

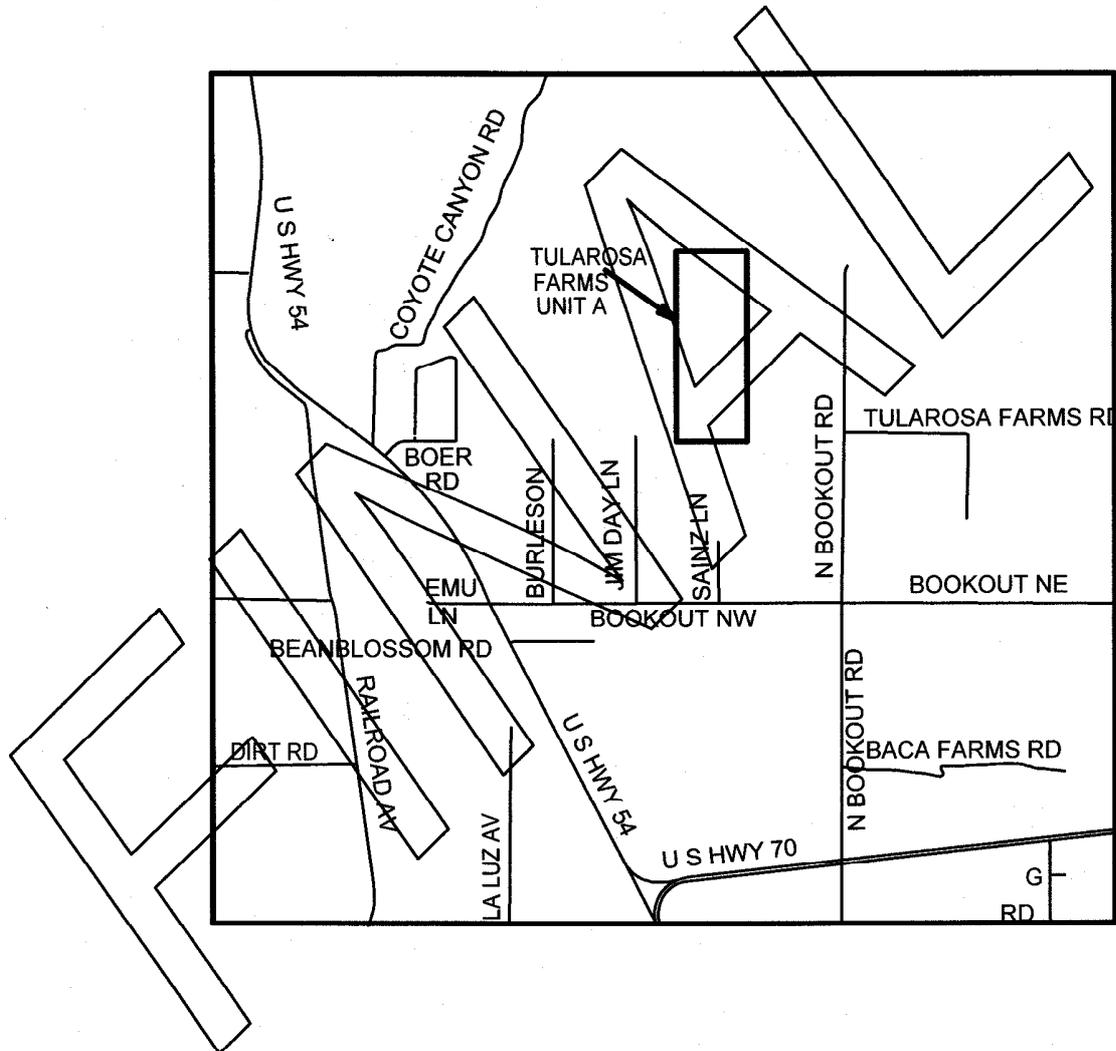


ALAMOTERO
LAND
SURVEYS, P.C.

PROFESSIONAL LAND SURVEYORS
1101 NORTH FLORIDA AVENUE
ALAMOGORDO, NEW MEXICO
PHONE 505-437-7074 FAX 505-437-7075

DISCLOSURE STATEMENT TULAROSA FARMS, UNIT A OTERO COUNTY, NEW MEXICO RUIDOSO VALLEY BUILDERS, LLC

APRIL, 2005



DISCLOSURE STATEMENT

FOR ALL TYPE 5 SUBDIVISIONS AND SUBDIVISIONS CONTAINING FIVE AND FEWER PARCELS.

YOU SHOULD READ THIS DISCLOSURE STATEMENT BEFORE YOU SIGN ANY DOCUMENTS OR AGREE TO ANYTHING.

This disclosure statement is intended to provide you with enough information to make an informed decision on the purchase, lease or acquisition of the property described in this statement. You should read carefully all of the information contained in this disclosure statement **before** you decide to buy, lease or otherwise acquire the described property.

Various public agencies may have issued opinions on both the subdivision proposal and the information contained in this disclosure statement. Summaries of these opinions are contained in this disclosure statement. They may be favorable or unfavorable. You should read them closely.

The Board of County Commissioners has examined this disclosure statement to determine whether the subdivider can fulfill what the subdivider has said in this disclosure statement. However, the Board of County Commissioners does not vouch for the accuracy of what is said in this disclosure statement. In addition, this disclosure statement is not a recommendation or endorsement of the subdivision by either the County or the State. It is informative only.

The Board of County Commissioners recommends that you inspect the property **before** buying, leasing, or otherwise acquiring it.

If you have not inspected the parcel before purchasing, leasing or otherwise acquiring it, you have six (6) months from the time of purchase, lease or other acquisition to personally inspect the property. After inspecting the parcel within the six (6) month period, you have three (3) days to rescind the transaction and receive all your money back from the subdivider when merchantable title is revested in the subdivider. To rescind the transaction you must give the subdivider written notice of your intent to rescind within three (3) days after the date of your inspection of the property.

County regulations require that any deed, real estate contract, lease or other instrument conveying an interest in a parcel in the subdivision be recorded with the Otero County Clerk.

Building permits, wastewater permits or other use permits must be issued by state or county officials before improvements are constructed. You should investigate the availability of such permits before you purchase, lease, or otherwise acquire an interest in the land. You should also determine whether such permits are requirements for construction of additional improvements before you occupy the property.

1. **NAME OF SUBDIVISION:** Tularosa Farms, Unit A, Otero County, New Mexico

2. **SUBDIVIDER INFORMATION**

Name of Subdivider(s): Ruidoso Valley Builder's, LLC

Address: 51 Jim Day Lane, Tularosa, New Mexico, 88352

3. **CONDITION OF TITLE**

Please answer all of the following that are applicable:

Number of mortgages existing on the property being subdivided: One on the east ½ of the property, the W½ is un encumbered

Name and address of each mortgagee, and balance owing and summary of release provisions on each mortgage:

Laymon Hightower, balance owing is \$145,000, one acre will be released for each \$2,500.00 paid.

Number of real estate contracts on the subdivided land for which the subdivider is making payments as a purchaser: None

For each real estate contract held on the subdivided land for which the subdivider is making payments as a purchaser, please state the name and address of each person holding the contract, balance owing on each real estate contract, and summary of default and release provisions of each real estate contract:

N/A

Statement of any other encumbrances on the land:

None

Statement of any other conditions relevant to the state of title:

None

4. **STATEMENT OF ALL RESTRICTIONS OR RESERVATIONS OF RECORD THAT SUBJECT THE SUBDIVIDED LAND TO ANY CONDITIONS AFFECTING ITS USE OR OCCUPANCY**

State here all deed and plat restrictions affecting the subdivided land:

Are there restrictive covenants for this subdivision? Yes No

The owners in Tularosa Farms shall be governed by Covenants contained herein.

If yes, attach copy of restrictive covenants to this disclosure statement. See Exhibit A

5. **UTILITIES**

Name of entity providing electricity: Texas-New Mexico Power Co.

Please describe availability of electric service. Is electric service available to each parcel in the subdivision? If electric service is available to some but not all parcels in the subdivision, please state which parcels it will

be available to: Electricity is presently available to lot 1 and 12.

Electric utilities are: above ground below-ground

Who is responsible for providing electric service to individual parcels?

Subdivider purchaser/lessee

Gas service: Propane Natural

If natural gas is available, name of entity providing service: PNM Gas Services

Is natural gas service available to each parcel in the subdivision? If gas service is available to some but not all parcels in the subdivision, please state which parcels it will be available to:
Natural gas is in Northwest Bookout Road, Contract services for propane are also available.

Gas utilities are: above-ground Below ground

Who is responsible for providing gas service (either natural or propane) to individual parcels?

Subdivider Purchaser/Lessee

Water: Well Shared well

Who is responsible for providing water service to individual parcels?

Subdivider Purchaser/Lessee

*If water is to be provided by well or shared well, complete Section 9 of this form.
If water is provided by a community system, complete Section 8 of this form.*

Is telephone service available to this subdivision? Yes No

Name of entity providing telephone service: Tularosa Basin Telephone Co.
Please describe availability of telephone service. Is telephone service available to each parcel in the subdivision? If telephone service is available to some but not all parcels in the subdivision, please state which parcels it will be available to:

Telephone service is available to lot 1 and 12 .

Who is responsible for providing telephone service to individual parcels?

Subdivider purchaser/lessee

Telephone utilities are: above-ground below-ground

Method of liquid waste disposal: Septic tank Community System

Who is responsible for providing liquid waste disposal service to individual parcels?

Subdivider Purchaser/Lessee

Complete Section 10 of this form.

Method of solid waste disposal: Responsibility of Purchaser / Lessee

Responsibility of Subdivider

Describe the availability and sources of water to meet the subdivision's maximum annual water requirements:

The maximum annual water requirement for Tularosa Farms is 36 acre/feet per year. See Exhibit "B" Based on the Otero County 40 year water plan (1990-2030) the water level in this area may drop 75-85 feet if Alamogordo fully develops the La Luz well field. The "Tularosa Basin and Salt Basin Regional Water Plan 2000-2040" states "the total annual sustainable yield for the east portion of the Tularosa Basin is approximately 129,000 AFY. The total projected water demands for the same area approach 60,000 AFY by the year 2040." Underground water is generally available in the subdivision area. The subdivider makes no representation or guarantees that water will be found under any lot. The development of a reverse osmosis plant, by the City of Alamogordo, north of Tularosa may increase the decline of the static water table in this area.

Describe the means of water delivery within the subdivision:

Individual or shared wells

Describe any limitations and restrictions on water use in the subdivision:

The State Engineer will grant a domestic permit under Section 72-12-1 NMSA 1978 only to the person who in good faith, intends to use the well for household or other domestic purpose. The permit is limited to 3.00 acre feet per annum per well. Including non-commercial irrigation of up to 1 acre of lawn, garden, orchard, etc. If a shared well is utilized the maximum annual consumption is limited to an accumulative total of 3.00 acre feet per annum. Shared wells shall be metered and quarterly reports sent to the State Engineers Office. See the shared well maintenance agreement in Exhibit "B".

Summarize the provisions of any restrictive covenants or other restrictions requiring the use of water saving fixtures and other water conservation measures:

The subdivider is imposing no requirement for the mandatory use of water saving devices. Water conservation is recommended. The use of water saving fixtures, xeriscape landscaping, water harvesting and the covering of pools and spa's to prevent evaporation is encouraged.

Describe what measures (such as meters), if any, will be employed to monitor or restrict water use in the subdivision: Only those restrictions that may be imposed by the State Engineer's requirements in the future. Shared wells shall be metered, limited to serving no more than four households, with a cumulative total of three acre feet and quarterly meter readings sent to the State Engineer's Office.

8. FOR SUBDIVISIONS WITH COMMUNITY WATER SYSTEMS

If no community water system is to be used in this subdivision, please skip to the next question.

Name and address of entity providing water: N/A

Source of water and means of delivery: N/A

Summary of any legal restrictions on either indoor or outdoor usage: N/A

Statement that individual wells are prohibited, if such is the case: N/A

9. **FOR SUBDIVISIONS WITH INDIVIDUAL DOMESTIC WELLS OR SHARED WELLS (if applicable)**

State whether wells will be provided by the subdivider or by the prospective purchaser/lessee:

The purchaser/lessee.

If wells are provided by purchaser/lessee, state the estimated cost to complete a domestic well, including drilling, pressure tank, control devices, storage and treatment facilities: Well costs are estimated at approximately \$12,000.00 to include cased well, pump and pressure tank.

If wells are provided by the subdivider, state the cost, if any to the purchaser/lessee: N/A

Summary of legal restrictions on either indoor or outdoor usage: The State Engineer will grant a domestic Permit under Section 72-12-1 NMSA 1978 only to the person who in good faith , intends to use the well For household or other domestic purposes. The domestic permit is limited to 3 acre feet per annum per well, Including noncommercial irrigation of up to 1 acre of lawn, garden, orchard, etc. shared wells shall be metered, limited to a cumulative total of three acre feet per annum and quarterly meter readings sent to the State Engineer's Office.

Average depth to groundwater and the minimum and maximum well depths to be reasonably expected:

Average depth to water is 169 feet. Minimum depth to water is 130 feet, maximum depth to water is 298 feet based on 34 wells in Section 18. Wells should run 300 to 400 feet deep.

10. **LIQUID WASTE DISPOSAL**

Describe the precise type of liquid waste disposal system that is proposed for use within the subdivision:

Individual septic tanks

Describe the responsibilities of both subdivider and purchaser/lessee in installing liquid waste disposal system:

It is the purchaser/lessees responsibility to obtain the proper permit for the proper system .

NOTE: NO LIQUID WASTE DISPOSAL SYSTEM MAY BE USED IN THIS SUBDIVISION OTHER THAN A SYSTEM APPROVED FOR USE IN THIS SUBDIVISION BY THE BOARD OF COUNTY COMMISSIONERS AND THE NEW MEXICO ENVIRONMENT DEPARTMENT.

11. **TERRAIN MANAGEMENT**

Describe the suitability for residential use of the soils in the subdivision as defined in the Natural Resource Conservation District's soil survey for Otero County: See Exhibit "C" . This area contains AdB, AhB, LfB, McB, PmA and PmB soils. The area's are very fine sandy loam to fine sandy loam. All with 1 to 3 percent slopes. These are deep well drained soil. The soils are high in gypsum and calcareous throughout. Permeability is moderately slow to moderately rapid and available water capacity is high. The soils have high potential for urban development. Moderate shrink-swell potential is a moderate limitation but can be overcome by good design and careful installation. The moderately slow permeability limits septic tank filter

fields but can be overcome by increasing the size of the absorption area or modifying the filter field. The gypsum can corrode underground utilities but the use of noncorrodible materials overcomes this limitation.

