

THE LINCOLN-DeVORE TESTING LABORATORY

MEMBER: A.S.T.M.
A.S.C.E.
CEC
ACI

George D. Morris, P. E.

1000 W. Fillmore
Colorado Springs, Colorado
303-632-3593

May 14, 1973

Soil Testing

Foundation
Evaluation

Materials
Tests

Concrete
Batch Design

Asphalt Mix
Design

Geologic
Interpretation

Groundwater
Hydrology

by

Registered
Professional
Engineers

&

Geologists

Colorado
Springs,
Colorado

Pueblo,
Colorado
Howard M. Dump

Rock Springs,
Wyoming
Jerald K. Elliott

**Robert T. Irwin
Irwin Realty
Western Federal Savings
Room 105
101 N. Cascade
Colorado Springs, Colorado**

Gentlemen:

Transmitted herewith is a report concerning the general geology and groundwater on a tract of land to be sub-divided in El Paso County and known as **Hadden Heights**. This report is written under the regulations of the El Paso County and of Senate Bill 35 which govern such reports.

Respectfully submitted,

LINCOLN DeVORE TESTING LAB.


George D. Morris, P.E.

GDM/klb

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GENERAL GEOLOGY AND GROUNDWATER INVESTIGATION

HADDEN HEIGHTS SUBDIVISION

EL PASO COUNTY, COLORADO

GENERAL:

This report is a summary of the results of various tests and investigations made on the site of the proposed subdivision. The surface soils, general geology, ground water conditions and proposed sanitary facilities have been investigated under the provisions of Senate Bill 35 and El Paso County regulations. The tract of land consists of approximately 140 acres and is better described as a portion of the South 1/2 of Section 13, Township 13 South, Range 65 West of the 6th Principal Meridian. A small part of the tract extends into the north half of this section. The tract is approximately one mile and one-half south of the town of Falcon, Colorado and lies about one-fourth mile east of Hi-way 24, as shown on the attached location map.

The surficial examination of the site was made to determine the surface soil types. Test borings were also drilled on the site both to determine the type of soil more precisely at depth and for use in performing percolation tests in the various soil types found on the site. Geologic features of the site were studied both on the surface of the ground and from the literature, the records of nearby well logs, mostly rather shallow and then used to substantiate the upper aquifers that are known to exist beneath the tract. All of this data has been used in the report together with localized soil maps and well data published by the State of Colorado. For the purpose of satisfying the requirements of Senate Bill 35 and the El Paso County regulations. Soil Conservation soil maps have been

reproduced and included in this report.

AREA GEOLOGY:

The proposed subdivision lies about one-fourth mile east of Hi-way 24 and about the same distance west of West Blaney Road south of the town of Falcon. This area is approximately 18 miles east of the east edge of the front range of the Rocky Mountains and can be considered as the western edge of the Great Plains area. The Rampart Fault and Ute Pass Fault lie on the face of the mountains west of the site, neither fault affecting the site. This portion of El Paso County is underlain by very thick sedimentary rocks which have a slight dip to the northeast.

Structurally the site can be considered as the southern edge of the Denver Basin. Other than the dip in the underlying sedimentary strata, the basin has little effect on the tract. Regional dip is relatively gentle. Several geologic formations exist beneath the site, and of these three are known to be aquifers.

At great depths the entire area is underlain by the hard, dense formational Pierre Shale. This material underlies nearly all of the area east of the front range and is found on the surface of the ground in southern Colorado Springs and to the south. This is a very hard, dense shale formation and is quite thick. It is estimated to be from 4000 to 6000 feet in thickness and for all practical purposes can be considered as bedrock.

Immediately above the Pierre Shale, the Fox hills formation is found. This formation consists of three

identifiable beds of medium to fine grained sandstone separated by thinner layers of shale and clay. This formation is not generally as dense as the Pierre Shale at least in this area and outcrops on the surface of the ground three to four miles south of the site. It is estimated as approximately 600 to 700 feet in thickness in this area of El Paso Country.

Immediately above the Fox Hill formation the Laramie formation is found. There is some difference of opinion as to terminology in this formation, but in any event, the material is relatively thin and consists primarily of alternating strata of shale and sandstone. Three layers of coal are also found in this formation, which have been mined at several places in north Colorado Springs and to the east. This formation is estimated at 300 feet in thickness at this point.

Above the Laramie formation and extending to the surface of the ground, the soils are almost all of the Dawson formation. The Dawson formation is an extremely erratic one, it consists basically of sandstones but contains large layers of clay. In general, this clay cannot be considered as shale since it is more massive and not well bedded. The Dawson formation is not as well defined as the ones below, and must be described as erratic, from the soils standpoint. This formation is estimated to be about 1000 to 1100 feet in thickness at this point.

The surface of the ground is primarily very deeply weathered silty and clayey sands derived from the Dawson

formation. A small amount of eolian material was found near the high points on the site, the eolian cover is thin and spotty. This windblown material is generally in the form of fine grained silt or silty sand which may be found in the loessial condition in the general area. None of the soil on the site can be considered as loess and will not act as such. Some recent very local alluvial action has re-worked the upper soils on the site so that some variation can be noted in the upper 3 to 4 feet of the profile.

