

TRI-COUNTY DISTRICT HEALTH DEPARTMENT ENVIRONMENTAL HEALTH DIVISION

Nº 10134

ADAMS CITY
4301 E. 72nd Ave.
Adams City, 80022
288-6816

AURORA
15400 E. 14th Pl., Suite 309
Aurora, 80011
341-9370

ENGLEWOOD
4857 S. Broadway
Englewood, 80110
761-1340

BRIGHTON
22 S. 4th Ave., Suite 301
Brighton, 80601
659-8333

CASTLE ROCK
355 S. Wilcox
Castle Rock, 80104
688-5145

PERMIT

TRI-COUNTY DISTRICT HEALTH DEPARTMENT (FILE) NO. 10134

PERMIT TO () CONSTRUCT () REMODEL A NON-MUNICIPAL WASTE DISPOSAL SYSTEM FOR KB Griffin, Inc.

AT 1411 Meadow Trail Lot 82 Pinewood Knolls (Name)

COMPOSED OF 1250 (Address or Legal Description) GALLON SEPTIC TANK AND A SOIL ABSORPTION AREA 2240 * SQ. FT.

OR Field must be dosed with a dosing siphon or install two alternating fields of 1120 sq' ea.

A PERMIT TO CONSTRUCT SHALL EXPIRE ONE YEAR FROM DATE OF ISSUANCE UNLESS EXTENDED TO A FIXED DATE UPON REQUEST BY THE APPLICANT AND APPROVAL BY THE HEALTH OFFICER. A PERMIT TO REMODEL EXPIRES TWO WEEKS FROM DATE OF ISSUANCE.

NOTE: THIS PERMIT EXPIRES ON 12/21/90 **"Construction requirements and special conditions relative to this permit are presented on the accompanying application. This permit shall not be valid unless a copy of the application is attached to it."**

ISSUED BY HH Rohrer, MD PUBLIC HEALTH OFFICER, TRI-COUNTY DISTRICT HEALTH DEPARTMENT BY

John Kleckner John Kleckner DATE 12221/89
(Sanitarian)

OWNER MUST ASCERTAIN THAT THIS ENTIRE WASTE DISPOSAL SYSTEM REMAINS OPEN FOR INSPECTION UNTIL IT HAS RECEIVED APPROVAL BY THE TRI-COUNTY DISTRICT HEALTH DEPARTMENT. THE HEALTH OFFICER CANNOT ASSUME RESPONSIBILITY IN CASE OF FAILURE OR INADEQUACY OF A WASTE DISPOSAL SYSTEM BEYOND CONSULTING IN GOOD FAITH WITH PROPERTY OWNER.

PERMIT FEE OF \$ 150.00 FOR NEW SYSTEM, CHECK NO. 2620 M.O. NO. _____ CASH _____

RECEIVED BY 1a DATE 12/21/89



Tri-County Health Department
Serving Adams, Arapahoe and Douglas Counties

Permit # 279681
Date Paid 6-15-98
Check # 2295
Rec'd By bs

Install: \$300
Repair/Expand: \$250

APPLICATION TO:
 INSTALL REPAIR EXPAND
AN INDIVIDUAL SEWAGE DISPOSAL SYSTEM

To Be Completed By Applicant - Please Type or Print Clearly

Address/Legal Description of Property Served by Proposed System: 1411 Meadow Trail
& (lot 82) Pinewood Knolls

City and Zip Code: Franktown, CO 80116

Property Owner Terrence & Gail Jones

Applicant (same)

Address 1411 Meadow Trail

Address _____

City Franktown State CO

City _____ State _____

Zip 80116 Phone (303) 814-8643

Zip _____ Phone (____) _____

Installer Bill Vogel

Design Engineer Geo-Technica

License # _____ Phone (____) _____

Job # 98-3639-2 Phone (303) 660-0300

Proposed Facility:

Facility Type: Single Family Residence Other _____ Lot Size 4.6 acres

Source/Type of Water Supply: On Site Well Community Other _____

If supplied by community water, give name of supplier: _____

General Information:

Number of bedrooms: 5 Basement: Full Walkout ^{rough} Basement Plumbed? Yes No

Are Additional Bedrooms Planned? Yes No Is this property within 400 feet of a sewer line? NO

If so, will that sewage district provide service? _____ (attach letter from sewage district)

Is lot marked and are percolation holes staked? yes

I the undersigned hereby certify that all information and data provided is correct and true to the best of my knowledge. I agree that the construction of this individual sewage disposal system will comply with Tri-County Health Department's Regulation I-96 and all other applicable laws and regulations.