Describe any measures necessary for overcoming soil and topographic limitations, and who will be responsible for implementing these measures: These area's may be flooded for short periods following intense rains. It is the purchaser's responsibility to preserve positive drainage away from the home and not to divert water onto adjacent properties.

Identify by lot and block numbers all parcels within the subdivision that are subject to flooding:

Per FIRM panel no. 350044 009B for Otero County New Mexico no lot within the subdivision is in a special flood hazard area Zone "A". Lot owners can expect surface run-off after heavy rains.

Identify by lot and block numbers all parcels within the subdivision located in whole or in part on slopes in excess of 8%: None of the lots in the subdivision have slopes greater than 8%

Describe the surface drainage for all lots in the subdivision:

Overland sheet flow in a southwesterly direction . It is recommended that all structure's be located on a built up earth pad at least one to two feet above the highest adjacent grade to the structure..

Describe the subsurface drainage for all lots in the subdivision as contained in the Natural Resource Conservation Soil Survey: Water percolates slowly in some areas of the subdivision, The septic tank installer can recommend the proper size of leach field for the particular installation.

Describe the nature, location and completion dates of all storm drainage systems constructed or required to be constructed in the subdivision: None are planned .

12. SUBDIVISION ACCESS

Name of town or village nearest to subdivision: Tularosa , New Mexico

Distance in miles from nearest town to subdivision and the general route over which that distance is computed:

Approximately 2.5 miles southwest via Quarterhorse Lane to Jim Day Lane to NW Bookout Road to US Highway 54 to St. Francis Drive.

Describe access roads to the subdivision, including approximate width and surfacing:

Jim Day Lane and NW Bookout Road are a county maintained roads. They are approximately 24' wide. Jim Day Lane and Bookout are paved with double penetration asphalt. US Highway 54 is a State maintained highway.

State whether or not subdivision is accessible by conventional vehicle and whether it is accessible at all times of the year; also state any weather conditions that could affect access to the subdivision and any measures that will be necessary to gain access during these conditions:

The subdivision is normally accessible by conventional vehicle. Occasional dust storms, rain storms or snow storms may cause delays

Describe roads within the subdivision, including width and surfacing:

Thoroughbred Lane will be a private 24' gravel surfaced road with barrow ditches, culverts and low water crossings where needed.

Does the subdivider propose to submit the roads within the subdivision to the County for maintenance?

Yes X No

THIS DOES NOT GUARANTEE THAT ROADS WILL BE ACCEPTED FOR MAINTENANCE BY THE COUNTY.

For roads proposed to be privately maintained or until the County accepts roads for public maintenance, who is responsible for maintenance of the roads? Subdivider X purchaser/lessee

State how the roads will be maintained, describe any responsibilities and obligations lot owners will have with respect to road maintenance, and describe the measures taken to make sure that maintenance of the roads takes place (include responsibilities of property owners' association, if applicable):

See the road maintenance agreement

Who is responsible for maintenance of other improvements within the subdivision (water systems, parks, etc.)?

Subdivider N/A purchaser/lessee N/A

State how the improvements will be maintained, describe any responsibilities and obligations lot owners will have with respect to maintenance of improvements, and describe the measures taken to make sure that maintenance of the improvements takes place (include responsibilities of property owners' association, if applicable): N/A

NOTE: UNDER NEW MEXICO STATE LAW, LAND OWNERS ARE RESPONSIBLE FOR PROVIDING THEIR OWN FENCE IF THEY WANT TO KEEP LIVESTOCK OUT.

13. CONSTRUCTION GUARANTEES (if applicable)

Describe any proposed roads, drainage structures, water treatment facilities or other improvements that will not be completed before parcels in the subdivision are offered for sale:

N/A

Describe or attach all performance bonds, letters of credit or other collateral securing the completion of each proposed improvement: N/A

UNLESS THERE IS SUFFICIENT BOND, LETTER OF CREDIT OR OTHER ADEQUATE COLLATERAL TO SECURE THE COMPLETION OF PROPOSED IMPROVEMENTS, IT IS POSSIBLE THAT THE PROPOSED IMPROVEMENTS WILL NOT BE COMPLETED. CAUTION IS ADVISED.

14. ADVERSE OR UNUSUAL CONDITIONS

State any activities or conditions adjacent to or nearby the subdivision, such as feed lots, dairies, cement plants or airports, that would subject the subdivided land to any unusual conditions affecting its use or occupancy:

None

15. FIRE PROTECTION

Name of nearest fire station: Municipality
Volunteer Jack Rabbit Flats and Tularosa Volunteer Fire Department

Travel distance to nearest fire station from subdivision: Approximately 6.5 miles

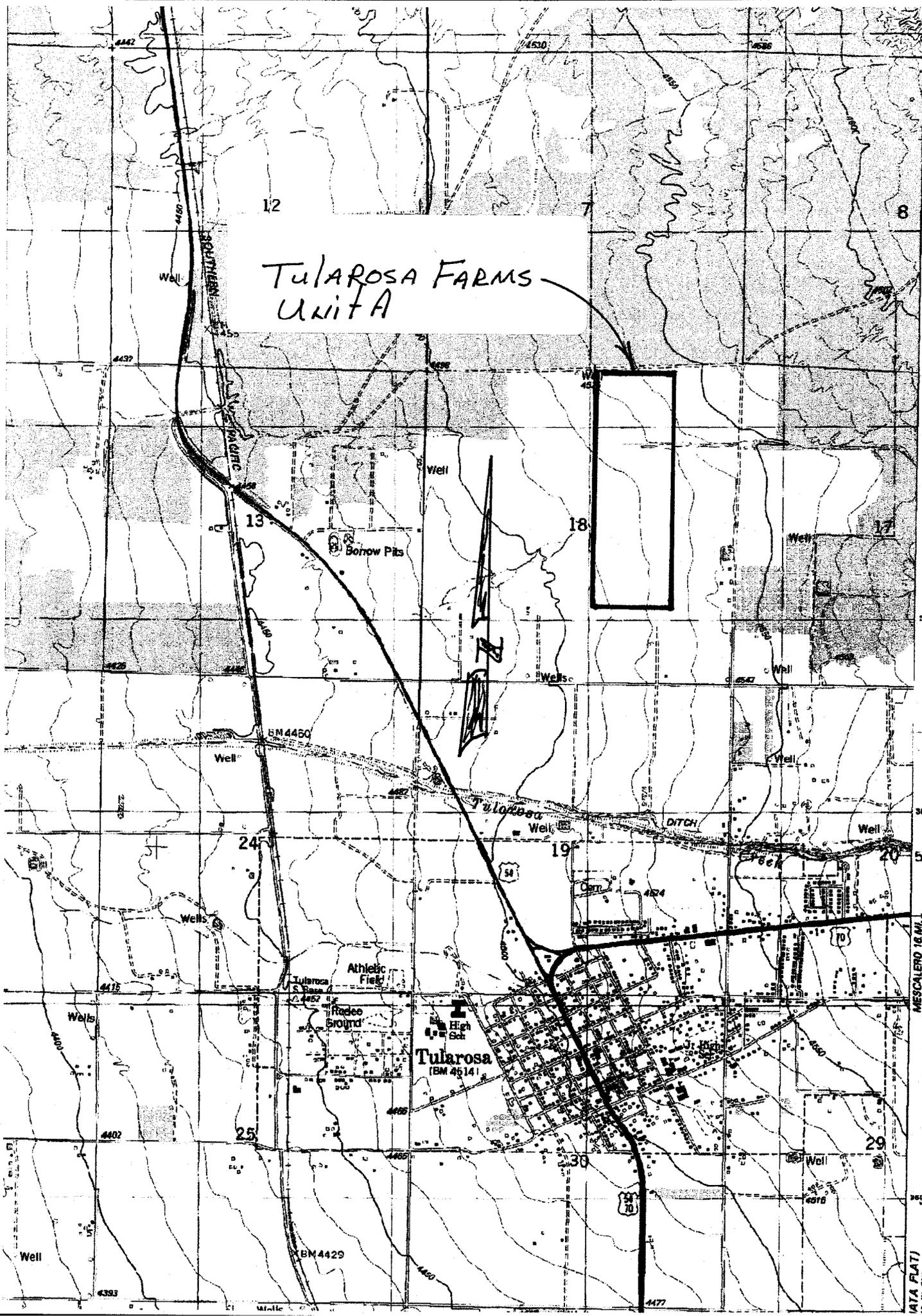
16. POLICE PROTECTION

Show the various law enforcement agencies having jurisdiction in the area of the subdivision:

X NM State Police X Otero County Sheriff's Department

770 000 FEET
365
364
363
362
361
360
359

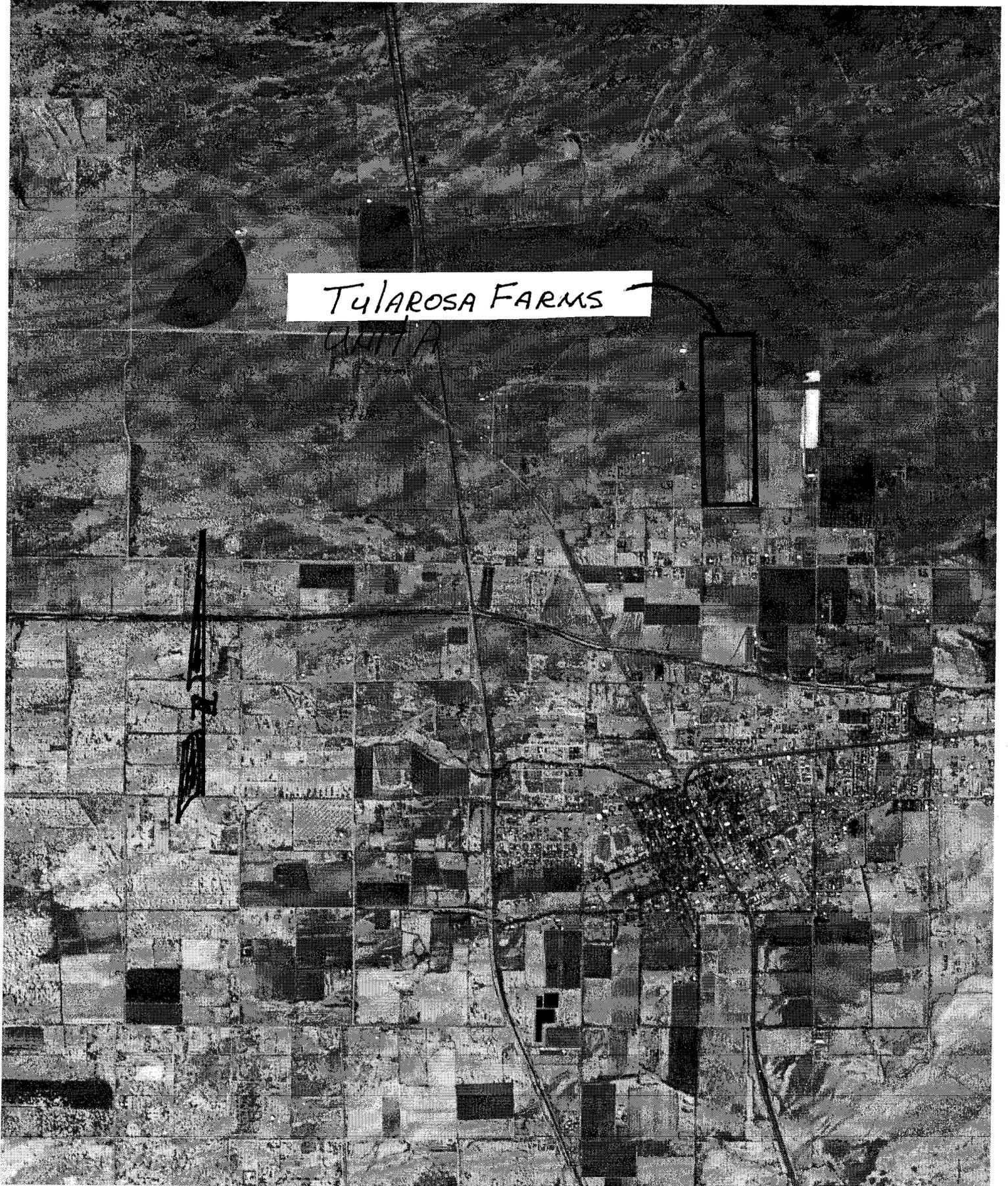
TULAROSA FARMS
UNIT A



MESCALERO 16 MI.
RUIDOSO (UVA N. MEX. 37) 24 MI.
ATA FLAT)
S 1/4 SW

TULAROSA FARMS

UNIT A



**DECLARATION OF COVENANTS, CONDITIONS
AND RESTRICTIONS**
FOR

TULAROSA FARMS (UNIT A)

A HORSE AND RESIDENTIAL COMMUNITY

THIS DECLARATION is made this _____ day of _____, 2005 by **Ruidoso Valley Builders, LLC**, a New Mexico Limited Liability Company, hereinafter referred to as the **"Declarant."**

RECITALS

Declarant is the owner of real property located in Otero County, New Mexico, which is described as Lots 1 through 12 of **TULAROSA FARMS (UNIT A)**, hereinafter referred to as the **"Property,"** recorded as Document No. _____, Page _____, Book _____ of the Records of the County Clerk for Otero County, New Mexico on the _____ day of _____, 2005. Declarant desires to develop this property as a residential and horse community and desires that all the real estate, which it develops will be subject to the easements, covenants, conditions and restrictions set forth in this Declaration.

Declarant states that the real property shall be held, sold and conveyed subject to the following easements, covenants, conditions and restrictions, all of which are for the purpose of enhancing and protecting the value, desirability and attractiveness of the property. These easements, covenants, conditions and restrictions shall run with the property and shall be binding upon all persons having or acquiring any right, title or interest in the described properties or any part thereof, and shall inure to the benefit of each such person.

- **Exhibit "A"** -

**ROAD MAINTENANCE AGREEMENT,
TULAROSA FARMS, UNIT A, OTERO COUNTY, NEW MEXICO**

THE OWNERS OF LOTS IN TULAROSA FARMS, UNIT A HEREBY AGREE TO MAINTAIN THE ROADS AND DITCHES BENEFITING TULAROSA FARMS, UNIT A ON AN EQUALLY SHARED, RESPONSIBLE BASIS. THE COST OF MAINTENANCE SHALL BE EQUALLY SHARED BY THE TWELVE (12) LOT OWNERS.