SURFACE SOILS:

The surface soils on the site have been mapped and are shown on the attached soil distribution diagram. These are classified by the Unified Classification System. For the most part these materials can be considered as sands or silty sands. Some very small areas of silt and clay were found on the site. These areas are rather minor compared to the entire subdivision, however, and will affect a very few houses or sanitary facilities. All of the upper soils has been re-worked to some extent judging by the stratification. Local colluvial action is responsible for most of this, and water generated on the hillside has washed sands and silts into some pockets, particularly in lower areas. All of the material found is of high permeability, is non-plastic and is generally of medium density. The only exception to this is the eolian silt and a small area of clay. This material has no tendency to expand nor to long term consolidation under load. The bearing values on the subdivision average at about

2900 psf and was found to vary from about 2400 psf to about 3000 psf.

The major variable in the surface soils on the site, is that of the windblown material. This is a very fine grained soil, of medium permeability, of low plasticity and generally of low density. It has no tendency to expand nor to extreme long term consolidation under load. This is not a loessial soil and does not have the collapsing characteristics of a true loess. The bearing values on this material will average around 2200 psf and were found to vary from 1900 to 2500 psf.

Since the clays found are expansive a minimum bearing value of 1000 psf should be used on this material. Some minor clayey soils were found from point to point, but none of them contain sulfates in detrimental quantities. Type I cement can generally be used in the entire development.

From the standpoint of foundation design most of the soils are either non-expansive or low in expansive characteristics. It is anticipated that continuous spread footings will be used as a foundation system for most of the area. No-footing foundations will be required on the clay. Due to the variations in the soil types found, it must be recommended that the structures be balanced to avoid large differential in the loading. It is also recommended that the stem walls of the building be designed as grade beams capable of spanning 10 feet in order to properly spread the loads and to span soft spots which will be found on the site.

Surface drainage will quite important on

this site and should be constructed so that drainage water runs away from each of the structures as rapidly as possible. Water should not be allowed to stand or pond around the structures, particularly in backfilled areas. The possibility of some settlement, particularly in the finer grained sands indicates that special design may be required for floor slabs on grade.

Although no seepage was noted on the site at the time of drilling, seepage can occur in this type of geologic setting due to the lensatic arrangements of silts and some clays within the upper sands. Since this investigation did not indicate seepage it must be assumed that it does not exist over most of the site. If such seepage areas are found in excavating foundations, however, care should be taken in designing the foundations and the foundations should be drained with a French Drain. It should be noted that designs for specific sites should not be undertaken without testing that specific site. It is felt that this point should be emphasized since the soils in the area are known to be erratic and changes can take place very rapidly.

In general, the topography of the site is that of relatively smooth sided hill. The top of the hill is near the southeast corner of the tract, with drainage running in all directions from this point. The only major drainage gully of any size was found near the northwest corner and exit for the water which is generated on the subdivision to Sand Creek. With this one exception, no areas of dangerous water were noted on the site. The

amount of this water was calculated in a drainage report for the subdivision and was found to be insufficient to affect the houses in the area. It was recommended that this ditch be converted into a drainage easement to carry the water off the site and onto the drainage structure built under Hi-way 24. No other points of possible high water were found on the site.

GROUNDWATER:

Considering the various geologic formations beneath the subdivision, several aquifers are known to exist. The Pierre Shale formation is a very poor groundwater source. It does contain some fracture water, but neither of these sources can be predicted and the balance of material does not contain large amounts of water. It is simply not feasible to drill individual wells into the Pierre Shale or through the Pierre Shale, due to the erratic nature of fracture water and the extreme thickness of the shale.

Immediately above the Pierre Shale, the Fox Hills formation contains at least two levels of water bearing sand which are excellent aquifers. Well records indicate that no wells in this immediate vicinity reach the Fox Hills aquifer so that no immediate records exist. Some wells do exist north and east of the site which have penetrated to the Fox Hills aquifer and have proven to be quite productive. For the purpose of this report, it is noted that this aquifer does exist, but no further comments will be made.

In general the same statement is made of the Laramie formation, although it is not as deep. At least one good aquifer is known to exist in the Laramie formation and is being tapped a short distance southeast of the site. On this particular site the aquifer is too deep for practical use with individual wells and a better aquifer exists in the upper Dawson formation. The aquifer in the Laramie formation is also found in conjunction with coal layers and may be affected by higher sulfate contents.

For this site the Dawson Arkose formation will be best and most economical one for use as an aquifer to supply the subdivision. Although the formation is of moderate thickness at this point, it will generate sufficient water to adequately supply individual wells drilled on the site. Fair to good quantities of water may be found in at least two elevations close to the surface of the ground, and one is somewhat deeper, thereby wells for which records can be found are mostly less than 100 feet in depth and are producing surface water. At least two wells in the general area have been drilled to a depth of 200 feet and produce good quantities of water. The first aquifer in the upper Dawson formation at this point appears to be between 80 and 150 feet below the surface. Judging from well records in the vicinity, quantities of water may be found at this level which would adequately supply an individual well. A somewhat better aquifer exists at a depth of between 250 and 300 feet and in general it is recommended that the deeper aquifer be used by wells in

this subdivision.