Terrence L. Jones

6/15/98

Applicant's Signature

Date

Commerce City
4301 E. 72nd Ave.
Commerce City, CO 80022
288-6816

Aurora
15400 E. 14th Pl.
Suite 309
Aurora, CO 80011
341-9370

Castle Rock
101 Third St.
Castle Rock, CO 80104
663-7650

Englewood
4857 S. Broadway
Englewood, CO 80110
761-1340

Northglenn
10190 Bannock St.
Suite 100
Northglenn, CO 80221
452-9547

For Department Use Only
Design Installation Requirements

All applicable design/installation requirements of Regulation 1-96 shall be complied with in the installation of this system

System designed for: _____ gallons per day and/or 5 bedrooms

Soils data: (See attached Percolation Test and Soil Data Form)

Average percolation rate: 144 (minutes per inch) Depth to groundwater: 710'

Depth to bedrock: 4' Ground slope: 0 % to 0

Type of disposal area proposed: Engineered - drip trenches

Minimum size tank: existing 1250 gallons Minimum disposal area (bed): 8800 square feet

Engineer design required? yes Minimum disposal area (trench): _____ square feet

Maximum depth of disposal area: _____ (not to exceed depth of percolation test holes)

Minimum depth of installed rock: _____ Minimum No. of Chamber Units: Bed - _____
Trenches - _____

Special Permit Conditions: Install system as per
GEOtechnica design design no. 98-3039-2 Report no.
98-437

Design engineer inspection of the completed system required? yes

Site approved by: J. Kleckner Date: 6/18/98

Application reviewed and approved by: J. Kleckner Date: 6/18/98

Site Visit Comments: Verified Perfor hole - Bud Jagel 6/18/98 J.K.

Final Inspection

Inspection Date(s): 6/29/98

Septic Tank Size (as built): 1250/1000 gallons

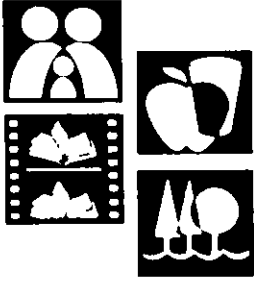
Disposal Area Type: drip trenches Size (as built): 8800 square feet

Depth At Deepest Point: _____

Comments: Need Eng. letter J.K.

7/22/98
Date Of Final Approval

John Kleckner
Environmental Health Specialist



Tri-County Health Department

Serving Adams, Arapahoe and Douglas Counties

Chris J. Wiant, M.P.H., Ph.D.
Executive Director

ENVIRONMENTAL HEALTH DIVISION

PERMIT NO. 279681

PERMIT TO REPAIR AN INDIVIDUAL SEWAGE DISPOSAL SYSTEM

OWNER: TERRENCE & GAIL JONES

LOCATION: 1411 MEADOW TRAIL

COMPOSED OF EXISTING 1250 GALLON AND ADDITIONAL 1250 GALLON SEPTIC TANKS AND AN ABSORPTION AREA OF 8800 SQUARE FEET. INSTALL SYSTEM AS PER GEO-TEKNICA DESIGN, DESIGN NO. 98-3039-2, REPORT NO. 98-437.

A PERMIT TO CONSTRUCT SHALL EXPIRE ONE YEAR FROM THE DATE OF ISSUANCE UNLESS EXTENDED TO A FIXED DATE UPON REQUEST BY THE APPLICANT AND APPROVAL BY TRI-COUNTY HEALTH DEPARTMENT. A PERMIT TO REMODEL EXPIRES TWO WEEKS FROM THE DATE OF ISSUANCE.

THIS PERMIT EXPIRES ON 07-23-98.

NOTE: Construction requirements and special conditions relative to this permit are presented on the accompanying application. This permit shall not be valid unless a copy of the application is attached to it.

ISSUED BY John Kleckner OF TRI-COUNTY HEALTH DEPARTMENT ON 06-23-98.