THE INDIVIDUAL OWNERS WILL BE SOLELY RESPONSIBLE FOR ANY "CUTS" IN THE ROAD TO ACQUIRE UTILITY SERVICE FOR THEIR LOT AND FOR THE COST OF MAKING THE ROAD REPAIRS.

THIS AGREEMENT IS BINDING ON ALL SUBSEQUENT OWNERS, HEIRS AND ASSIGNS.

LOT 1 _____

LOT 2 _____

LOT 3 _____

LOT 4 _____

LOT 5 _____

LOT 6 _____

LOT 7 _____

LOT 8 _____

LOT 9 _____

LOT 10 _____

LOT 11 _____

LOT 12 _____

OTERO COUNTY

40-YEAR WATER PLAN

1990-2030

Prepared for

Otero County

November 1993



Leedshill-Herkenhoff, Inc.

500 Copper Ave. N.E.

P.O. Box 1217

Albuquerque, NM 87103

ENGINEERS

LH 93032.12

ARCHITECTS

John W. Shomaker, Inc.

Suite D 345-3407

2703 Broadbent Parkway N.E.

Albuquerque, NM 87107

GEOLOGIST HYDROGEOLOGIST

- *Exhibit "B"* -

6.1.2.1

Scenario 1 - Scenario 1 assumes that growth and water demand occur according to historic trends which establish the distribution of surface water and groundwater supplies to satisfy demands, the forecasted demands outlined in the earlier chapters, and makes a special assumption for Alamogordo. It assumes that surface water use for the City reaches a maximum of about 5300 afy and that additional demand must come from groundwater pumping in the La Luz well field. The 5300 afy limit of available surface water supply is based on the amount calculated (using the SWRRB model described in Section 6.2.2) which would be available 90% of the time during the 40-year study period. This means that pumping from the well field would increase from a theoretical 1990 rate of about 1400 afy to about 3500 afy by the year 2030. Pumping rates in the model are increased every 10 years so that by 2030 they reach 3500 afy in the La Luz well field as reflected by the groundwater supply values presented on Table 9.

Scenario 1 represents the baseline conditions for which the groundwater basin will follow if county water management practices are continued in the next forty years similar to the trends established historically.

Scenario 1 assumes that the percentage of groundwater use by the basin would increase from 64 to 67% by the year 2030, with uses by small municipal and rural entities ("other") increasing from 52 to 62%. The major increase in groundwater use would be Alamogordo, with an increase from 21 to 39%.

Results of this pumping scenario are shown in Figure 10 in the form of drawdowns resulting from the pumping. The impacts are "total impacts" from the beginning of significant groundwater withdrawals in the 1950s to the year 2030, rather than only impacts from 1990 to 2030. In the agricultural area near Tularosa, total drawdowns would reach 80-85 feet by 2030, which would still allow adequate saturated thicknesses and water quality for agricultural use. In the Holloman area, drawdowns would reach 70 feet, leaving adequate saturated thicknesses and quality in the present Boles well field area. This conclusion is based on analysis of total dissolved solids increases with depth (Orr and Myers, 1986, Figure 8) and extrapolation from Morrison's modeling results (Morrison, 1989). Water quality modeling was not part of the present study.

In the area around La Luz well field, drawdowns would reach as much as 440 feet because of withdrawals by Alamogordo. A review of well records indicates that this amount of usable saturated thickness does not exist in this area, making it impossible to reach a pumping level approaching 3500 afy. Communities which would be severely impacted by such a pumping scenario include Alamo Heights, Canyon Hills, Dungan, Freemans, Enchanted Valley, Shady Grove and La Luz as well as the City of Alamogordo.

In summary, the results of the simulation analysis for Scenario 1 indicate that the area to experience the greatest potential problem in the next 40 years is the La Luz well field.

Therefore, an alternate scenario was evaluated in an attempt to determine what county water management practices, if any, could be implemented to reduce impacts on the La Luz well field area.

6.1.2.2 Scenario 2 - A second scenario was developed which envisioned a reduction of all groundwater withdrawals (including agricultural use) by 10% through water conservation. The same proportion of surface to groundwater use as is reflected in Scenario 1 is retained. The actual values of each for the 40-year study period are summarized in Table 11 in ten year increments. It is assumed that 10% conservation is not actually achieved until the year 1995.

Results of the Scenario 2 simulation are shown on Figure 11 and indicate that the groundwater drawdown situation does not improve significantly. Drawdowns in the Tularosa area remain about the same as Scenario 1, improve from 70 to 64 feet in the Holloman area and improve in the La Luz well field from 440 to 400 feet. While this helps, such a scenario is still not feasible in the La Luz well field area where drawdowns exceeding 200 feet are not technically possible. Even if the 10% reduction was applied only to groundwater withdrawals and not surface water use, drawdowns in the La Luz well field would be very similar.

As in Scenario 1, results of Scenario 2 reinforce the concern that, based on historic water management practices, even when combined with 10% water conservation, the La Luz well field area would not be a viable groundwater supply source during the entire 40-year study period. Scenario 2 results also demonstrate that county-wide water management practices cannot alone reconcile this problem. Instead, the City of Alamogordo must address the idea of relying on additional surface water supply sources and conservation to supplement their groundwater supply to satisfy projected demands.

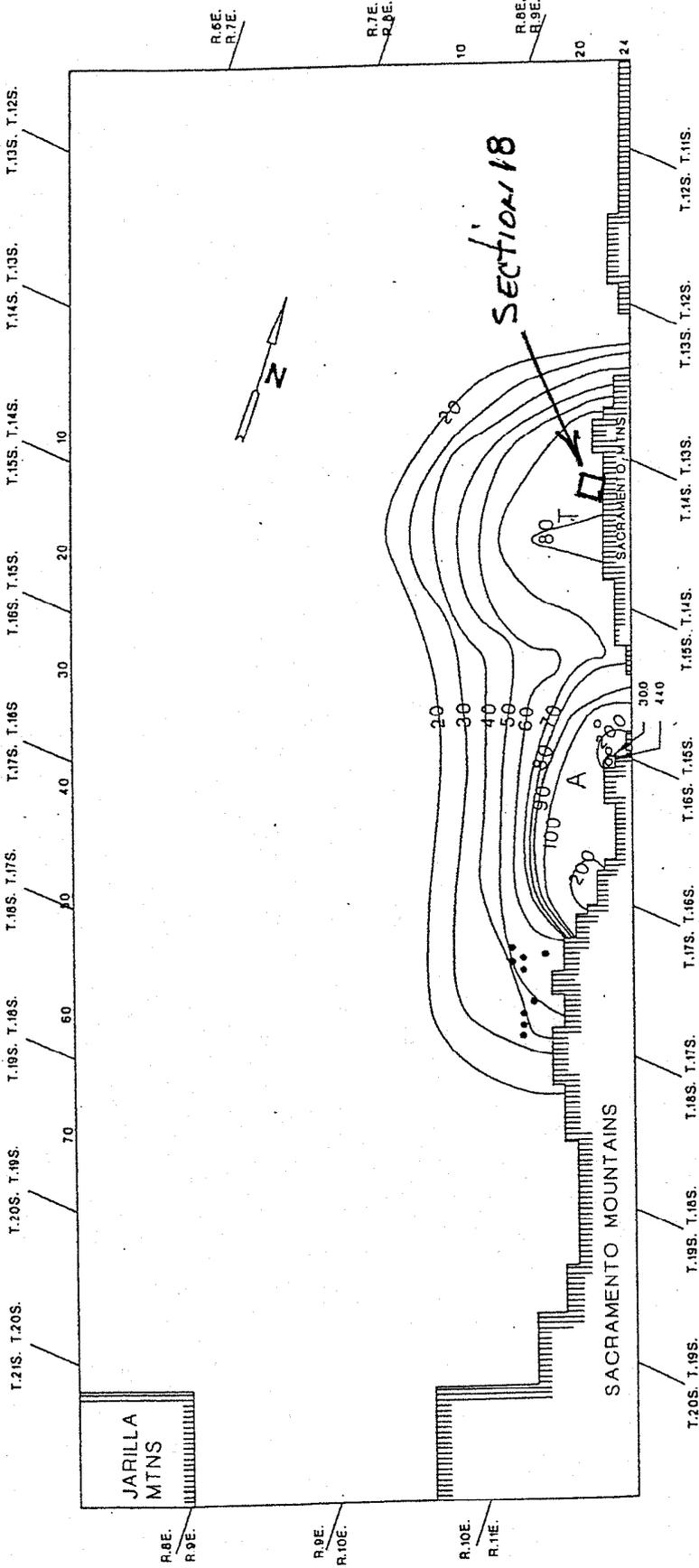
6.1.2.3 Scenario 3 - To evaluate the extent of additional surface water supplies required by Alamogordo, a third scenario was developed. Scenario 3 is based on increasing surface water use in the next forty years for Alamogordo and retaining a 10% reduction in the entire region through conservation. The demand and supply conditions are the same as that illustrated in Table 11 except for Alamogordo and Holloman. Table 12 reflects the adjustments in distribution between groundwater and surface water supplies to satisfy projected demands for Scenario 3. The impacts of Scenario 3 are shown in Figure 12. Only slight improvement would occur, with drawdowns in the La Luz well field area still as high as 380 feet.

Scenario 3 assumes that Holloman pumping remains at 1,137 afy from 1990 through 2030, which would keep drawdowns to a tolerable level of 60 feet and allow water quality to remain under 1,000 mg/l. (See Figure 8.) Morrison reports that water quality in the Boles and associated well fields is generally well below 1,000 mg/l. Of 187 total dissolved solids measurements listed in Morrison's water quality appendix (Morrison, 1989, Appendix 5) for Holloman Air Force Base, 174 measurements were less than 1,000 mg/l (most in the 500-700 mg/l range) and 13 exceeded 1,000 mg/l. (Ref. 23).

TABLE 12
SCENARIO 3: 10% Reduction of Water Use Plus Maximize Surface Water Supply for Alamogordo (AFY)

Group Area (Alamogordo)	1990	1995	2000	2010	2020	2030
Total Demand	6,270	5,927	6,210	6,778	7,345	7,912
Groundwater Supply	948	605	888	1,456	2,023	2,590
Surface Water Supply	5,322	5,322	5,322	5,322	5,322	5,322

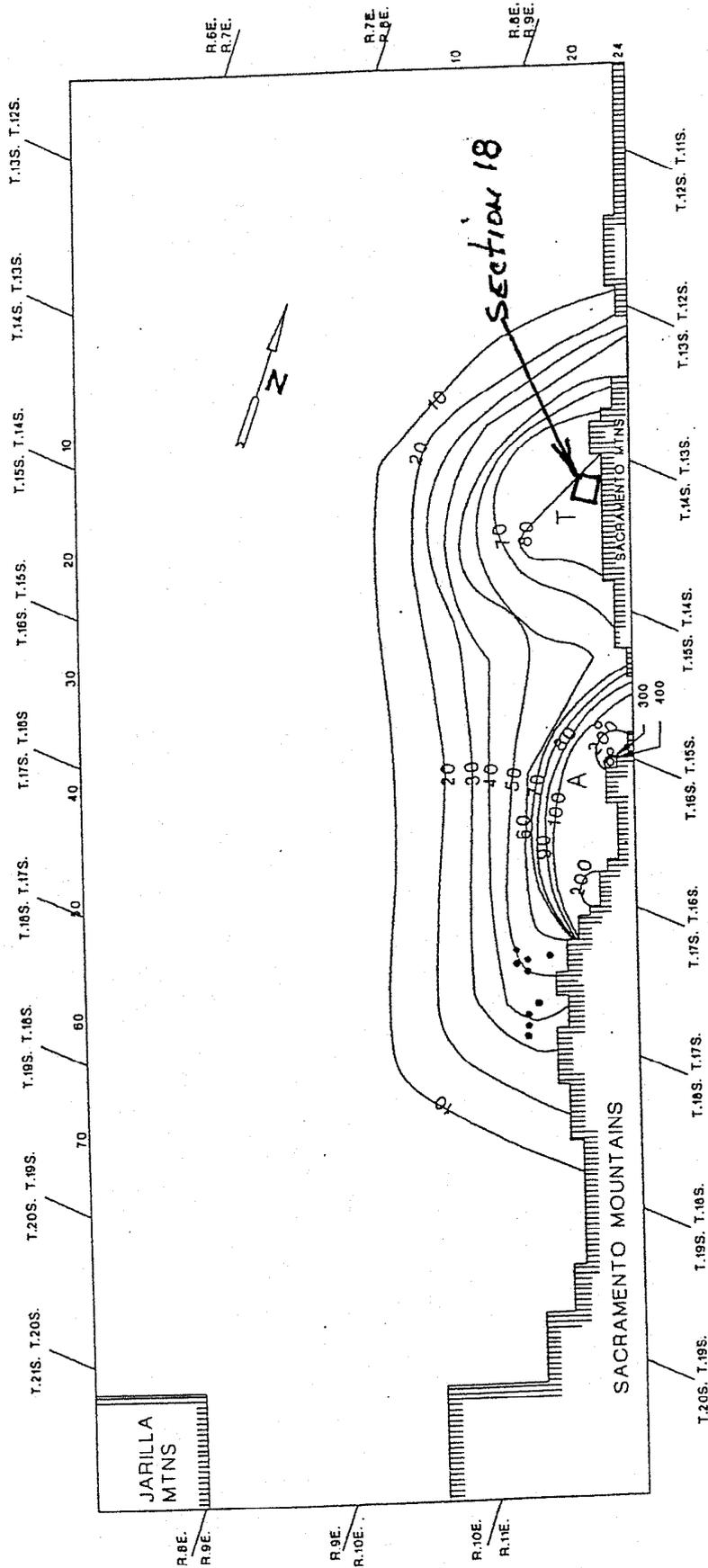
6.1.2.4 Scenario 4 - Because groundwater withdrawals of this magnitude are clearly not feasible in the area near the La Luz well field, the model was run at various lower pumping rates to find a "safe yield" from the well field. With all other agricultural and municipal pumping remaining the same, including a 10% reduction county-wide due to conservation, La Luz well field was reduced until a "safe yield" pumping rate was determined. At a rate of about 1,500 afy, drawdowns in the well field would be about 180 feet by the year 2030, which is considered to be a maximum feasible drawdown. At this drawdown, total dissolved solids (TDS), would probably increase by 300 to 500 mg/l (presently TDS in the La Luz well field area range from 1,200 to 2,300 mg/l;) (Ref. 23). Section 6.2.2 discusses the increase in surface water supply needed to compensate for sustaining future groundwater withdrawals at a maximum rate of 1,500 afy.