All of the upper aquifers are dependent on surface infiltration to some extent. This will be variable depending on the weather prevailing during a given period. This site is near the top of a ridge separating Black Squirrel, Jimmy Camp and Sand Creeks, so that the recharge area on the site itself is relatively small, but both Jimmy Camp and Sand Creeks head most of the site, however and the west branch of Black Squirrel Creek runs by it to the north. The entire Black Squirrel Creek basin above the site can be considered as a recharge area for this subdivision. The recharge area is therefore fairly large and lies north of the site. Requirements of the storage and surface water or infiltration will not be given in this report since it has been recommended that the deeper aquifer be used. Wells in the aquifer at a depth of 250 feet more or less can be used to supply the subdivision without dependence on the immediate recharge area. At least two of these wells have been tested to a production of more than 100 gallons per minute, indicating that large quantities of water are available. Since individual wells are anticipated on the site, they will be restricted to 15 gallons per minute. This aquifer will adequately supply individual wells for this site.

Considering the 5 1/2 acre subdivision which is proposed, assuming 3 1/2 persons to a tract it has been estimated that the total requirements of the subdivision after development will be approximately 9 acre feet per year. These figures

are slightly high of the county average so that this figure is considered safe for use. Well data in the area indicates that the upper aquifer consists of several layers of water bearing sand totaling approximately 110 feet of true water bearing material. The porosity averages about 34 and it has been found on the average that approximately six-tenths of this existing water can be easily pumped. The second or lower aquifer is somewhat better and contains more water bearing sand, making the total depth of water bearing sands to the recommended depth of 350 feet below the site, together with the area of the site itself it is estimated that slightly over 10,200 acre feet of water are present beneath the site. Of this 6, 120 acre feet will be available for pumping. The ratio of use to available water indicates that approximately .15 of 1% of the available storage beneath the site will be required per year. This computation is made assuming no recharge in the area. Since a large recharge basin exists north of the site which will allow reasonable recharge, and individual sewage systems are being contemplated on the site indicate that approximately 90% of the water used in the tract will be returned to the upper layer of soil. Most of the usable water therefore will be returned to Sand Creek and the Black Squirrel Creek.

The draw down characteristics in this soil and formation are such that well sites should be separated by at least 400 feet between individual wells. This should be feasible with the 5 acre tract type of development proposed.

WATER QUALITY:

Several wells in the near vicinity of the site have been drilled to the aquifer found in the upper portion of the formation. No well could be found in the immediate vicinity which had been drilled to a depth of over 250 feet. Water samples could not be obtained from the deeper aquifer. Since the general source of water is the same, however, it can be at least assumed that the quality of water will be the same or better in the deeper aquifer as it is in the upper. A sample of water taken from one of the wells and the water analysis was made with the following results:

Total Dissolved Solids	218.0 ppm
Turbidity	30 Units
Suspended Solids	80. ppm
Iron	-0-
Chloride	5.0 ppm
Fluoride	0.5 at 22° C.
Sulfate	110.0 ppm
Nitrate	1.0 ppm
pH	6.5 ppm
Manganese	-0-
Zinc	.89 ppm
Arsenic	-0-
Copper	-0-
Hardness	70.0
Calcium	60.0 ppm
Magnesium	10.0 ppm
Chromium	.01 ppm
Specific Conductance	175 MOHS/CM at 21°
Barium	0.90
Cyanide	- 0 Trace-

A Bacteria count indicates that the water is not contaminated and is potable.

WATER RIGHTS:

At the time of writing this report no wells have been drilled

on this particular site and it is assumed that none of them have filed for use with the State Engineer. If it has been filed, no record could be found. No evidence of previous use in the area could be found other than the occasional stock wells and domestic wells which serve the surrounding residences and ranches. Some municipal type wells exist in the valley of Black Squirrel Creek. In general, these all tap the same aquifer, but may be in a different creek basin insofar as surface water is concerned. Nearly all of the wells around the site serve either domestic purposes of individual houses, some stock tanks or in the one case municipalities. Nearly all of the water in the basin is being used for domestic purposes. The proposed group of new individual wells on the site would not change the general usage of this aquifer in this part of El Paso County. Investigation of the record indicates that no prior water rights exist on Jimmy Camp Creek above or close to this subdivision. Some water rights do exist at lower points along Jimmy Camp Creek closer to Fountain.

Based on the fact that this water will be used for domestic purposes only and that most of the water will be returned to the upper soil profile by sewage disposal or other waste systems and by the fact that the wells will be restricted to 15 gallons per minute or less. It is believed that this proposed subdivision and the wells thereon will fall within the group of wells exempted from the well legislation by the 1971-72 amendments to CRS 148-21-45 known as the House Bill 1042.