OWNER MUST MAKE SURE THAT THIS ENTIRE WASTE DISPOSAL SYSTEM REMAINS OPEN FOR INSPECTION UNTIL IT HAS RECEIVED APPROVAL BY TRI-COUNTY HEALTH DEPARTMENT. TRI-COUNTY HEALTH DEPARTMENT CANNOT ASSUME RESPONSIBILITY IN CASE OF FAILURE OR INADEQUACY OF A WASTE DISPOSAL SYSTEM BEYOND CONSULTING IN GOOD FAITH WITH THE PROPERTY OWNER.

PERMIT FEE OF \$250. CHECK #2295

RECEIVED BY B.DUTTON ON 06-15-98

() Owner Copy () Bldg. Dept. Copy () Installer Copy () H.D.

Fifty years of working to **50** *improve the public's health*

GEO-teknica Engineering, Inc.

SOIL TESTS • PERCOLATION TESTS • FOUNDATION DESIGNS

P.O. BOX 266
FRANKTOWN, CO 80116
(303) 660-0300
(303) 660-3615 (FAX)

**Terry Jones
1411 Meadow Trail .
Franktown, CO 80116**

Job No: 98-437

Inspection Dates:

- 1. 6/29/98**
- 2. N/A**
- 3. N/A**

Certification of the On-site Wastewater Disposal System Inspection for a Residence at:

***1411 Meadow Trail,
Pinewood Knolls Subdivision,
Douglas County, Colorado***

The following inspections have been performed by GEO-teknica Engineering for the above system:

- Site Evaluation
- Equipment and Facilities Installation
- Completed System

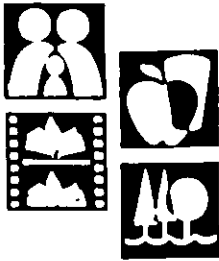
This report is to certify that the system is in compliance with the design and specifications with the following exceptions, if any:

1. _____
2. _____
3. _____

Remarks:

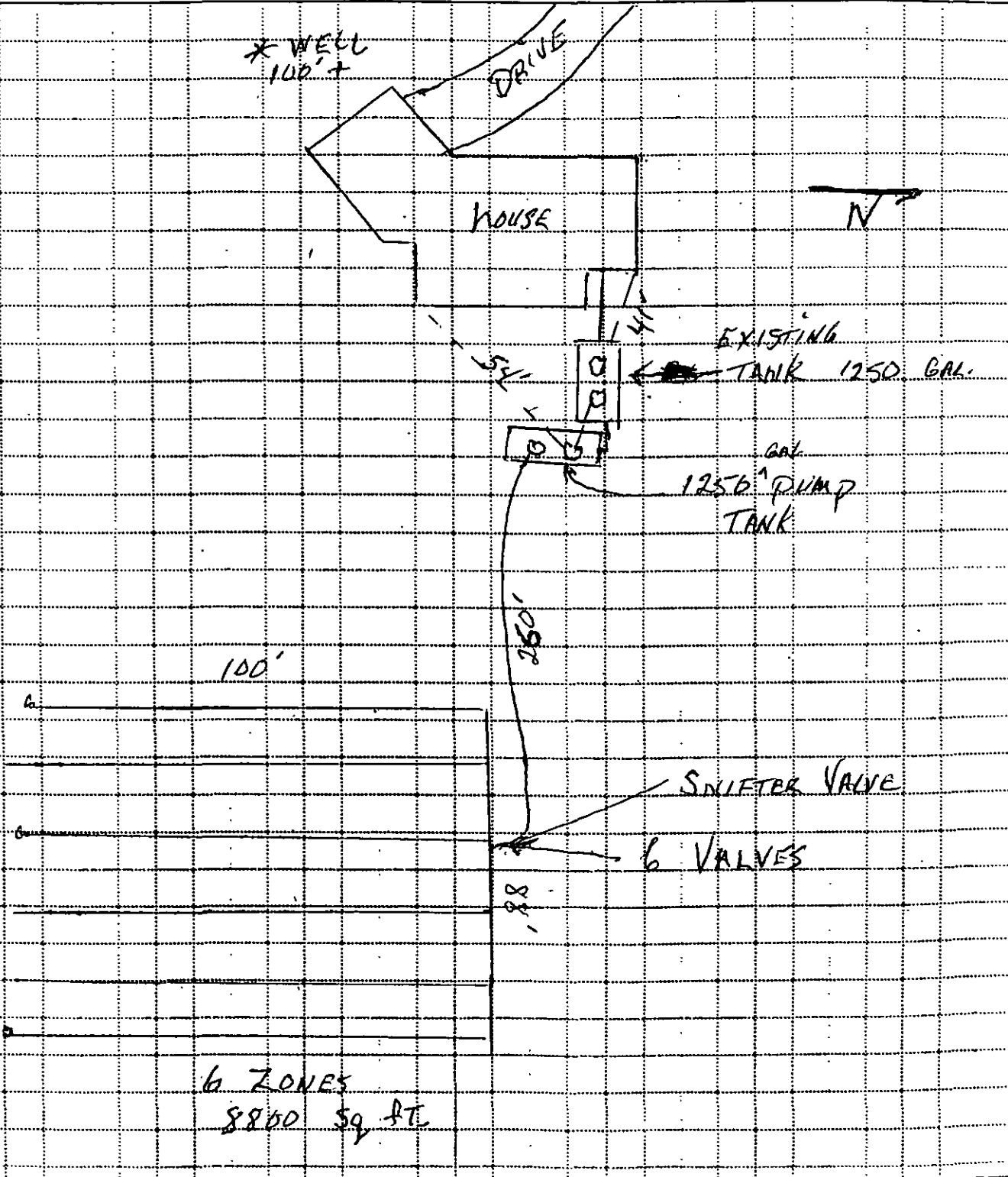


7-21-98



Onsite System
As-Built
Drawing

Property Address 1411 MEADOW TR.
Permit # 279681
Date System Completed 6-29-48
Installer's Name BILL VOGEL CONST.
Installer's License # 98-082
Installer's Address and Phone 11700 Hwy
86 KIOWA Co 303 621-2899



SITE VISIT WORKSHEET

Permit Number: 1998-07-000310

Date Printed: June 15, 1998

Property Location: 1411 E Meadow Trail

Owner: Terrence Jones

System Installer: 60000082, Bill Vogel Construction Co

SITE INFORMATION AS REPORTED BY ENGINEER:

PERC RATE:

Holes:

One	<u>4</u>	Two	<u>4</u>	Three	<u>8</u>	Four	<u>8</u>	Five	<u>4</u>	Six	_____	Avg Rate	_____	Sizing Rate	<u>144</u>
													<i>use 180 MPI</i>		

CIRCLE ONE:

Bedrock Encountered? Yes No If Yes, Type Sandstone Depth to Bedrock (ft) 4

Ground Water Encountered? Yes No If Yes, Depth to Groundwater (ft) _____

SOIL CLASSIFICATION:

- | | | |
|------------------------------|---|---------------------------|
| CL Clay (low-med plasticity) | CH Clay (high plasticity) | MH Silt |
| ML Silt | ML-CL Silt & Clay | SC Clayey Sand |
| SM-SC Silty Clayey Sand | SM Silty Sand | SW Sand, Well Graded |
| SP Sand, Poorly Graded | <input checked="" type="radio"/> GC Clayey Gravel | GM-GC Silty Clayey Gravel |
| GM Silty Gravel | | GW Gravel, Well Graded |

Ground Slope at Absorption Area (%) 0

FIELD OBSERVATIONS:

CIRCLE ONE:

Bedrock Encountered? Yes No If Yes, Type Sandstone, base rocks very hard
Depth to Bedrock (ft) 4 gravelly sand.

Ground Water Encountered? Yes No If Yes, Depth to Groundwater (ft) _____

SOIL CLASSIFICATION:

- | | | |
|------------------------------|---|---------------------------|
| CL Clay (low-med plasticity) | CH Clay (high plasticity) | MH Silt |
| ML Silt | ML-CL Silt & Clay | SC Clayey Sand |
| SM-SC Silty Clayey Sand | SM Silty Sand | SW Sand, Well Graded |
| SP Sand, Poorly Graded | <input checked="" type="radio"/> GC Clayey Gravel | GM-GC Silty Clayey Gravel |
| GM Silty Gravel | | GW Gravel, Well Graded |

Field Observations Consistent with Engineer's Data Yes No

CONTINUED ON THE NEXT PAGE

SITE VISIT WORKSHEET

Permit Number: **1998-07-000310**

Date Printed: June 15, 1998

RECORD OF SITE VISITS:

(It is important to record any extra visits for billing purposes)

Visit 1 Date <u>6/18/98</u>	By (EHS #) <u>405</u>	Time Spent <u>1 hr.</u>
Visit 2 Date _____	By (EHS #) _____	Time Spent _____
Visit 3 Date _____	By (EHS #) _____	Time Spent _____
Visit 4 Date _____	By (EHS #) _____	Time Spent _____

SPECIAL CONDITIONS

COMMENTS

Very large drip trench to be installed by Bill Vogel. This is a
repair. Long up hill reach to manifold - 1 1/2" line to be used so
not much water draining back to pump station.

Signature TCHD Inspector: [Signature] Date 6/18/98

Tri-County Health Department

Percolation Test and Soils Data Form

Property address 1411 Meadow Trail, Pinewood Knolls Subdivision

Legal description _____

Property Owner:

Name Terry Jones

Address 1411 Meadow Trail, Franktown, CO 80116

Phone _____

Note:

- Percolation Test Form, Site Plan and Grain Size Distribution Curve of the Sample must be submitted with this form.
- For all <5 acres the site plan must include the entire lot. Test locations must be accurately tied to lost corners or other permanent markers.

Saturation and Swelling

- Smear surfaces removed: Yes No
- Sand or gravel added: Yes No
- Date and time presoak water added:
5/15/98 12:00 pm
- Amount of presoak water added (gallons):
6½±
- Date and time percolation test is started:
5/16/98 1:00 am
- Did water remain in the hole after the overnight swelling period:
Hole 1 Yes No
Hole 2 Yes No
Hole 3 Yes No
Hole 4 Yes No
Hole 5 Yes No

Percolation Rate Measurement

Percolation Rate (min./in.)	Hole 1	Hole 2	Hole 3	Hole 4	Hole 5	Average
	<u>480</u>	<u>40</u>	<u>80</u>	<u>80</u>	<u>40</u>	<u>144</u>

Groundwater:

- Encountered @ NE feet.
- Estimated depth to maximum seasonal water table if not encountered in profile: UNKNOWN.
- Is area believed to be subject to seasonal fluctuations which could result in a seasonal water table within 8' of surface?
 Yes No

Slope determination in absorption area: -- % to the -- (direction)

Bedrock:

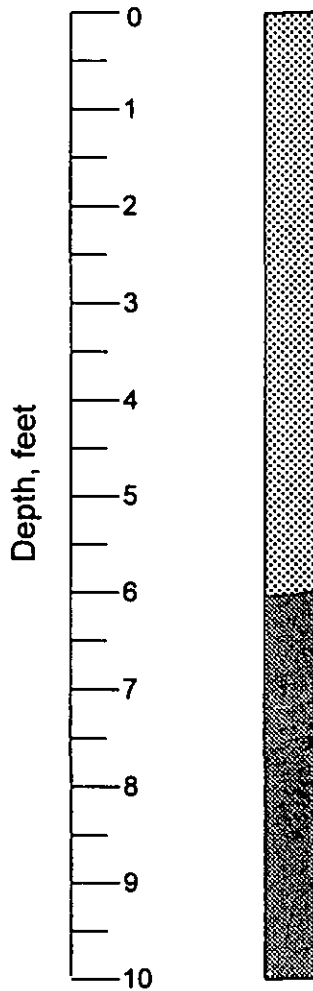
- Encountered @ 6 feet.
- Estimated depth if not encountered in profile: _____
- Type of bedrock: Sandstone
 Claystone Siltstone
_____ Other
- Is bedrock fractured or weathered?
 Yes No
- Is bedrock believed to be permeable?
(Perc rate <60 min./in.)
 Yes No

Profile Hole Information

(Soils must be classified using Unified System ASTM D2487)

GEO-teknica Engineering Job No: 98-437

Profile Hole Log



SAND, gravelly, very clayey, loose

Drive Sample Taken at 36"

8/12 Blow Count

15% Moisture Content

44% Passed the #200 Sieve

SANDSTONE

Drive Sample Taken at 96"

50/5 Blow Count

7% Moisture Content

11% Passed the #200 Sieve

Certification

I certify that the above information is correct and complete to the best of my knowledge and that all tests were performed in accordance with the provisions of Tri-County Health Department Regulation I-96 by myself or under my supervision.