LEGEND

- Holleman Air Force Base Well Fields
- Alamogordo Well Fields
- A City of Alamogordo
- T Village of Tularosa
- 100- Drawdown in 2030 relative to 1950s Water Table Elevation

**FIGURE 10
SCENARIO 1:
BASE LINE**



LEGEND

- Holloman Air Force Base Well Fields
- Alamogordo Well Fields
- A City of Alamogordo
- T Village of Tularosa

-100- Drawdown in 2030 relative to 1950s Water Table Elevation

FIGURE 11
SCENARIO 2:
10% REDUCTION OF WATER USE

New Mexico Office of the State Engineer
Well Reports and Downloads

Township: 14S Range: 10E Sections: 18

NAD27 X: Y: Zone: Search Radius:

County: OT Basin: T Number: Suffix:

Owner Name: (First) (Last) Non-Domestic Domestic All

Well Data Report	Avg Depth to Water Report	Water Column Report
	Clear Form	WATERS Menu
		Help

AVERAGE DEPTH OF WATER REPORT 06/01/2001

Bsn	Tws	Rng	Sec	Zone	X	Y	Wells	(Depth Water in Feet)		
								Min	Max	Avg
T	14S	10E	18				34	130	298	169

Record Count: 34

New Mexico Office of the State Engineer
Well Reports and Downloads

Township: 14S Range: 10E Sections: 18

NAD27 X: Y: Zone: Search Radius:

County: OT Basin: T Number: Suffix:

Owner Name: (First) (Last) Non-Domestic Domestic All

Well Data Report	Avg Depth to Water Report	Water Column Report
Clear Form	WATERS Menu	Help

WATER COLUMN REPORT 06/01/2001

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest)

Well Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Depth Well	Depth Water	Water Column	(in feet)
T 00157	14S	10E	18	1	2	2				406	152	254	
T 02911	14S	10E	18	1	2	2				320	298	22	
T 01636	14S	10E	18	1	4	3				260	160	100	
T 00156	14S	10E	18	2	2	2				330	217	113	
T 00454	14S	10E	18	3	1	3				270	170	100	
T 00024 B	14S	10E	18	3	1	3				250	135	115	
T 01011	14S	10E	18	3	1	4				300	230	70	
T 00527	14S	10E	18	3	1	4				275			
T 03085	14S	10E	18	3	2	2				300	178	122	
T 02838	14S	10E	18	3	2	4				240	150	90	
T 00194	14S	10E	18	3	2	4				265	165	100	
T 00426	14S	10E	18	3	2	4				314	170	144	
T 02464	14S	10E	18	3	2	4				235	180	55	
T 00142 CLW	14S	10E	18	3	3	1				250	131	119	
T 00142	14S	10E	18	3	3	1				225	131	94	
T 00142 CLW170405	14S	10E	18	3	3	1				250	131	119	
T 00141	14S	10E	18	3	3	1				230	130	100	
T 03007	14S	10E	18	3	3	4				315	162	153	
T 03753	14S	10E	18	3	4	1				305	147	158	
T 00149	14S	10E	18	3	4	2				250	165	85	
T 00213	14S	10E	18	3	4	3				310	175	135	
T 00212	14S	10E	18	3	4	3				200	135	65	
T 00427	14S	10E	18	3	4	4				250	150	100	
T 00601	14S	10E	18	3	4	4				250	161	89	
T 01477	14S	10E	18	4	1	4				278	178	100	
T 00023	14S	10E	18	4	2	4				327			
T 01640	14S	10E	18	4	3	3				298	160	138	
T 03340	14S	10E	18	4	3	3				240	155	85	
T 02730	14S	10E	18	4	3	4				245	175	70	
T 00687	14S	10E	18	4	3	4				299	192	107	
T 01314	14S	10E	18	4	3	4				304	186	118	
T 00215	14S	10E	18	4	4	1				305			
T 01491	14S	10E	18	4	4	2				278	171	107	
T 02589	14S	10E	18	4	4	3				260	169	91	

<u>T</u>	<u>00148 CLW170656</u>	14S	10E	18	4	4	3			
<u>T</u>	<u>00801</u>	14S	10E	18	4	4	3	340		
<u>T</u>	<u>00148</u>	14S	10E	18	4	4	3	318	155	163
<u>T</u>	<u>00024</u>	14S	10E	18	4	4	4	322	164	158
<u>T</u>	<u>00700</u>	14S	10E	18	4	4	4	430		
								360	204	156

Record Count: 39

New Mexico Office of the State Engineer
Well Reports and Downloads

Township: Range: Sections:

NAD27 X: Y: Zone: Search Radius:

County: Basin: Number: Suffix:

Owner Name: (First) (Last) Non-Domestic Domestic All

Well Data Report	Avg Depth to Water Report	Water Column Report
Clear Form	WATERS Menu	Help

WELL DATA REPORT 06/01/2001

DB File Nbr	Use	Diversion	Owner	Well Number	Tws	Rng	S
T 00023	IRR	0	R. D. CHAMPION	T 00023	14S	10E	18
T 00024	IRR	0	R.D. CHAMPION	T 00024	14S	10E	18
T 00024 A	IRR	15	JERRY C. AND FRANCES L. WALKER	T 00024 A	14S	10E	18
T 00024 AA	IRR	15	DARREN AND/OR SHIELA WEEHUNT	T 00024	14S	10E	18
T 00024 B	IRR	30	TOMMY OR TAMMY GILILLAND	T 00024 B	14S	10E	18
T 00141	IRR	25	ROSS N. BURLESON	T 00141	14S	10E	18
T 00142	IRR	25	FRED L. PARKER	T 00142	14S	10E	18
T 00142 CLW				T 00142 CLW	14S	10E	18
T 00148	IRR	35	HOMER C. & LORETTA A. JOHNSON	T 00148	14S	10E	18
T 00149	IRR	70	JAMES W. DAY	T 00149	14S	10E	18
T 00156	IRR	640	TULAROSA FARMS, INC.	T 00156	14S	10E	18
T 00157	IRR	640	DON C. & LINDA R. BLACKSTONE	T 00157	14S	10E	18
T 00194	IRR	35	DONALD V. HORICK	T 00194	14S	10E	18
T 00212	DOM	3	JAMES B. & JULIA C. LLOYD	T 00212	14S	10E	18
T 00213	IRR	21	JAMES B. & JULIA C. LLOYD	T 00213	14S	10E	18
T 00215	IRR	30	F.F. & BILLIE RICHBURG	T 00215	14S	10E	18
T 00426	IRR	50	DONALD C. HENSLEY	T 00426	14S	10E	18
T 00427	IRR	35	DEAN DAVIS	T 00427	14S	10E	18
T 00454	IRR	35	WILLIAM J. LOCK	T 00454	14S	10E	18
T 00527	DOM	0	JOHN D. MORTON	T 00527	14S	10E	18
T 00601	DOM	3	LARRY DON KELLY	T 00601	14S	10E	18
T 00687	DOM	3	SAM H. SMITH	T 00687	14S	10E	18
T 00700	IRR	9	WESLEY WEEHUNT	T 00700	14S	10E	18
T 00801	IRR	15	NIJONI CASUSE	T 00801	14S	10E	18
T 01011	DOM	3	WILLIAM LAWRENCE	T 01011	14S	10E	18
T 01059	DOM	0	DEAN DAVIS	T 01059	14S	10E	18
T 01198	DOM	0	TOMMY & TAMMY GILILLAND	T 00024 B	14S	10E	18
T 01314	DOM	3	JOE FLINT	T 01314	14S	10E	18
T 01477	DOM	3	RAYMOND GOMEZ	T 01477	14S	10E	18
T 01491	DOM	3	JOHN D. GOMEZ	T 01491	14S	10E	18
T 01636	DOM	3	TONY L. SANCHEZ	T 01636	14S	10E	18
T 01640	IRR	31	ALBERT SAINZ	T 01640	14S	10E	18
T 02464	DOM	3	RICHARD OR BRENDA LYN STAAB	T 02464	14S	10E	18

(quarters are 1=NW 2=NE 3=SE 4=SW)
(quarters are biggest to)

T	02589	DOM
T	02730	DOM
T	02838	DOM
T	02911	DOM
T	03007	IRR
T	03085	DOM
T	03340	DOM
T	03753	DOM

3	DARREN & SHIELA WEEHUNT
3	HOMER C. & LORETTA A. JOHNSON
3	RONALD LE CLAIR
3	TODD R & MARY W BOWSHER
15	JAMES FREDIE & ROMA FAYE LIVIN
3	EDDIE OR LEE ANN NICHOLS
3	ANDREW BRAUCCI
3	RICARDO BELL

T	02589	14S	10E	1
T	02730	14S	10E	1
T	02838	14S	10E	1
T	02911	14S	10E	1
T	03007	14S	10E	1
T	03085	14S	10E	1
T	03340	14S	10E	1
T	03753	14S	10E	1

Record Count: 42

STATE ENGINEER OFFICE
WELL RECORD

181687

Section 1. GENERAL INFORMATION

(A) Owner of well RONALD LE CLAIR Owner's Well No. _____
Street or Post Office Address PO BOX 934
City and State TULAROSA, NM 88352 585-2605

Well was drilled under Permit No. T-2838 and is located in the .
a. SE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 18 Township 14 Range 10E N.M.P.M.
b. Tract No. _____ of Map No. _____ of the _____
c. Lot No. 5 of Block No. _____ of the _____
Subdivision, recorded in OVERO County.
d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in
the _____ Grant _____

(B) Drilling Contractor Statewide Drilling, Inc. License No. WD-601
Address P. O. Box 458
La Luz, NM 88337

Drilling Began 11-29-95 Completed 11-29-95 Type tools AIR ROTARY Size of hole 8 in.
Elevation of land surface or _____ at well is _____ ft. Total depth of well 240 ft.
Completed well is shallow artesian. Depth to water upon completion of well 150 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			
158	165	7	sand & gravel	
190	195	5	sand & gravel	

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet		Length (feet)	Type of Shoe	Perforations	
			Top	Bottom			From	To
5	PVC		0	240	240		180	200
							220	240
6	STEEL		+1	3	4			

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet		Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
From	To				

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet		Cubic Feet of Cement
	Top	Bottom	
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received December 11, 1995 Quad _____ FWL _____ FSL _____
File No. T-2838 Use Domestic Location No. 14S.10E.18.324

RECEIVED
 9 05 AM
 DEC 11 1995
 STATE ENGINEER OFFICE
 LAS CRUCES, NEW MEXICO

Revised June 1972
TRN153531

STATE ENGINEER OFFICE
WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well ANDREW BRAUCCI Owner's Well No. _____
 Street or Post Office Address PO BOX 1082
 City and State TULAROSA, NM 88352 585-9714

Well was drilled under Permit No. T-03340 and is located in the
 a SW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 18 Township 14S Range 10E N.M.P.M.
 b. Tract No. _____ of Map No. _____ of the _____
 c Lot No. _____ of Block No. _____ of the _____
 Subdivision, recorded in OTERO County.
 d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in
 the _____ Grant.

(B) Drilling Contractor Statewide Drilling, Inc. License No. WD-601
P. O. Box 458
 Address La Luz, NM 88337
 Drilling Began 08/25/98 Completed 08/25/98 Type tools AIR ROTARY Size of hole 9 in.
 Elevation of land surface or _____ at well is _____ ft. Total depth of well 240 ft.
 Completed well is shallow artesian Depth to water upon completion of well 155 - ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			
175	180	5	gravel	10
210	220	10	gravel	30

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet		Length (feet)	Type of Shoe	Perforations	
			Top	Bottom			From	To
5	PVC		0	240	240		180	240
6	STEEL		+1	3	4			

Section 4 RECORD OF MUDDING AND CEMENTING

Depth in Feet		Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
From	To				

Section 5. PLUGGING RECORD

Plugging Contractor _____
 Address _____
 Plugging Method _____
 Date Well Plugged _____
 Plugging approved by _____
 State Engineer Representative

No.	Depth in Feet		Cubic Feet of Cement
	Top	Bottom	
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received **September 16, 1998** Quad _____ FWL _____ FSL _____

File No. T-03340 Use Domestic Location No. 14S.10E.8.433

Revised June 1972

STATE ENGINEER OFFICE
WELL RECORD

#180839

Section 1. GENERAL INFORMATION

(A) Owner of well Richard B. Or Brendalyn K. Staab Owner's Well No _____
Street or Post Office Address 201 First Street
City and State Tularosa, NM 88352

Well was drilled under Permit No. T-2464 and is located in the:
a. N 1/2 W SE W NE W SW W of Section 18 Township 14S Range 10E N.M.P.M.
b. Tract No. _____ of Map No. _____ of the _____
c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in Otero County.
d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in
the _____ Grant.

(B) Drilling Contractor Darren Weahunt Drilling License No. WD 630
Address PO Box 905 Tularosa, NM 88352
Drilling Began 11-6-93 Completed 11-11-93 Type tools Rotary Size of hole 8 in.
Elevation of land surface or _____ at well is _____ ft. Total depth of well 235 ft.
Completed well is shallow artesian. Depth to water upon completion of well 180 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			
169	181	12	Red clay	30-40

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet		Length (feet)	Type of Shoe	Perforations	
			Top	Bottom			From	To
4 1/2 PVC sch 40			0	235	235	None	185	215
							215	235

Gravel pack

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet		Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
From	To				

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by: _____
State Engineer Representative

No.	Depth in Feet		Cubic Feet of Cement
	Top	Bottom	
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received NOVEMBER 22, 1993 Quad _____ FWL _____ FSL _____
File No. T-2464 Use DOMESTIC Location No. 14S.10E.18.324

Revised June 1972

STATE ENGINEER OFFICE
WELL RECORD

181778

Section 1. GENERAL INFORMATION

(A) Owner of well Virginia Cheryl Bremer & James E. Bremer Owner's Well No. _____
Street or Post Office Address P.O. Box 152
City and State Mescalero, N.M. 88340

Well was drilled under Permit No. T-2911 and is located in the:
a. 1/4 NE 1/4 NE 1/4 NW 1/4 of Section 18 Township 14S Range 10E N.M.P.M.
b. Tract No. _____ of Map No. _____ of the _____
c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in Otero County.
d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in
the _____ Grant.

