDS POWER CANAL
S 57°00'00" E
726.36'
LOT 8
LOT 9
LOT 10
LOT 11
LOT 12
LOT 13
LOT 14
LOT 15
LOT 16
BLOCK 1
WILLOW RIDGE COURT
NEW 8" SAN. SEWER
NEW 8" WATER
COMMON OPEN SPACE
S 69°12'52" W
184.42'
N 65°37'30" E 487.08'
BIKE PATH
C/BASIN
BRIDGE RAIL
8" & 10" SAN. SEWER
SS MH
REVISED PRELIMINARY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Drainage direction
BRACH'S MARKET
0' 30' 60' 90'
REDLANDS POWER CANAL
S 57°00'00" E
726.36'
COMMON OPEN SPACE
N 00°35'50" E
261.90'
OVERHEAD UTILITIES
AREA FOR POSSIBLE DETENTION
MAY'S SUBD.
N 00°35'50" E
400.21'
LOT 1
BLOCK 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7
LOT 8
LOT 9
LOT 10
LOT 11
LOT 12
LOT 13
LOT 14
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LOT 16
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COMMON OPEN SPACE
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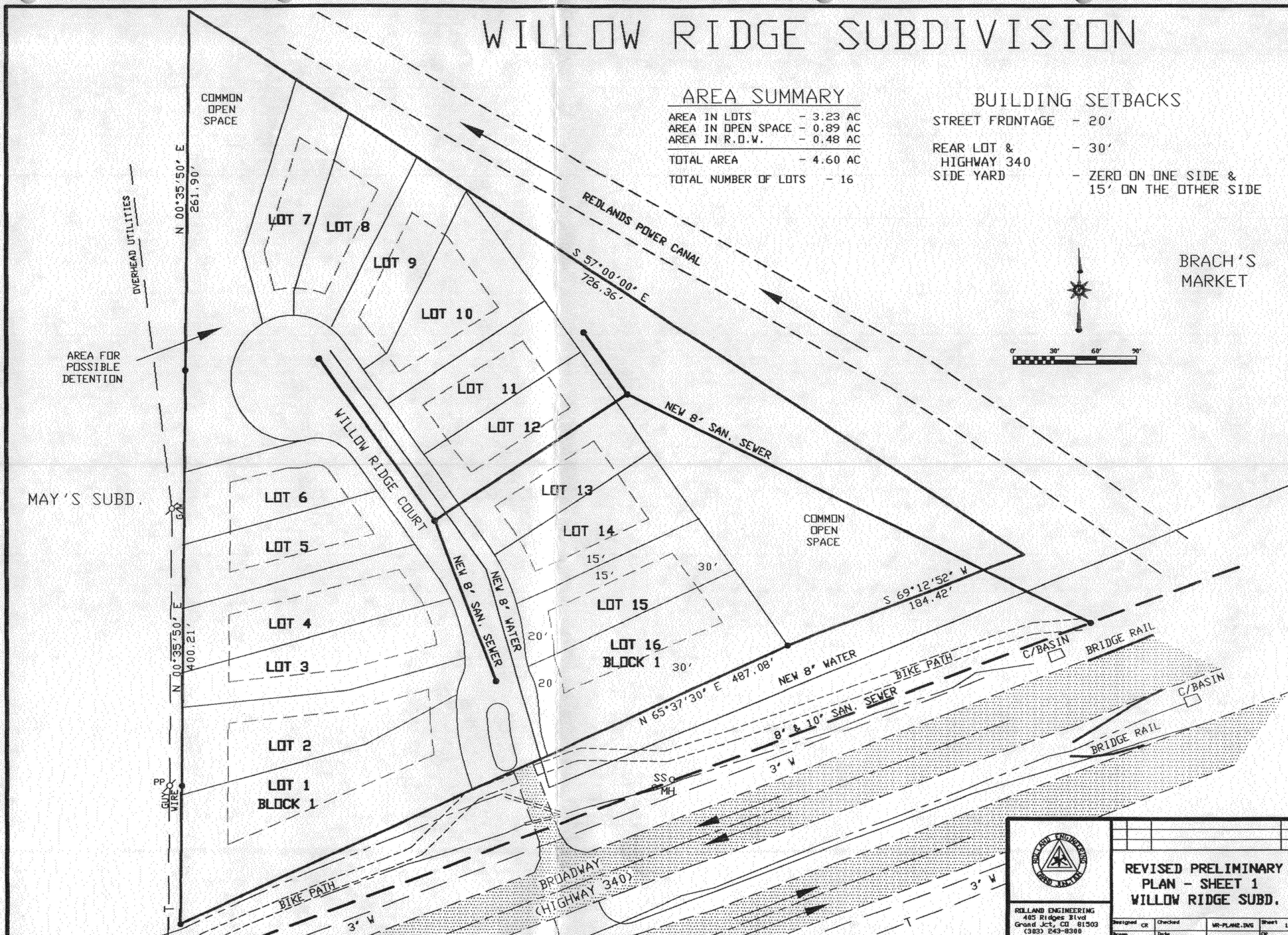
184.42'
N 65°37'30" E 487.08'
BIKE PATH
C/BASIN
BRIDGE RAIL
BROADWAY
(HIGHWAY 340)
SS MH
PP
GUY WIRE
4580
4590
4600
4610
ROLLAND ENGINEERING
485 Ridges Blvd
Grand Jct, CO 81503
(303) 243-8300
PRELIMINARY STORMWATER
MANAGEMENT PLAN
& SHEET 2 REVISED
PRELIMINARY PLAN
Designed WL
Checked
WR-PLAN2.DWG
Sheet 2
Drawn CFD
Date 8/31/94
REV 10/4/94
OF 2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BROADWAY (HIGHWAY 340)
REVISED PRELIMINARY PLAN - SHEET 1 WILLOW RIDGE SUBD.
ROLLAND ENGINEERING
405 Ridges Blvd
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Date 8/31/94
WR-PLANE.DWG
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Sheet 1 OF 2