Michael J. Ballou

Original Signature

6-3-98

Date

GEO-teknica

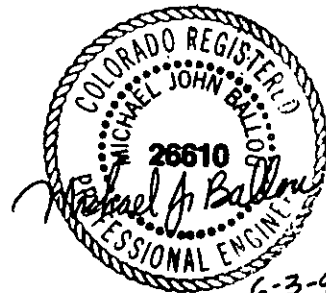
Company Name

P.O. Box 266, Franktown, Co 80116

Address

(303) 660-0300

Phone



Original Seal

TRI-COUNTY HEALTH DEPARTMENT
PERCOLATION TEST RESULT FORM
JOB NO. 98-437

HOLE NO.	HOLE DEPTH (IN.)	LENGTH OF INTERVAL (MIN.)	WATER ADDED	WATER DEPTH @ START OF INTERVAL (IN.)	WATER DEPTH @ END OF INTERVAL (IN.)	DROP IN WATER LEVEL (IN.)	PERCOLATION RATE @ FINAL INTERVAL (MIN./IN.)
1	60	30		8.0000	7.8750	0.1250	
		30		7.8750	7.8125	0.0625	
		30		7.8125	7.7500	0.0625	
		30		7.7500	7.6875	0.0625	480
2	48	30		8.0000	5.7500	2.2500	
		30		5.7500	3.8750	1.8750	
		30	**	8.0000	6.0000	2.0000	
		30		6.0000	4.5625	1.4375	
		30	**	8.0000	6.6250	1.3750	
		30		6.6250	5.6875	0.9375	
		30		5.6875	4.9375	0.7500	
		30		4.9375	4.1875	0.7500	40
3	36	30		8.0000	7.5000	0.5000	
		30		7.5000	6.9375	0.5625	
		30		6.9375	6.3750	0.5625	
		30		6.3750	5.8750	0.5000	
		30		5.8750	5.3750	0.5000	
		30		5.3750	4.9375	0.4375	
		30		4.9375	4.5000	0.4375	
		30		4.5000	4.1250	0.3750	80
4	48	30		8.0000	7.4375	0.5625	
		30		7.4375	6.9375	0.5000	
		30		6.9375	6.5000	0.4375	
		30		6.5000	6.1250	0.3750	
		30		6.1250	5.6875	0.4375	
		30		5.6875	5.3125	0.3750	
		30		5.3125	4.9375	0.3750	
		30		4.9375	4.5625	0.3750	80
5	36	30		8.0000	6.8750	1.1250	
		30		6.8750	5.7500	1.1250	
		30		5.7500	4.8125	0.9375	
		30	**	8.0000	6.7500	1.2500	
		30		6.7500	6.0000	0.7500	
		30		6.0000	5.4375	0.5625	
		30		5.4375	4.6875	0.7500	
		30		4.6875	3.9375	0.7500	40