(B) Drilling Contractor NEW MEXICO DRILLING, INC License No. WD 471
PO BOX 1423
Address ALAMOGORDO, NM 88311-1423

Drilling Began 4-23-96 Completed 4-24-96 Type tools Rotary Size of hole 8 in.
Elevation of land surface or _____ at well is _____ ft. Total depth of well 320 ft.
Completed well is shallow artesian. Depth to water upon completion of well 298 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			
212	218	6	Gravel	8 gpm.
243	298	55	Boulders	est. 500-600

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet		Length (feet)	Type of Shoe	Perforations	
			Top	Bottom			From	To
5	PVC	160	0	320			280	320

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet		Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
From	To				

Section 5. PLUGGING RECORD

Plugging Contractor _____
Address _____
Plugging Method _____
Date Well Plugged _____
Plugging approved by _____
State Engineer Representative _____

No.	Depth in Feet		Cubic Feet of Cement
	Top	Bottom	
1	8	8	
2	8	8	
3			

FOR USE OF STATE ENGINEER ONLY

Date Received APRIL 29, 1996 Quad _____ FWL _____ FSL _____

File No. T-2911 Use DOMESTIC Location No. 14S.10E.18.122

STATE ENGINEER
L.S. CHAVES, N.M.
198 APR 29 97
REC'D

Water Well Operation Agreement Tularosa Farms, Otero County, New Mexico

All current and future owners of shared wells in Tularosa Farms, located in Otero County, New Mexico, shall be bound by this Agreement with respect to a shared water well and related equipment. The owners of lots within Tularosa Farms have the right to exempt themselves from this Agreement if they choose to obtain water from an alternative source. The operation of the water well shall be handled as follows:

I. Director.

A. Election. Owners shall meet annually to elect the Director for the following year. Owners eligible to vote shall be the Owners of lots within Tularosa Farms on which construction of a residence has begun, as long as the Owners have not exempted themselves from this Agreement by choosing to obtain water from an alternative source. Each lot meeting these preceding conditions shall be allowed one vote. The person receiving the most votes shall be the Director; in the event of a tie vote, the duties of Director shall be held jointly by the persons receiving the same number of votes. The Director shall not be paid and shall not be held liable as a result of his actions.

B. Duties. The Director's duties shall be to (1) pay all utility bills and other bills that arise from the operation of the water well or become necessary for its continued operation, the source of payment being the Operational Fund; (2) contact appropriate repairmen in the event of a malfunction or breakdown, obtain estimates for repairs, order repairs to be made, and pay costs of repairs, the source of payment being the Operational Fund; and (3) Provide the State Engineer's Office with quarterly meter readings for the shared well and take care of any other matters that arise so that uninterrupted water service shall continue, barring acts of God and circumstances beyond the Director's control.

2. Expenses.

A. Monthly Fee. All Owners eligible to vote in accordance with section I.A above shall pay a monthly fee of \$30.00, this fee being used to pay water well utility bills and minor repairs, as well as to build a reserve in the Operational Fund for such major repairs as pump replacement. This fee may be increased or decreased by a majority of Owners at the annual election of the Director.

B. Major Expenses. If the cost of a repair exceeds the reserve in the Operational Fund, the shortfall shall be borne equally by all Owners eligible to vote in accordance with section I.A above.

C. Accounting. All monthly fees and all other monies received from the Owners shall be deposited into a separate checking account for the Operational Fund, and all payments for utility and repair bills shall be made from this account.

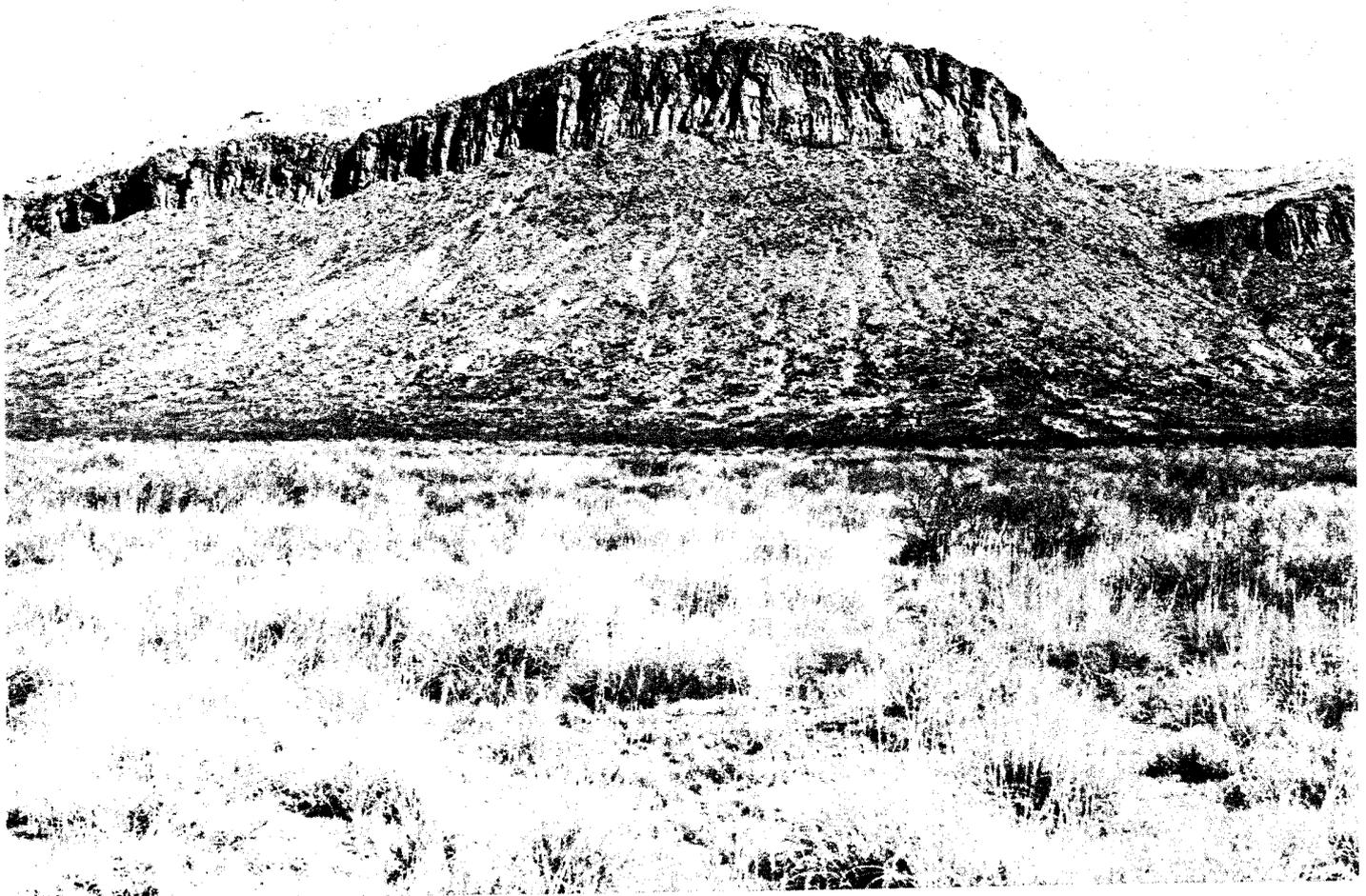
3. Other Matters.

A. All Owners who pay their fees and expenses in accordance with section 2 above shall be deemed to have access to the water well and related equipment and shall have the right to examine the records of the checking account for the Operational Fund.

B. Each Owner shall be responsible for installation and repair of the water meter and water line on his lot.

C. Usage of water by each lot is limited to three-fourths of an acre-foot per year, or a greater percentage there-of. There shall be no more than 4 households per shared well. The State Engineer's Office shall be provided with quarterly meter readings.

**SOIL SURVEY OF
OTERO AREA, NEW MEXICO
PARTS OF OTERO, EDDY, AND CHAVES COUNTIES**

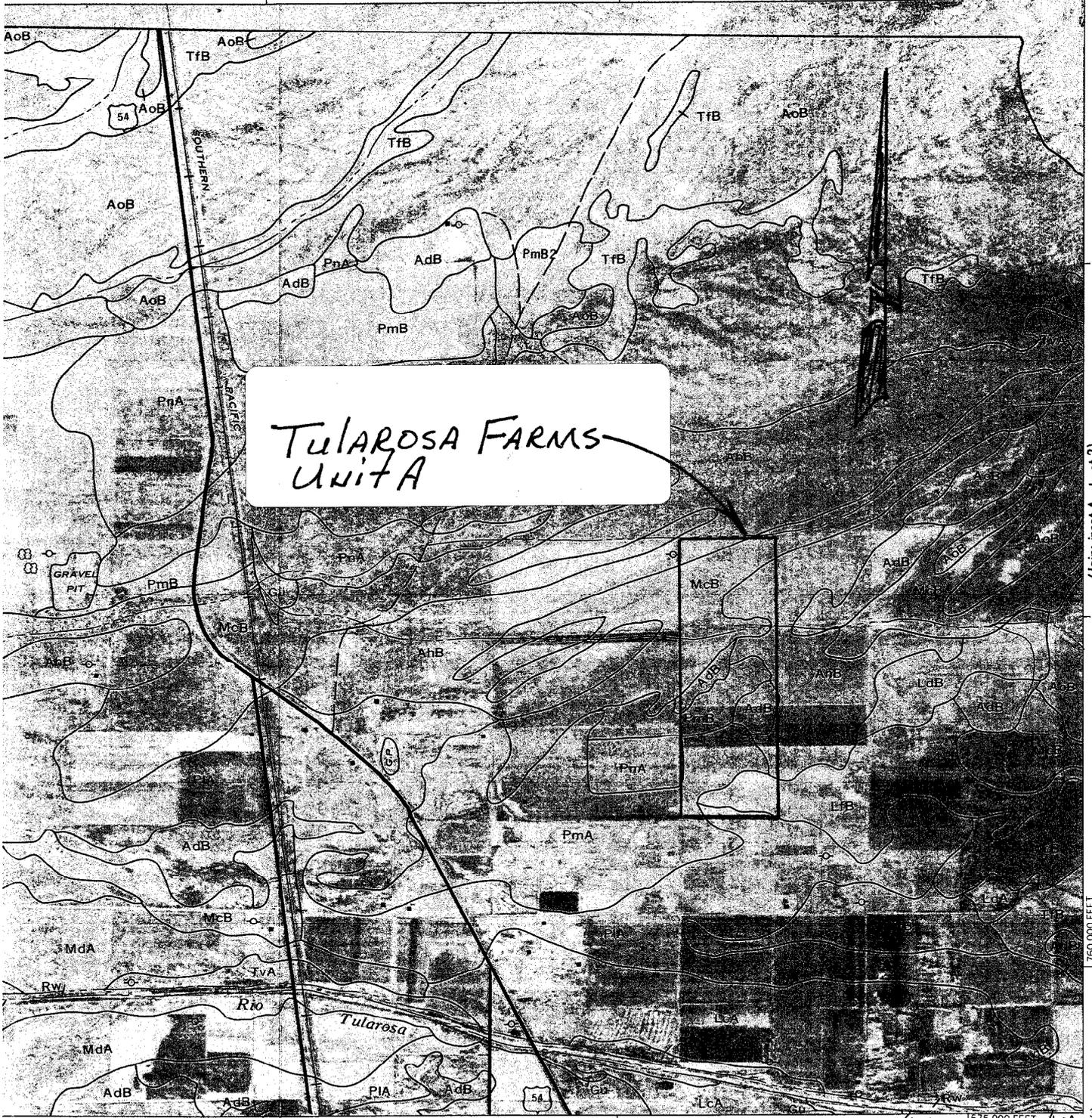


United States Department of Agriculture
Soil Conservation Service and Forest Service
in cooperation with the
New Mexico State University Agricultural Experiment Station

- Exhibit "C" -



R. 9 E. | R. 10 E



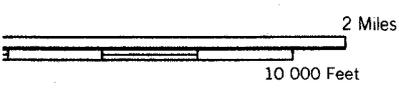
TULAROSA FARMS
UNIT A

(Joins inset A, sheet 2)

1760 000 FEET

(Joins sheet 2)

LcA 1575 000 FEET LcA 32°05'00"
106°00'00"



AdB—Alamogordo-Aztec complex, 1 to 3 percent slopes. This complex consists of small areas of deep, well drained soils. These soils are so intermingled that it is not feasible to separate them on the high detail map. Areas of this complex are relatively narrow and elongated and are 40 to 150 acres in size. They are dissected by small drainageways that are oriented basically east-west. Individual areas of each soil are about 2 to 3 acres in size.

Alamogordo very fine sandy loam makes up about 45 percent of each mapped area. It is mainly on the gently sloping side slopes and bottom land, but some areas are on small ridgetops. Typically, the surface layer is light brown very fine sandy loam about 7 inches thick. The upper 8 inches of the substratum is pinkish white loam that is very high in gypsum. Below that, the substratum to a depth of more than 60 inches is light brown very fine sandy loam that is high in gypsum.

This soil is high in gypsum and is strongly calcareous throughout. Permeability is moderately rapid, and available water capacity is low.

Aztec fine sandy loam makes up 35 percent of each mapped area. It is mainly on the small narrow ridgetops, but may occur anywhere in the unit. Typically, a desert pavement 1 inch thick is on the surface. The surface layer is light brown fine sandy loam about 5 inches thick. The upper 11 inches of the substratum is pinkish white gravelly sandy loam that is very high in gypsum. Below this, the substratum to a depth of more than 60 inches is pinkish white very gravelly fine sandy loam that is high in gypsum.

This soil is high in gypsum and carbonates. Permeability is moderately rapid below a depth of 16 inches, and available water capacity is low.

Included with these soils in mapping are areas of exposed gypsum, Largo very fine sandy loam, Prelo fine sandy loam, and a few scattered wind hummocks. These inclusions make up about 20 percent of this unit.

This complex has low potential for farming. These soils have been used for irrigated crops in some areas, but production was very low. Several limitations that are difficult to overcome adversely affect most crops grown in this area. The amount of gypsum limits the selection of crops to those that are salt tolerant. The gypsum also acts as a barrier to roots of many crops, thus limiting effective rooting depth. Because available water capacity is low, these soils are very droughty. These soils are unsuitable for any type of water-holding structure, such as pit tanks and storage reservoirs and dams, unless plastic liners are used. Solubility of the gypsum, seepage, and compressibility are the major restrictions on these types of structure.

These soils have very low potential for windbreak species. Onsite investigation is needed to determine what adapted species, if any, can be grown. Special site preparation is necessary.