Examination of the aquifer beneath the site, of the general terrain in the area, and of the vegetation on the site, all lead to the recommendation that lawn irrigation or large scale irrigation should not be undertaken in this area. Adequate water will not be available to both the subdivision and down stream users without restricting the irrigation use of the water. It is recommended that irrigation be restricted to extremely small areas on each site and that this be made part of the restrictive covenances for the tract.

Water requirements for the subdivision for domestic purposes only, have been given in the previous section of this report. Estimated water available has also been given. It is contemplated that these proposed wells will all be used for domestic purposes by individual owners on the site and that therefore there will be no change of use of water produced from these wells to be drilled in the future. It is recommended that future wells be registered and filed with the State Engineers office.

SANITARY SEWAGE:

The proposed sewage disposal system on the various tracts will be that of individual septic tanks and leaching fields. Equivalent systems may be used, but this is believed to be the overall plan. No central sewage system is planned at this time. A series of percolation tests was made on the site at various points and the results of these tests are included at the back of this report.

The soil is relatively uniform over most of the site from the standpoint of permeability. Some silt and clay lenses were found here and there on the site, but these are relatively small and can be removed. Percolation rates are slightly different over the area as can be seen by noting the results of the tests made. Percolation rates range from drop of 2 minutes per inch to a maximum drop of 6.6 minutes per inch. All rates are found to be well within the minimums established by the State Health Department.

.. resistivity survey of the area indicates that most of the area will have generally the same percolation rate and no area was found to have a lower rate than 3.3 minutes per inch. Sewage disposal by means of leaching fields or wells is therefore feasible for the site.

The site of each leaching field should be tested for percolation rate prior to designing individual house systems. To clarify the effluent as much as possible it is recommended that aeration tanks be used in the area rather than the standard settlement type septic tank. This will improve the quality of the effluent and will not tend to damage the upper aquifer as badly as the standard tank would. Due to the type of soils found over most of the area, any well must be sealed or protected from the discharge of a leaching area. The minimum distance between leaching fields and wells established by the State of Colorado must be followed in this area. It is generally recommended that the wells be placed on high ground if it is at all possible.

The clay area shown on the map will not have good percolation rates. In this area, some form of evaporation-transpiration system will be required, rather than the standard leaching field.

SUMMARY & CONCLUSIONS:

Based on the results of the surface exploration some shallow drilling and resistivity profile run on the site, the soils have been found to provide good foundations for the proposed structures. Special foundations will not be required in the area. No sign of hillside creep or instability were noted. Except for a very small area along the drainage easement proposed no areas of flooding were noted. There are very few areas on the site which can be considered danger areas from the standpoint of foundation.

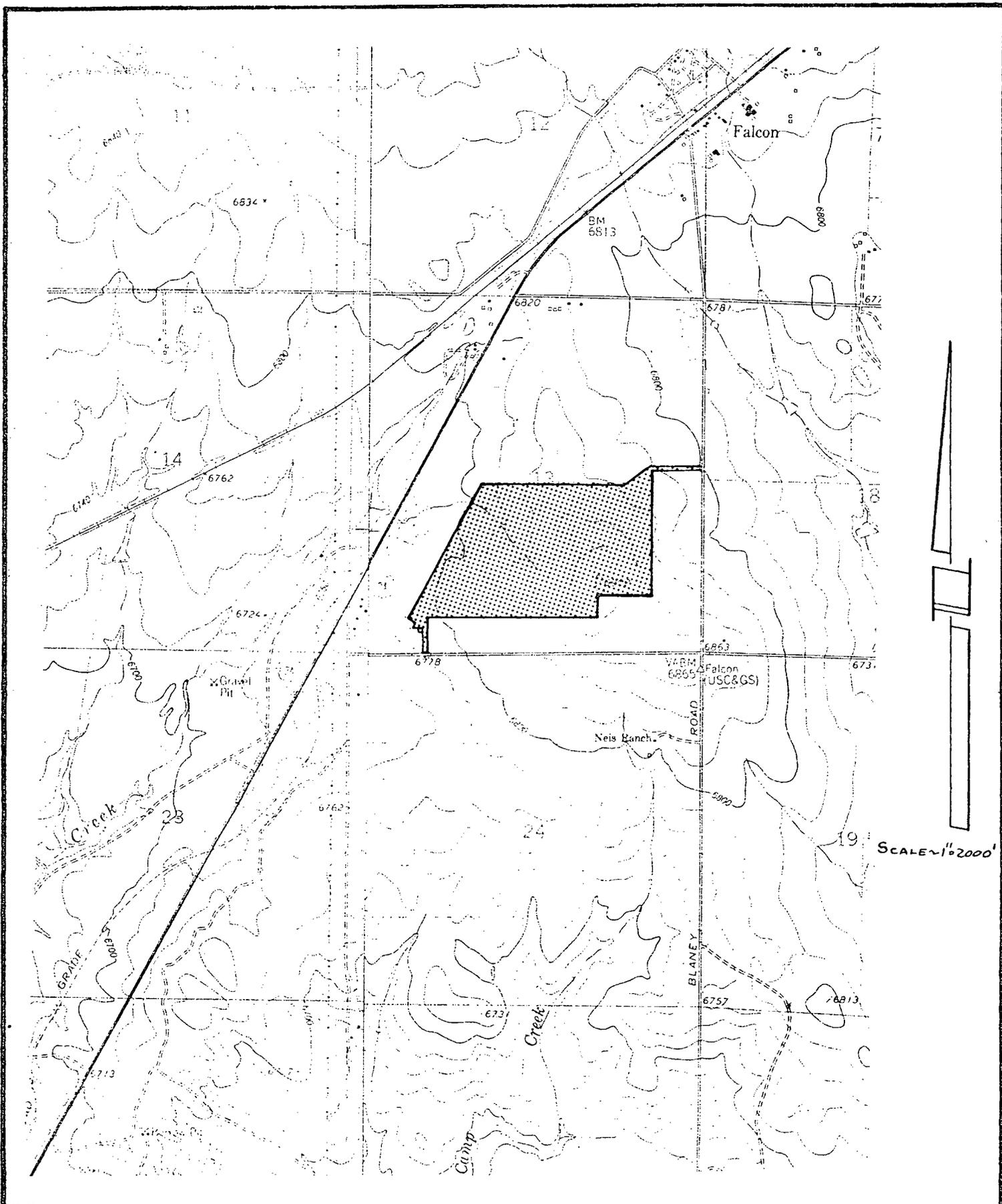
The lots on the proposed site can be adequately supplied from individual wells drilled to an aquifer at a recommended depth of between 250 and 350 feet below the surface of the ground. More shallow wells on the site will produce water but this will be mostly surface water and dependent on more rapid recharge. The deeper source is dependable under drouth conditions and the amount of water required by this subdivision would not adversely affect down stream use since most of the water will be returned to the flow of the creeks.