** WATER ADDED

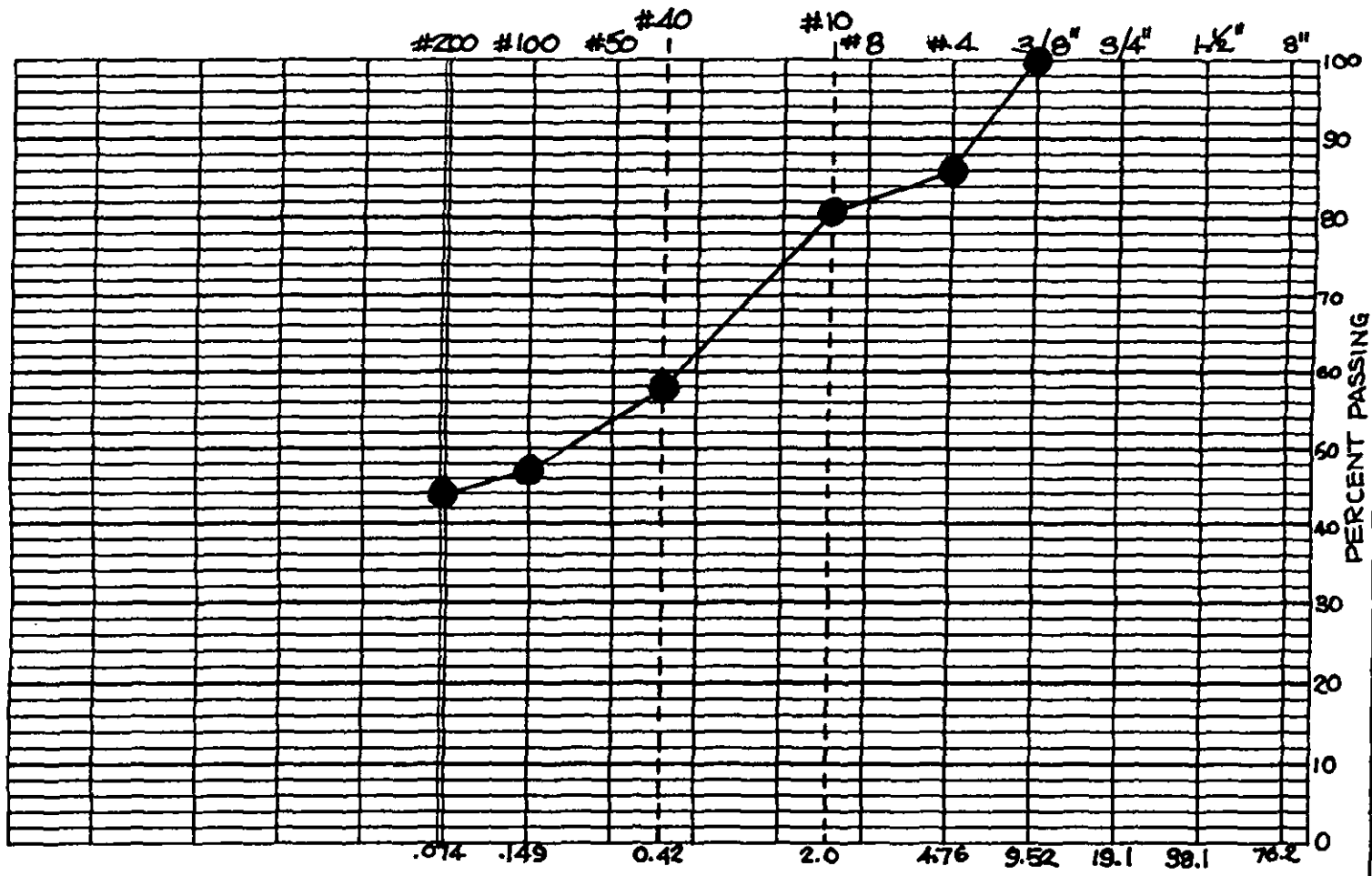
*FIELD NOTES SHALL BE RECORDED ON THIS FORM OR IN THIS FORMAT; TYPED COPIES OF FIELD RECORDS MAY BE SUBMITTED ON THIS FORM.

*A FOUR HOUR TEST MUST BE CONDUCTED UNLESS (A) WATER REMAINS IN THE HOLE AFTER THE PRESOAK IN WHICH CASE ONE 30 MIN. INTERVAL IS SUFFICIENT. (B) THE FIRST 6" OF WATER SEEPS AWAY IN <30 MINUTES IN WHICH CASE A ONE-HOUR TEST OF 6-10 MINUTE TIME INTERVALS MAY BE USED. (C) THE TEST IS BEING CONDUCTED IN SAND IN WHICH CASE A ONE-HOUR TEST OF 6-10 MINUTES TIME INTERVALS MAY BE USED. (D) THREE SUCCESSIVE WATER LEVEL DROPS DO NOT VARY BY MORE THAN 1/16 INCH IN WHICH CASE A TWO HOUR TEST MAY BE CONDUCTED.