Increased population growth in this county and development of small ranchettes has resulted in increased urbanization. The shallow depth to gypsum and its inherent properties limit foundations and streets and roads. Good design and careful installation and the use of suitable fill help to overcome these problems. Septic tank absorption fields are not restricted, but contamination of ground water may result from moderately rapid permeability, a high concentration of facilities, and formation of pits as gypsum dissolves.

The potential of this complex for wildlife habitat is low. The soils produce only limited pasture and hay that provide very little food and some cover for a few species of wildlife, including scaled and Gambel quail and mourning and white-winged dove. Russian-olive, several shrub and forb species, and grasses planted along unlined irrigation ditches, fence rows, odd areas, and flood plains improve habitat. Protected strip plantings of grain or green forage on the included soils also provide food and cover.

TABLE 8.--BUILDING SITE DEVELOPMENT ON HIGH DETAIL MAP UNITS

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
AdB*: Alamogordo-----	Slight-----	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
Aztec-----	Severe: small stones.	Slight-----	Slight-----	Slight-----	Slight.

TABLE 10.--SANITARY FACILITIES ON HIGH DETAIL MAP UNITS

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill.
AdB*: Alamogordo-----	Slight-----	Severe: seepage.	Slight-----	Slight-----	Poor: area reclaim.
Aztec-----	Slight-----	Severe: seepage.	Slight-----	Slight-----	Poor: area reclaim, small stones.

TABLE 12.--CONSTRUCTION MATERIALS ON HIGH DETAIL MAP UNITS

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AdB*: Alamogordo-----	Fair: area reclaim, low strength.	Unsuited-----	Unsuited-----	Poor: thin layer, area reclaim, excess salt.
Aztec-----	Good-----	Poor: excess fines.	Fair: excess fines.	Poor: small stones, excess lime, area reclaim.

TABLE 14.--WATER MANAGEMENT ON HIGH DETAIL MAP UNITS

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
AdB*: Alamogordo-----	Seepage, slope.	Low strength, piping, excess salt.	Excess salt-----	Droughty, excess salt.	Piping, rooting depth, slope.
Aztec-----	Seepage, slope.	Hard to pack, seepage, unstable fill.	Slope-----	Droughty, slope.	Slope, small stones.

TABLE 20.--ENGINEERING PROPERTIES AND CLASSIFICATIONS OF SOILS IN HIGH DETAIL MAP UNITS

Soil name and map symbol	Depth In	USDA texture	Classification		Frag-ments > 3 inches Pct	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
AdB*: Alamogordo-----	0-7	Very fine sandy loam.	ML, SM, GM	A-4, A-2	0	50-100	45-90	35-85	25-60	20-30	NP-5
	7-15	Loam, very fine sandy loam, fine sandy loam.	ML	A-4	0	95-100	90-100	70-95	50-75	20-30	NP-5
	15-60	Loam, very fine sandy loam, fine sandy loam.	SM, ML	A-4	0	95-100	90-100	70-100	45-75	25-35	NP-10
Aztec-----	0-5	Fine sandy loam	GM	A-2	0-5	25-40	20-35	20-35	15-30	---	NP
	5-16	Gravelly sandy loam, gravelly fine sandy loam.	GM, SM	A-1, A-2	0-5	50-70	45-65	30-50	15-30	---	NP
	16-26	Very gravelly fine sandy loam, gravelly sandy loam, very gravelly fine sandy loam.	GM	A-1, A-2	0-5	45-60	40-55	25-45	15-30	---	NP
	26-60	Very gravelly very sandy loam, very gravelly loamy sand.	GP-GM, GM	A-1	0-5	25-55	20-50	10-35	5-20	---	NP

TABLE 22.--PHYSICAL AND CHEMICAL PROPERTIES OF SOIL IN HIGH DETAIL MAP UNITS

Soil name and map symbol	Depth In	Permeability In/hr	Available water capacity In/in	Soil reaction pH	Salinity Mmhos/cm	Shrink-swell potential	Erosion factors		Wind erodibility group
							K	T	
AdB*: Alamogordo-----	0-7	2.0-6.0	0.06-0.14	7.9-8.4	4-16	Low-----	0.43	1	3
	7-15	2.0-6.0	0.04-0.09	7.9-8.4	>4	Low-----	0.55		
	15-60	2.0-6.0	0.06-0.10	7.9-8.4	>4	Low-----	0.49		
Aztec-----	0-5	2.0-6.0	0.10-0.14	7.9-8.4	<2	Low-----	0.24	5	3
	5-16	0.2-0.6	0.07-0.11	7.9-8.4	<2	Low-----	0.17		
	16-26	2.0-6.0	0.06-0.10	7.9-8.4	2-4	Low-----	0.17		
	26-60	6.0-20	0.03-0.07	7.4-8.4	4-8	Low-----	0.15		

TABLE 24.--SOIL AND WATER FEATURES OF HIGH DETAIL MAP UNITS

Soil name and map symbol	Hydro-logic group	Flooding			Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Hard-ness	Depth	Hard-ness		Uncoated steel	Concrete
AdB*: Alamogordo-----	B	None-----	---	---	In		In		---	High-----	High.
Aztec-----	B	None-----	---	---	In		In		---	High-----	High.

AhB—Alamogordo-McCullough sandy loams, hummocky, 0 to 3 percent slopes. This complex consists of medium to large areas of deep, well drained soils on pediment fans and foot slopes. These soils are so intermingled that it is not feasible to separate them on the high detail map. Areas of this complex are wide and elongated and are 50 to 200 acres in size. The areas are oriented northeast-southwest. Individual areas of each soil are generally smaller than 3 acres.

Alamogordo sandy loam makes up about 40 percent of each mapped area. It is on the lower parts of the slightly undulating landscape. Typically, the surface layer is reddish brown sandy loam about 6 inches thick. The upper 9 inches of the substratum is light brown fine sandy loam that is high in gypsum and contains as much as 10 percent gravel. Below that, the substratum is reddish brown gravelly loam that is thinly stratified with reddish brown very gravelly sandy loam to very gravelly silt loam. Gypsum content decreases with depth. This soil has more gravel and is redder than typical Alamogordo soils.

This soil is calcareous throughout and is high in gypsum in the upper part of the substratum. Permeability is moderately rapid, and available water capacity is low.

McCullough sandy loam makes up about 35 percent of each mapped area. It is on the higher parts of the slightly undulating landscape. Typically, the surface layer is reddish brown sandy loam about 6 inches thick. In some areas a desert pavement is on the surface. The upper 16 inches of the substratum is reddish brown sandy loam and contains accumulations of gypsum as small nests of very fine crystals and as pendants underneath the pebbles. Below that, the substratum to a depth of more than 60 inches is reddish brown sandy loam that does not have segregations of gypsum. Gypsum content decreases with depth. Gypsum is absent in some places.

This soil is calcareous throughout. Permeability is moderately rapid, and available water capacity is low.

Included with these soils in mapping are some areas of Tobler soils in the small shallow drainageways that meander across the map unit. Also included are a few small intermingled areas of Prelo and Largo soils at lower positions on the landscape. These included soils make up about 25 percent of this complex. Individual areas are smaller than 3 acres. Small wind hummocks of sandy loam, fine sandy loam, very fine sandy loam, or loam are scattered throughout the unit.

This complex has low potential for farming. Low natural fertility, gypsum content, and low water-holding capacity are limitations, but they can be partially overcome by proper management. The wind hummocks limit farming and should be leveled if the soils are to be used. Some areas have been leveled and are irrigated. Cotton, small grains, and alfalfa are grown, but yields are low except where large amounts of fertilizer have been added and irrigation water is well managed. This complex has a severe erosion hazard if the surface is left bare, especially during spring and summer when winds are strong and heavy rain storms occur.

These soils have low potential for adapted windbreak species. Trees such as Arizona cypress, Rocky Mountain juniper, green ash, Siberian elm, and Russian-olive and the shrubs squawbush, lilac, and American plum can be grown, but in places special treatment is required to overcome specific soil conditions.

These soils have moderate to high potential for most urban uses. Low strength, pitting, and corrosivity can be overcome by good design and careful installation and by use of noncorrodible materials.

This complex has moderate potential for wildlife habitat. The McCullough soil produces pasture, hay, orchards, and row crops that provide food and some cover for a variety of wildlife, including scaled and Gambel quail and mourning and white-winged dove. Russian-olive, cottonwood, several shrub and forb species, and grasses planted along unlined irrigation ditches, fence rows, odd areas, and flood plains improve habitat. Protected strip plantings of grain or green forage also provide food and cover.

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TABLE 8.--BUILDING SITE DEVELOPMENT ON HIGH DETAIL MAP UNITS

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
AhB*: Alamogordo-----	Slight-----	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
McCullough-----	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: low strength.

TABLE 10.--SANITARY FACILITIES ON HIGH DETAIL MAP UNITS

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AhB*: Alamogordo-----	Slight-----	Severe: seepage.	Slight-----	Slight-----	Poor: area reclaim.
McCullough-----	Slight-----	Severe: seepage.	Slight-----	Slight-----	Good.

TABLE 12.--CONSTRUCTION MATERIALS ON HIGH DETAIL MAP UNITS

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AhB*: Alamogordo-----	Fair: area reclaim, low strength.	Unsuited-----	Unsuited-----	Poor: thin layer, area reclaim, excess salt.
McCullough-----	Fair: low strength.	Unsuited-----	Unsuited-----	Good.

TABLE 14.--WATER MANAGEMENT ON HIGH DETAIL MAP UNITS

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
AhB*: Alamogordo-----	Seepage, slope.	Low strength, piping, excess salt.	Excess salt-----	Droughty, excess salt.	Piping, rooting depth, slope.
McCullough-----	Seepage-----	Piping-----	Favorable-----	Droughty, soil blowing.	Soil blowing.

TABLE 20.--ENGINEERING PROPERTIES AND CLASSIFICATIONS OF SOILS IN HIGH DETAIL MAP UNITS

[The symbol < means less than; > means greater than. Absence of an entry means data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches Pct	Percentage passing sieve number--				Liquid limit Pct	Plasticity index
			Unified	AASHTO		4	10	40	200		
AhB*: Alamogordo-----	0-6	Sandy loam-----	SM, GM	A-2	0	50-100	45-90	35-60	15-30	---	NP
	6-15	Loam, very fine sandy loam, fine sandy loam.	ML	A-4	0	95-100	85-100	70-95	50-75	20-30	NP-5
	15-60	Gravelly loam, gravelly very fine sandy loam, gravelly fine sandy loam.	SM, ML	A-4	0	60-80	55-75	50-70	35-50	25-35	NP-10
AhB*: McCullough-----	0-6	Sandy loam-----	SM, ML	A-2, A-4	0	100	95-100	60-90	30-55	20-30	NP-5
	6-22	Fine sandy loam, loam, sandy loam.	SM, ML	A-4	0	100	90-100	70-90	35-65	20-30	NP-5
	22-60	Fine sandy loam, loam, sandy loam.	SM, ML	A-2, A-4	0	90-100	85-95	55-90	25-55	20-30	NP-5

TABLE 22.--PHYSICAL AND CHEMICAL PROPERTIES OF SOIL IN HIGH DETAIL MAP UNITS

[The symbol < means less than; > means greater than. The erosion tolerance factor (T) is for the entire profile. Wind erodibility group is for the surface layer. Absence of an entry means data were not available or were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group
							K	T	
AhB*: Alamogordo-----	0-6	> 2.0-6.0	0.05-0.10	7.9-8.4	4-16	Low-----	0.37	1	3
	6-15	2.0-6.0	0.04-0.09	7.9-8.4	>4	Low-----	0.55		
	15-60	2.0-6.0	0.06-0.10	7.9-8.4	>4	Low-----	0.49		
McCullough-----	0-6	2.0-6.0	0.11-0.15	7.9-8.4	<2	Low-----	0.24	5	3
	6-22	2.0-6.0	0.11-0.16	7.9-8.4	<2	Low-----	0.24		
	22-60	2.0-6.0	0.11-0.16	7.9-8.4	<2	Low-----	0.24		

TABLE 24.--SOIL AND WATER FEATURES OF HIGH DETAIL MAP UNITS

Soil name and map symbol	Hydro-logic group	Flooding			Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Hard-ness	Depth	Hard-ness		Uncoated steel	Concrete
AhB*: Alamogordo-----	B	None-----	---	---	>60	---	---	---	---	High-----	High.
McCullough-----	B	None-----	---	---	>60	---	---	---	---	High-----	Low.

LfB—Largo-Ogral complex, 1 to 3 percent slopes.

This complex consists of medium-sized areas of deep, well drained soils on nearly level to very gently sloping pediments that are slightly lower than the surrounding landscape. The soils are so intermingled that it was not feasible to separate them on the high detail map. Areas of this complex are elongated and are 60 to 350 acres in size. Individual areas of each soil are generally smaller than 3 acres.

Largo very fine sandy loam makes up 55 percent of each mapped area. Typically, the surface layer is reddish brown very fine sandy loam about 6 inches thick. The next layer is reddish brown silt loam about 19 inches thick. The substratum is reddish brown silty clay loam to a depth of more than 60 inches.

This soil is strongly calcareous throughout. Permeability is moderately slow, and available water capacity is high. The root zone is deep and when moist is easily penetrated by plant roots.

Ogral very fine sandy loam makes up about 30 percent of each mapped area. Typically, the surface layer is reddish brown very fine sandy loam about 6 inches thick. The next layer is reddish brown fine sandy loam about 12 inches thick. The substratum is reddish brown very gravelly fine sandy loam to a depth of more than 60 inches. In about 70 percent of the mapped area, 30 percent of the surface is covered by a gravelly desert pavement.

This soil is strongly calcareous throughout. Permeability is moderately rapid, and available water capacity is low. The root zone is deep and can be penetrated by roots of most plants.

Included in mapping are small areas of Emot, Tome, and Alamogordo Variant soils and Largo sandy loam. Inclusions make up about 15 percent of the unit. Individual areas are generally smaller than 2 acres.

This complex has low potential for farming because of the low available water capacity of the Ogral soil. The complex pattern of the Largo and Ogral soils makes it very difficult to properly manage irrigation water. Small areas of irrigated pasture or hay are more suitable for this complex than fields of most row crops. Commercial

fertilizer increases yields. The water erosion hazard is severe if these soils are disturbed.