Based on the investigation of the site, the laboratory feels that a subsurface water supply adequate for the

requirements of the subdivision is present and available in reasonably shallow underlying aquifers. Use of the water has been recommended for domestic purposes only.

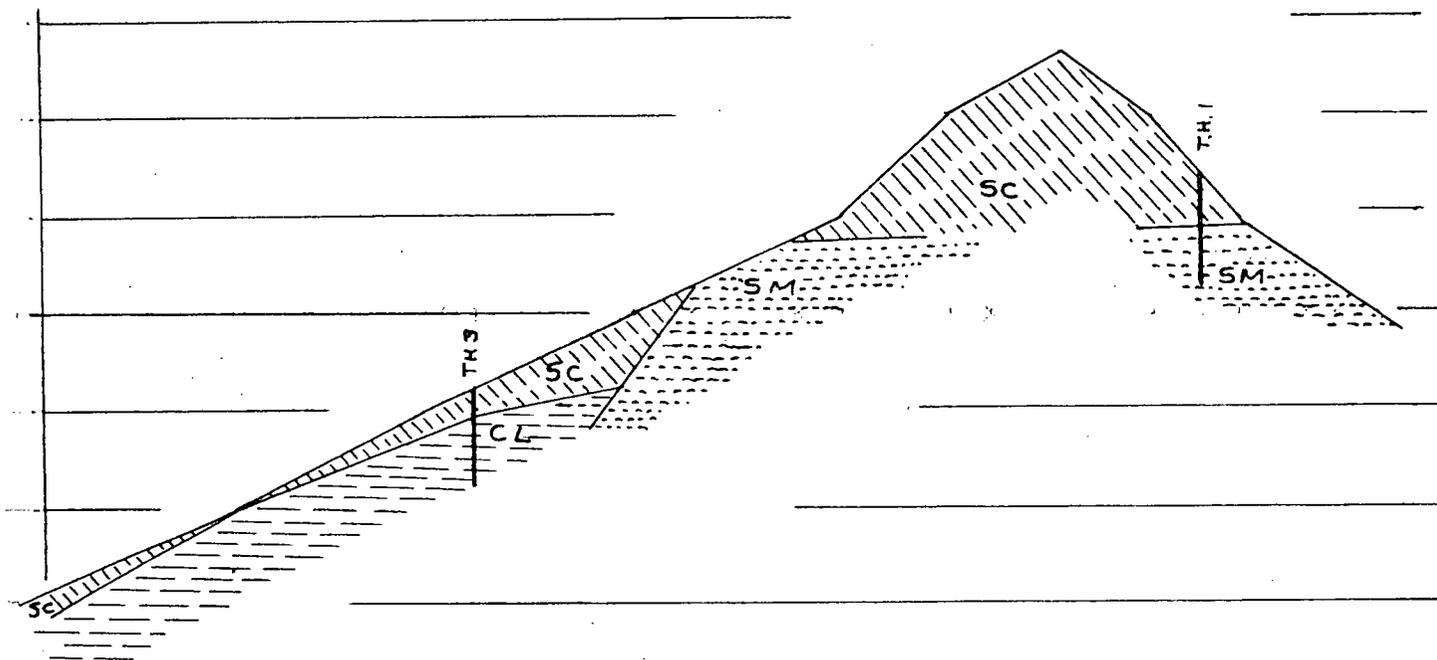
Equality of the water found on the site is good although the water is slightly mineralized. No dangerous bacteria were found in the sample and the water was found to be potable.