Increased population growth and development of small ranchettes has increased urbanization. The moderate shrink-swell potential and low strength of the Largo soils limit dwellings and local roads and streets but can be overcome by good design and careful installation and by use of suitable fill material. The moderately slow permeability of the Largo soils limits septic tank filter fields but can be overcome by increasing the size of the filter field or modifying the design. Filter fields are not restricted in the Ogral soils, but because of the gravelly substratum, underground water may be contaminated.

These soils have moderate potential for adapted wind-break species. Trees such as Arizona cypress, Rocky Mountain juniper, green ash, Siberian elm, and Russian-olive and the shrubs squawbush, lilac, and American plum can be grown with little or no difficulty. Some other species can be grown, but special treatment is required to overcome specific soil conditions.

The potential of this complex for wildlife habitat is moderate. The soils produce limited pasture, hay, orchards, and row crops that provide some food and some cover for a variety of wildlife, including scaled and Gambel quail and mourning and white-winged dove. Russian-olive, cottonwood, several shrub and forb species, and grasses planted along unlined irrigation ditches, fence rows, odd areas, marshy sites, and flood plains improve habitat. Protected strip plantings of grain or green forage also provide food and cover.

TABLE 10.--SANITARY FACILITIES ON HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LFB*: Largo-----	Severe: percs slowly.	Moderate: slope, seepage.	Slight-----	Slight-----	Good.
Ogral-----	Slight-----	Severe: seepage, small stones.	Slight-----	Slight-----	Poor: small stones, area reclaim.

TABLE 12.--CONSTRUCTION MATERIALS ON HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
LFB*: Largo-----	Fair: shrink-swell, low strength.	Unsuited-----	Unsuited-----	Good.
Ogral-----	Good-----	Poor: excess fines, small stones.	Poor: excess fines.	Fair: area reclaim, small stones.

TABLE 14.--WATER MANAGEMENT ON HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
LFB*: Largo-----	Slope, seepage.	Piping, low strength.	Percs slowly, slope.	Erodes easily, percs slowly, slope.	Piping, percs slowly, erodes easily.
Ogral-----	Seepage-----	Hard to pack, piping, seepage.	Slope-----	Droughty, erodes easily, slope.	Small stones.

TABLE 20.--ENGINEERING PROPERTIES AND CLASSIFICATIONS OF SOILS IN HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Depth In	USDA texture	Classification		Frag- ments > 3 inches Pct	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
LFB*: Largo-----	0-6	Very fine sandy loam.	CL-ML, CL	A-4	0	100	100	95-100	50-70	20-30	5-10
	6-25	Silt loam, very fine sandy loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	95-100	80-95	25-35	5-15
	25-60	Loam, silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	95-100	75-95	25-35	5-15
LFB*: Ogral**-----	0-6	Very fine sandy loam.	SM, ML	A-4	0	70-100	65-100	50-95	40-65	20-30	NP-5
	6-18	Fine sandy loam, sandy loam.	SM, ML	A-2, A-4	0	90-100	85-100	55-80	25-55	20-30	NP-5
	18-60	Very gravelly fine sandy loam, very gravelly sandy loam.	GP-GM, GM	A-1	0	25-50	20-45	15-40	5-25	20-30	NP-5

TABLE 22.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS IN HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Depth In	Permeability In/hr	Available water capacity In/in	Soil reaction pH	Salinity Mmhos/cm	Shrink-swell potential	Erosion factors		Wind erodibility group
							K	T	
LfB*: Largo-----	0-6 6-25 25-60	0.6-2.0 0.2-0.6 0.2-0.6	0.16-0.21 0.16-0.21 0.16-0.21	7.4-8.4 7.4-8.4 7.4-8.4	<4 <4 <4	Low----- Moderate Moderate	0.49 0.49 0.49	5	4L
Ogral-----	0-6 6-18 18-60	0.6-6.0 2.0-6.0 2.0-6.0	0.13-0.17 0.08-0.15 0.04-0.08	7.9-8.4 7.9-8.4 7.9-8.4	<2 <2 <2	Low----- Low----- Low-----	0.43 0.43 0.15	1	3

TABLE 24.--SOIL AND WATER FEATURES OF HIGH DETAIL MAP UNITS

[Absence of an entry indicates the feature is not a concern. See Glossary for descriptions of symbols and such terms as "rare," "brief," and "perched." The symbol < means less than; > means greater than]

Soil name and map symbol	Hydro-logic group	Flooding			Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth In	Hardness	Depth In	Hardness		Uncoated steel	Concrete
LfB*: Largo-----	B	Rare to occasional.	Very brief	Jun-Oct	>60	---	---	---	---	High-----	Low.
Ogral-----	B	None-----	---	---	>60	---	---	---	---	High-----	Low.
McB----- McCullough	B	None-----	---	---	>60	---	---	---	---	High-----	Low.
MdA----- McCullough Variant	B	None-----	---	---	>60	---	---	---	---	High-----	Low.
NaC*: Nickel-----	B	None-----	---	---	>60	---	---	---	---	High-----	Low.

See footnote at end of table.

McB—McCullough sandy loam, 1 to 3 percent slopes. This deep, well drained, very gently sloping soil is on lower parts of toe slopes of pediments. Slopes are smooth and slightly concave. Individual areas are 20 to 150 acres in size.

Typically, the surface layer is reddish brown sandy loam about 5 inches thick. The next layer is reddish brown fine sandy loam about 17 inches thick. The upper 7 inches of the substratum is reddish brown very gravelly coarse sand. Below that, the substratum is reddish brown fine sandy loam to a depth of more than 60 inches.

Included with this soil in mapping are some areas of McCullough fine sandy loam. Also included are small intermingled areas of Largo, Prelo, Alamogordo, and Holoman soils. Small wind hummocks are randomly scattered over the unit. Many shallow drainageways dissect the unit. These drainageways are mostly less than 12 inches deep and are very gravelly. The included soils make up about 30 percent of this unit.

This soil is calcareous throughout. The lower part of the substratum has a few, small, soft masses of gypsum. Permeability is moderately rapid, and available water capacity is moderate. Tilth is good and the soil can be worked over a wide range of moisture conditions. The root zone is deep and is easily penetrated by plant roots.

This soil has high potential for farming. The potential for irrigation is limited by rapid percolation and moderate available water capacity. Pasture and hay have higher potential than most cultivated crops. The hazard of wind erosion is very severe if this soil is disturbed or if the plant cover is removed. If row crops or small grains are grown, good tilth can be maintained by growing green manure crops and by returning crop residue to the soil. Minimum tillage, cover crops, stripcropping, and windbreaks reduce runoff and water and wind erosion. Commercial fertilizer increases the yields of all crops.

This soil has moderate potential for adapted windbreak species. Trees such as Arizona cypress, Rocky Mountain juniper, green ash, Siberian elm, and Russian-olive and the shrubs squawbush, lilac, and American plum can be grown with little or no difficulty, but more frequent irrigation is necessary than for most soils because of the low water holding capacity. Other species can be grown, but special treatment is required to overcome specific soil conditions.

This soil has high potential for most urban uses. Septic tank absorption fields work well in this soil, but if the population density becomes too high, contamination of ground water and seepage at the lower elevations are possible. Central sewage systems would eliminate the problem. These areas should be protected from runoff water from surrounding areas. To reduce wind erosion, a mulch should be maintained on all areas, such as lawns and rights-of-way for roads, until a plant cover is established.

The potential for wildlife habitat is high to moderate. This soil produces pasture, hay, orchards, and row crops that provide food and some cover for a variety of wildlife, including scaled and Gambel quail and mourning and white-winged dove. Russian-olive, cottonwood, several shrub and forb species, and grasses planted along unlined irrigation ditches, fence rows, odd areas, marshy sites, and flood plains improve habitat. Protected strip plantings of grain or green forage also provide food and cover.

TABLE 8.--BUILDING SITE DEVELOPMENT ON HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
McB-McCullough	Slight	Slight	Slight	Slight	Moderate: low strength.

TABLE 10.--SANITARY FACILITIES ON HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
McB-McCullough	Slight	Severe: seepage.	Slight	Slight	Good.

TABLE 12.--CONSTRUCTION MATERIALS ON HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
McB-McCullough	Fair: low strength.	Unsuited	Unsuited	Good.

TABLE 14.--WATER MANAGEMENT ON HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
McB-McCullough	Seepage	Piping	Favorable	Droughty, soil blowing.	Soil blowing.

TABLE 20.--ENGINEERING PROPERTIES AND CLASSIFICATIONS OF SOILS IN HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Depth in	USDA texture	Classification		Fragments > 3 inches Pct	Percentage passing sieve number--				Liquid limit Pct	Plasticity index
			Unified	AASHTO		4	10	40	200		
McB** McCullough	0-5	Sandy loam	SM, ML	A-2, A-4	0	70-100	65-100	50-90	30-55	20-30	NP-5
	5-22	Fine sandy loam, loam, very fine sandy loam.	SM, ML	A-4	0	100	90-100	70-90	35-65	20-30	NP-5
	22-29	Very gravelly coarse sand, very gravelly sandy loam, gravelly sandy loam.	GP-GM, GM, SP-SM, SM	A-1	0	40-75	35-70	25-55	5-25	---	NP
	29-60	Fine sandy loam, loam, sandy loam.	SM, ML	A-2, A-4	0	90-100	85-95	55-90	25-55	20-30	NP-5

TABLE 22.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS IN HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Depth in	Permeability in/hr	Available water capacity in/in	Soil reaction pH	Salinity mmhos/cm	Shrink-swell potential	Erosion factors		Wind erodibility group
							K	T	
McB-McCullough	0-5	2.0-6.0	0.11-0.15	7.9-8.4	<2	Low	0.24	5	3
	5-22	2.0-6.0	0.11-0.16	7.9-8.4	<2	Low	0.24		
	22-29	2.0-6.0	0.07-0.09	7.9-8.4	<2	Low	0.17		
	29-60	2.0-6.0	0.11-0.16	7.9-8.4	<2	Low	0.24		

TABLE 24.--SOIL AND WATER FEATURES OF HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Hydro-logic group	Flooding			Bedrock		Cemented sand		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
McB-McCullough	B	None	---	---	>50	---	---	---	---	High	Low.

BK 1209 Pg 696

PmA—Prelo silt loam, 0 to 1 percent slopes. This deep, well drained, nearly level soil is on the broad, somewhat dissected basin floor and on alluvial toe slopes (fig. 13). Slopes are smooth and slightly convex. Individual areas are 40 to 200 acres in size. A few major drainageways dissect the unit, and many smaller ones meander across the unit into the major drainageways.

Typically, the surface layer is reddish brown silt loam about 8 inches thick. In some areas the surface layer is 12 inches thick and has very thin platy structure or is very highly stratified. In these areas the surface layer was deposited by water and some of the very thin strata are clay loam. The subsoil is about 14 inches thick. The upper part of the subsoil is reddish brown silty clay loam, and the lower part is reddish brown silt loam. The subsoil contains common, white, soft masses and soft filaments of gypsum. The upper part of the substratum is reddish brown silt loam, and the lower part is light reddish brown silt loam to a depth of more than 60 inches. Content of gypsum in the form of small crystals and soft filaments increases with depth in the substratum.

Included with this soil in mapping are small areas of Prelo soils that are eroded or that are fine sandy loam and sandy loam. Also included are a few intermingled areas of Alamogordo and Largo soils. Wind hummocks less than 30 inches high, are in some areas. Included soils make up about 20 percent of the unit. Individual areas are generally smaller than 2 acres.

This soil is calcareous throughout. Gypsum content increases with depth. Permeability is moderately slow, and available water capacity is high. Tilth is poor, and the soil can be worked only over a moderate range of moisture conditions. The root zone is deep and is easily penetrated by plant roots.

This soil has a high potential for row crops, small grains, irrigated pasture, and hay. The moderately slow permeability limits farming unless irrigation water is well managed. Tilth can be maintained by returning crop residue to the soil and growing green manure crops in the cropping system. The wind erosion hazard is severe if cultivated crops are grown, especially in spring, when strong winds are common. Minimum tillage, cover crops, strip cropping, and windbreaks reduce runoff and wind erosion. All crops except legumes respond to nitrogen. Legumes respond to phosphate.

This soil has high potential for adapted windbreak species. Trees such as Arizona cypress, Rocky Mountain juniper, green ash, Siberian elm, and Russian-olive and the shrubs squawbush, lilac, and American plum can be grown with little or no difficulty.

This soil has high potential for most urban uses. Low strength, moderate shrink-swell potential, and susceptibility to piping can be overcome by good design and careful installation and by use of suitable fill material for foundations. The gypsum in the substratum can corrode underground utilities, but the use of noncorrodible materials overcomes this limitation. The moderately slow permeability limits septic tank absorption fields but can be overcome by increasing the size of the absorption area or modifying the filter field itself.

The potential for wildlife habitat is high. This soil produces pasture, hay, orchards, and row crops that provide food and some cover for a variety of wildlife, including scaled and Gambel quail and mourning and white-winged dove. Russian-olive, cottonwood, several shrub and forb species, and grasses planted along unlined irrigation ditches, fence rows, odd areas, marshy sites, and flood plains improve habitat. Protected strip plantings of grain or green forage also provide food and cover.

PmB—Prelo silt loam, 1 to 3 percent slopes. This deep, well drained, very gently sloping soil is on the broad, somewhat dissected basin floor. Slopes are smooth and slightly convex. Individual areas are 60 to 150 acres in size. A few major drainageways dissect the unit, and many smaller ones meander across the unit into the major drainageways.

Typically, the surface layer is reddish brown silt loam 6 inches thick. The subsoil is about 14 inches thick. The upper part of the subsoil is reddish brown silty clay loam, and the lower part is reddish brown silt loam. The subsoil has common, white, soft masses and soft filaments of gypsum. The upper part of the substratum is reddish brown silt loam, and the lower part to a depth of more than 60 inches is reddish brown silt loam and contains crystals and soft filaments of gypsum.

Included with this soil in mapping are small areas of Prelo soils that are eroded or that are fine sandy loam and sandy loam. Also included are a few intermingled areas of Prelo silt loam, 0 to 1 percent slopes, and Alamogordo and Largo soils and a few wind hummocks. The included soils make up about 15 percent of the unit. Individual areas are generally smaller than 3 acres.

This soil is calcareous throughout. Gypsum content increases with depth. Permeability is moderately slow, and available water capacity is high. Tilth is poor, and the soil can be worked only over a moderate range of moisture conditions. The root zone is deep and when moist is readily penetrated by plant roots.