Based on this investigation the laboratory feels that individual sewage disposal fields can be used in the area if they are properly designed. All state standards regarding the design and location of any leaching field must be followed in this area.



HADDEN HEIGHTS ~ EL PASO COUNTY

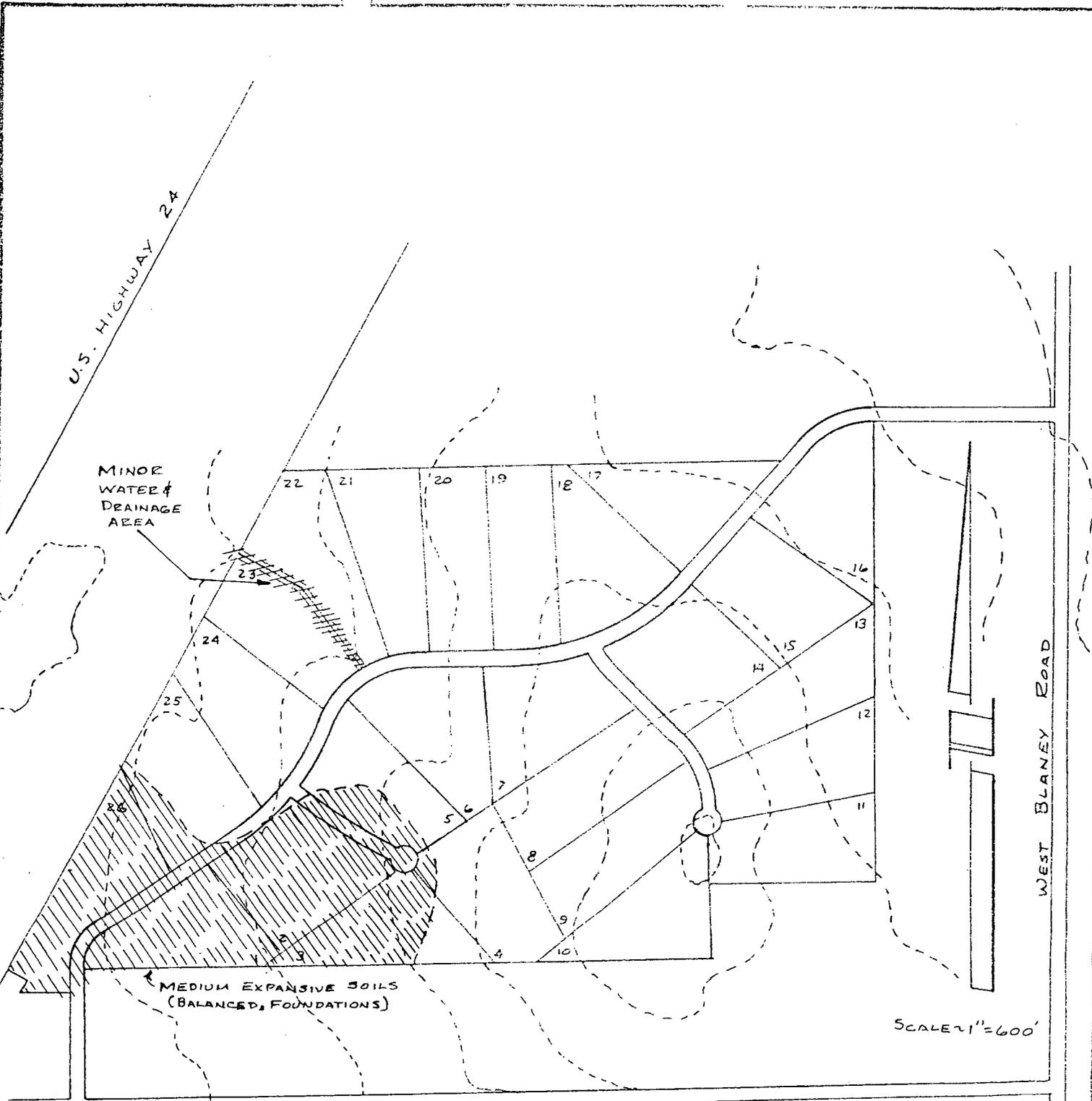
LINCOLN-DeVORE TESTING LABORATORY
 COLORADO SPRINGS, PUEBLO, -COLORADO



HORIZONTAL ~ 1" = 600'
 VERTICAL ~ 1" = 40'

GENERAL SOIL PROFILE
 HADDEN HEIGHTS ~ EL PASO COUNTY

LINCOLN-DeVORE TESTING LABORATORY
 COLORADO SPRINGS, PUEBLO, -COLORADO



SOIL & GEOLOGIC PROBLEM AREAS
HADDEN HEIGHTS ~ EL PASO COUNTY

LINCOLN-DEVORE TESTING LABORATORY
COLORADO SPRINGS, PUEBLO, -COLORADO

Hadden Heights Water Analysis

	Station	Station	Station	Station	Station
	Pete Field				
	SB 35 5/10/73				
Total Dissolved Solids	218.0	ppm			
Turbidity	30.	units			
Suspended Solids	80.				
Iron	-0-				
Chloride	5.0				
Fluoride	0.5 at				
	22° C.				
Sulfate	110.0				
Carbonate					
Bicarbonate					
Boron					
Phosphate					
Nitrate	1.0				
pH	6.5				
Acidity (grams/gal.)					
Alkalinity (grams/gal.)					
Dissolved Oxygen					
Sodium					
Manganese	-0-				
Lead					
Zinc	.89				
Arsenic	-0-				
Phenol					
Copper	-0-				
Mercury					
Coliform Bacteria					
Hardness	70.0				
Calcium	60.0				
Magnesium	10.0				
Chromium	.01				
Specific Conductance	175 MOHS = 1 cm at 21°C				
Barium	0.90				
Cyanide	-0 Trace -				

All values shown (except pH and where noted) - milligrams/liter

LINCOLN-DeVORE TESTING LABORATORY
COLORADO SPRINGS, PUEBLO, -COLORADO

SOIL PERCOLATION TESTS FIELD DATA SHEET

CLIENT Robert T. Irwin (Irwin Realty)

TEST NO. 11577 -1

TEST LOCATION SOUTH OF FALCON @ INTERSECTION
GARRETT AND WEST BLANEY

DATE 5/10/73

TRIAL NO.	DEPTH START, IN	START TIME	DEPTH FINISH, IN	FINISH TIME	TOTAL DROP INCHES	TOTAL DROP TIME, MIN.	MINUTES TO DROP 1 INCH
1	20"	1620 hrs	23"	1630 hrs	3.0"	10 min.	3.3
2							
3							
4							
5							

SOIL LOG

FROM	TO	SOIL CLASSIFICATION	MOISTURE
0	3'	SM - SC - Brown - Fine - Med. Sand	Moderate
3'	10'	SC - SM - Tan - Fine - Med. Sand W/Lt. Binder	Moderate

FHA - 1103 - 7.3
LEACHING FIELD
REQUIRED AREA OF TRENCH BOTTOM
PER BEDROOM 110 SQ. FT.

FHA - 1103 - 8.5
SEEPAGE PIT
REQUIRED SIDEWALL AREA
PER BEDROOM 65 SQ. FT.

REMARKS: _____

DATE HOLE SATURATED 5/10/73 TIME 1500 hrs

DATE PERCOLATION TEST MADE 5/10/73 TIME 1620 hrs

LINCOLN DEVORE TESTING LAB
George D. Morris, P. E.

H. Pick
OBSERVER

BY _____

LINCOLN DeVORE TESTING LABORATORY

COLORADO SPRINGS

PUEBLO, COLORADO

SOIL PERCOLATION TESTS FIELD DATA SHEET

CLIENT Robert T. Irwin (Irwin Realty)

TEST NO. 11577

TEST LOCATION SOUTH OF FALCON @ INTERSECTION

DATE 5/10/73

GARRETT AND WEST BLANEY

TRIAL NO.	DEPTH START, IN	START TIME	DEPTH FINISH, IN	FINISH TIME	TOTAL DROP INCHES	TOTAL DROP TIME, MIN.	MINUTES TO DROP 1 INCH
1	20"	1635 hrs	21.5"	1645 hrs	1.5"	10 min.	6.6
2							
3							
4							
5							

SOIL LOG

FROM	TO	SOIL CLASSIFICATION	MOISTURE
0	6'	SM - SC - Brown & Tan - Fine - Med Sand W/Lt. Binder	Moderate
6'	10'	CL - Gray - Dirty Clay	Moderate

FHA - 1103 - 7.3

FHA - 1103 - 8.5

LEACHING FIELD

SEEPAGE PIT

REQUIRED AREA OF TRENCH BOTTOM

REQUIRED SIDEWALL AREA

PER BEDROOM 145 SQ. FT.

PER BEDROOM 90 SQ. FT.

REMARKS _____

DATE HOLE SATURATED 5/10/73 TIME 1520 hrs

DATE PERCOLATION TEST MADE 5/10/73 TIME 1635 hrs

LINCOLN DEVORE TESTING LAB

George D. Morris, P. E.

H. Pick
OBSERVER

BY _____

LINCOLN DEVORE TESTING LABORATORY

COLORADO SPRINGS

PUEBLO, COLORADO

SOIL PERCOLATION TESTS FIELD DATA SHEET

CLIENT Robert T. Irwin (Irwin Realty)

TEST NO. 11577-3

TEST LOCATION FALCON @ INTERSECTION GARRETT & WEST BLANEY

DATE 5/10/73

TRIAL NO.	DEPTH START, IN	START TIME	DEPTH FINISH, IN	FINISH TIME	TOTAL DROP INCHES	TOTAL DROP TIME, MIN.	MINUTES TO DROP 1 INCH
1	20"	1630 hrs	22"	1640 hrs	2.0"	10 min.	5.0
2							
3							
4							
5							

SOIL LOG

FROM	TO	SOIL CLASSIFICATION	MOISTURE
0	2'	SM - SC - Brown - Topsoil	Moderate
2'	10'	SC - SM - Tan - Fine - Med. sand	Moderate
		Coarser w/depth Lt. Binder	

FHA - 1103 - 7.3
 LEACHING FIELD
 REQUIRED AREA OF TRENCH BOTTOM
 PER BEDROOM 125 SQ. FT.