This soil has high potential for row crops, small grains, pasture, and hay if adequate water is available. The moderately slow permeability limits farming unless irrigation water is well managed. Tilth can be maintained by returning crop residue to the soil and growing green manure crops in the cropping system. The hazard of wind erosion is severe if cultivated crops are grown, especially in spring when strong winds are common. The water erosion hazard is moderate. Minimum tillage, cover crops, stripcropping, and the windbreaks reduce runoff and water and wind erosion.

This soil has high potential for most urban uses. Low strength, moderate shrink-swell potential, and susceptibility to piping can be overcome by good design and careful installation and by use of suitable fill material for foundations. The high amount of gypsum in the substratum can corrode underground utilities. Use of noncorrodible materials overcomes this limitation. The moderately slow permeability limits septic tank absorption fields but can be overcome by increasing the size of the absorption area or modifying the filter field.

The potential for wildlife habitat is high. This soil produces pasture, hay, orchards and row crops that provide food and some cover for a variety of wildlife, including scaled and Gambel quail and mourning and white-winged dove. Russian-olive, cottonwood, several shrub and forb species, and grasses planted along unlined irrigation ditches, fence rows, odd areas, marshy sites, and flood plains improve habitat. Protected strip plantings of grain or green forage also provide food and cover.

TABLE 8.--BUILDING SITE DEVELOPMENT ON HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
PkA, PlA, PmA, PmB, PmB2, PnA-Prelo	Slight	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength.	Severe: low strength.

TABLE 10.--SANITARY FACILITIES ON HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PkA, PlA, PmA-Prelo	Severe: percs slowly.	Slight	Moderate: too clayey.	Slight	Fair: area reclaim, too clayey.
PmB, PmB2-Prelo	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight	Fair: area reclaim, too clayey.
PnA-Prelo	Severe: percs slowly.	Slight	Moderate: too clayey.	Slight	Fair: area reclaim, too clayey.

TABLE 12.--CONSTRUCTION MATERIALS ON HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PkA, PlA, PmA, PmB, PmB2, PnA, PpA-Prelo	Poor: low strength.	Unsuited	Unsuited	Fair: too clayey.

TABLE 14.--WATER MANAGEMENT ON HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
PkA, PlA, PmA-Prelo	Favorable	Low strength	Percs slowly, excess salt.	Excess salt	Erodes easily.
PmB, PmB2-Prelo	Favorable	Low strength	Percs slowly, excess salt, slope.	Erodes easily, slope, excess salt.	Erodes easily.
PnA, PpA-Prelo	Favorable	Low strength	Percs slowly, excess salt.	Excess salt	Erodes easily.

TABLE 20.--ENGINEERING PROPERTIES AND CLASSIFICATIONS OF SOILS IN HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
PlA- Prelo	0-4	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	100	100	60-95	40-65	15-25	NP-5
	4-26	Silty clay loam, silt loam, clay loam.	CL	A-6, A-7	0	100	100	95-100	75-95	30-45	10-20
	26-60	Silty clay loam, clay loam, silt loam.	CL	A-6	0	100	100	95-100	75-95	30-40	10-20
PmA- Prelo	0-8	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	90-100	70-95	20-30	5-15
	8-22	Silty clay loam, silt loam, clay loam.	CL	A-6, A-7	0	100	100	95-100	75-95	30-45	10-20
	22-60	Silty clay loam, clay loam, silt loam.	CL	A-6	0	100	100	95-100	75-95	30-40	10-20
PmB- Prelo	0-6	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	90-100	70-95	20-30	5-15
	6-20	Silty clay loam, silt loam, clay loam.	CL	A-6, A-7	0	100	100	95-100	75-95	30-45	10-20
	20-60	Silty clay loam, clay loam, silt loam.	CL	A-6	0	100	100	95-100	75-95	30-40	10-20

TABLE 22.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS IN HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group
							K	I	
PlA- Prelo	0-4	0.6-2.0	0.15-0.17	7.9-8.4	<2	Low	0.32	5	3
	4-26	0.2-0.6	0.19-0.21	7.9-8.4	2-4	Moderate	0.43		
	26-60	0.2-0.6	0.11-0.13	7.9-8.4	4-8	Moderate	0.43		
PmA- Prelo	0-8	0.6-2.0	0.19-0.21	7.9-8.4	<2	Low	0.43	5	4L
	8-22	0.2-0.6	0.19-0.21	7.9-8.4	2-4	Moderate	0.43		
	22-50	0.2-0.6	0.11-0.13	7.9-8.4	4-8	Moderate	0.43		
PmB- Prelo	0-6	0.6-2.0	0.19-0.21	7.9-8.4	<2	Low	0.43	5	4L
	6-20	0.2-0.6	0.19-0.21	7.9-8.4	2-4	Moderate	0.43		
	20-60	0.2-0.6	0.11-0.13	7.9-8.4	4-8	Moderate	0.43		

TABLE 24.--SOIL AND WATER FEATURES OF HIGH DETAIL MAP UNITS--Continued

Soil name and map symbol	Hydro-logic group	Flooding			Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Hard-ness	Depth	Hard-ness		Uncoated steel	Concrete
PKA, PlA, PmA, PmB, PmB2, PnA, PpA- Prelo	B	None to rare	---	---	>60	---	---	---	---	High	High.

~~FLOOD HAZARD BOUNDARY MAP~~
FIRM

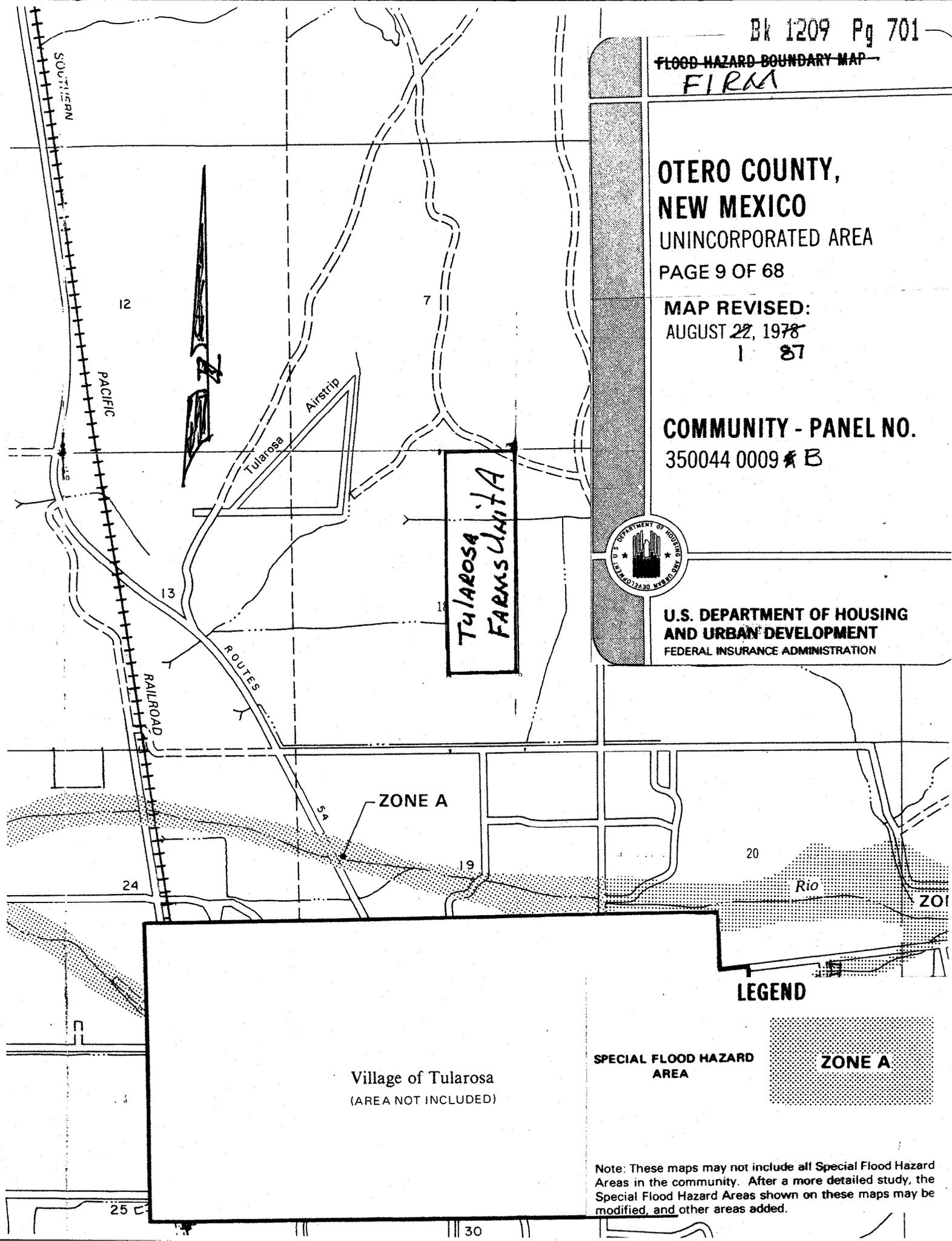
**OTERO COUNTY,
NEW MEXICO**
UNINCORPORATED AREA
PAGE 9 OF 68

MAP REVISED:
AUGUST 22, 1978
1 87

COMMUNITY - PANEL NO.
350044 0009 B



**U.S. DEPARTMENT OF HOUSING
AND URBAN DEVELOPMENT**
FEDERAL INSURANCE ADMINISTRATION



LEGEND

**SPECIAL FLOOD HAZARD
AREA**



ZONE A

Village of Tularosa
(AREA NOT INCLUDED)

Note: These maps may not include all Special Flood Hazard Areas in the community. After a more detailed study, the Special Flood Hazard Areas shown on these maps may be modified, and other areas added.

**OTERO SOIL AND WATER
CONSERVATION DISTRICT**

Bk 1209 Pg 702

2920 N. White Sands Blvd., Alamogordo, NM 88310 - PHONE (505) 437-3100

Rick Baish, Chairman
Bob Nichols, Vice Chairman
Robert Bishop, Secretary/Treasurer

Eddie Vigil, Member
Robert Bell, Member
Bill Mershon, Member
Thora Padilla, Member

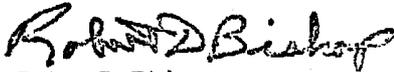
March 2, 2005

Dale Palkki, Planning Coordinator
Otero County
1000 New York Ave
Alamogordo, NM 88310

Re: Tularosa Farms Summary Review

I have received the information requested. Upon further review the preliminary plans for this subdivision are approved.

Sincerely,


Robert D. Bishop



ALAMOTERO LAND SURVEYS, P.C.

PROFESSIONAL LAND SURVEYORS

1101 NORTH FLORIDA AVENUE

ALAMOGORDO, NEW MEXICO

PHONE 505-437-7074

FAX 505-437-7075

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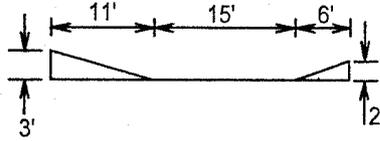
DRAINAGE INFORMATION REQUESTED BY OTERO COUNTY SOILS AND WATER FOR TULAROSA FARMS, UNIT 1, OTERO COUNTY, NEW MEXICO

JOB NO. 041129

THIS INFORMATION IS THE SAME THAT WAS PROVIDED FOR FOR HORSEMAN'S PARK, OTERO COUNTY, NEW MEXICO.

SCALE 1" = 200'

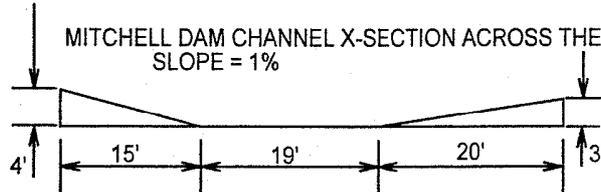
DATE 03/01/05



TECOLOTE CHANNEL X-SECTION ACROSS THE NORTH SIDE OF LOTS 6 AND 7
SLOPE = 1%

TECOLOTE AREA
 10 YEAR STORM = 960 CFS
 25 YEAR STORM = 1850 CFS
 50 YEAR STORM = 2950 CFS

MITCHELL DAM AREA
 10 YEAR STORM = 480 CFS
 25 YEAR STORM = 925 CFS
 50 YEAR STORM = 1475 CFS



MITCHELL DAM CHANNEL X-SECTION ACROSS THE NORTH SIDE OF LOTS 4 AND 9
SLOPE = 1%

OFF-SITE DRAINAGE AREA'S
 THERE ARE 2 CONTRIBUTING AREA'S TO THE OFFSITE DRAINAGE.
 THE TECOLOTE CANYON AREA AND THE MITCHELL DAM AREA.
 THE TOTAL OFF-SITE AREA EQUALS APPROXIMATELY 4660 ACRES.
 THE TECOLOTE CONTRIBUTING AREA DRAINS TO THE DIVERSION ON
 THE NORTH SIDE OF TULAROSA FARMS, WHILE THE MITCHELL DAM AREA
 DRAINS INTO THE DIVERSION RUNNING THROUGH THE CENTER OF
 TULAROSA FARMS. THE MITCHELL DIVERSION IS APPROXIMATELY 1/2 THE SIZE OF THE
 TECOLOTE AREA. THE FOLLOWING Q VALUES ARE FOR THE TOTAL AREA.
 THE 10 YEAR STORM = 1458 C.F.S., THE 25 YEAR STORM = 2803 C.F.S. AND THE 50 YEAR STORM = 4474 C.F.S.

Ruidoso Valley Builders, LLC

By: [Signature]
Murray Samuell, Jr.

State of New Mexico)

)ss

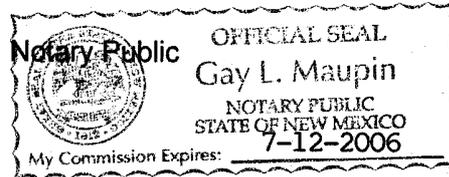
County of Otero)

On this 23rd day of May, 2005, before me personally appeared Murray Samuell, Jr. for Ruidoso Valley Builders, LLC, known to me to be the person who executed the foregoing instrument and acknowledged that he executed the same as his free act and deed.

WITNESS my hand and seal the day and year last written above.

[Signature]

My commission expires 7-12-2006



STATE OF NEW MEXICO } S.S.
OTERO COUNTY

FILED FOR RECORD IN MY OFFICE

This 4 day of Oct, 20 05

At 3:35 o'clock P M and duly recorded

in Book No. 1209 Page 649-704

The records of Otero County, New Mexico

Robyn Silva
County Clerk, Otero County, New Mexico

By [Signature] Deputy

11571