FHA - 1103 - 8.5
 SEEPAGE PIT
 REQUIRED SIDEWALL AREA
 PER BEDROOM 75 SQ. FT.

REMARKS: _____

DATE HOLE SATURATED 5/10/73 TIME 1510 hrs
 DATE PERCOLATION TEST MADE 5/10/73 TIME 1630 hrs

LINCOLN DEVORE TESTING LAB
 George D. Morris, P. E.

H. Pick
 OBSERVER

BY _____

LINCOLN DeVORE TESTING LABORATORY

COLORADO SPRINGS

PUEBLO, COLORADO

SOIL PERCOLATION TESTS FIELD DATA SHEET

CLIENT Robert T. Irwin (Irwin Realty)
 TEST LOCATION South of Falcon @ Intersection
Garrett and West Blaney

TEST NO. 11577-4
 DATE 5/10/73

TRIAL NO.	DEPTH START, IN	START TIME	DEPTH FINISH, IN	FINISH TIME	TOTAL DROP INCHES	TOTAL DROP TIME, MIN.	MINUTES TO DROP 1 INCH
1	20"	1645	21.3"	1655	1.3"	10	7.5
2							
3							
4							
5							

SOIL LOG

FROM	TO	SOIL CLASSIFICATION	MOISTURE
0	6'	SM/SC, brown & tan, fine to medium grained sand with light binder	Moderate
6'	10'	CL - gray, dirty clay	Moderate

FHA - 1103 - 7.3
 LEACHING FIELD
 REQUIRED AREA OF TRENCH BOTTOM
 PER BEDROOM 150 SQ. FT.

FHA - 1103 - 8.5
 SEEPAGE PIT
 REQUIRED SIDEWALL AREA
 PER BEDROOM 100 SQ. FT.

REMARKS: _____

DATE HOLE SATURATED 5/10/73 TIME 1530 hrs.
 DATE PERCOLATION TEST MADE 5/10/73 TIME 1640 hrs.

LINCOLN DEVORE TESTING LAB
 George D. Morris, P. E.

H. Pick

OBSERVER

BY _____

LINCOLN DeVORE TESTING LABORATORY

COLORADO SPRINGS

PUEBLO, COLORADO



SCS SOIL CLASSIFICATION
 HADDEN HEIGHTS & EL PASO COUNTY

LINCOLN-DEVORE TESTING LABORATORY
 COLORADO SPRINGS, PUEBLO, -COLORADO

SOIL SERIES	Truckton Sandy Loam - (R5-AB) (R5-C) (R5-DE)	Blakeland Loamy Sand (R7-BD)	Bressor Sandy Loam (R9-AB) (R9-C) (R9-D)	Tructon/Bresser Complex Eroded Phase XRT-BD-3 See individual types for all categories
LIMITATIONS SEPTIC TANK FILTER FIELD	Slight	Slight to moderate; Slopes 1-15%	Slight	
LIMITATIONS SEWAGE LAGOON	Severe; Rapid permeability	Severe; Rapid permeability	Moderate; Moderate permeability	
HOMESITES FOUNDATIONS	Slopes-Slight to moderate	Slight to moderate slopes	Slopes slightly to moderate	
AGRICULTURAL DRAINAGE	Rapid permeability	Rapidly permeable	Moderate permeability	
IRRIGATION	Low H ₂ O holding capacity, rapid intake, erodible	Low H ₂ O holding capacity, erodible, rapid intake rate	Moderate H ₂ O holding capacity; moderate intake	
FARM PONDS RESERVOIR AREA	Rapid permeability	Rapid permeability	Moderate permeability	
FARM PONDS EMBANKMENT	High Seepage	High Seepage	Good Compaction Low seepage	
TERRACES	Erodible; rapid permeability	Erodible; rapid permeability	Moderate permeability; good workability	
PERMEABILITY INCHES/HOUR	6.3-20.00	Less than 20.00	.63-2.00	
WATER HOLDING CAPACITY INCHES/INCHES SOIL	.06-.08	.04-.06	.12-.16	
SALINITY	None	None	None	
TOPSOIL	Fair to good	Poor	Fair to good	

(continued)

SOIL SERIES	Truckton Sandy Loam - (R5-AB) (R5-C) (R5-DE)	Blakeland Loamy Sand (R7-BD)	Bessor Sandy Loam (R9-AB) (R9-C) (R9-D)
SAND	Poor sand	Poor	Unsuitable
GRAVEL	Unsuitable	no gravel	Unsuitable
ROAD FILL	Good	Good	Good
HYDROLOGIC SOIL GROUP	B	A	B
HIGHWAY LOCATION	Good bearing Fair compaction	Good bearing Fair compaction	Good bearing Good compaction