PARTICLE SIZE DISTRIBUTION ANALYSIS

DATE SAMPLED 5-15-98 HOLE No. Profile SAMPLE DEPTH 36" REPORT No. 98-437
 SAMPLE LOCATION 1411 MEADOW TAIL, FINEWOOD KNOLLS, DOUGLAS COUNTY

SIEVE ANALYSIS



SIEVE No.	PERCENT PASSING
3.0	
1.5	
3/4	
3/8	100
#4	86
#8	
#10	81
#40	58
#50	
#100	47
#200	44

SOIL CLASSIFICATION

GC

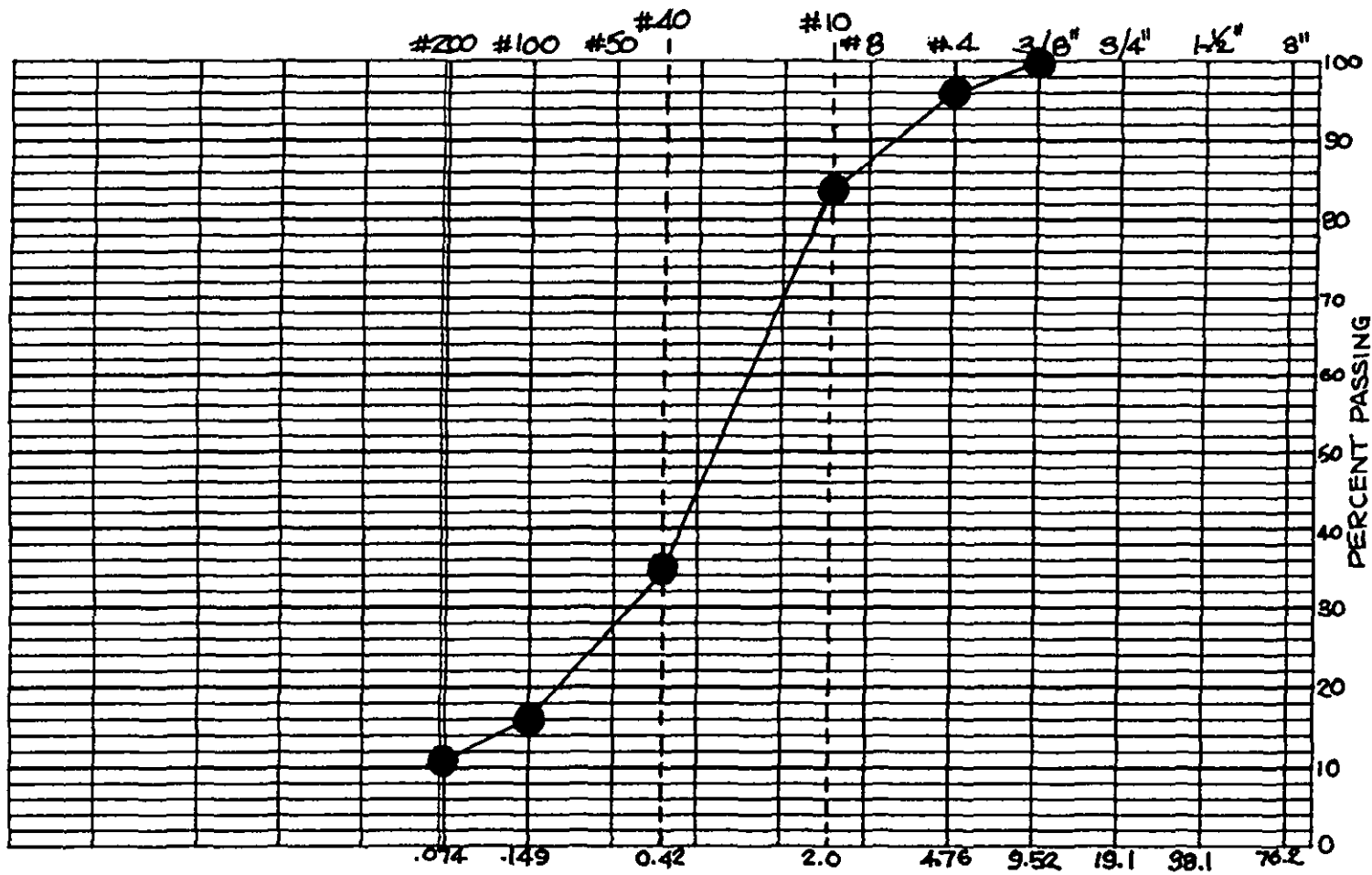
DIAMETER OF PARTICLES IN MILLIMETERS

CLAY (PLASTIC) TO SILT (NON PLASTIC)	SAND	GRAVEL
	FINE MEDIUM COARSE	FINE COARSE

PARTICLE SIZE DISTRIBUTION ANALYSIS

DATE SAMPLED 5-15-98 HOLE NO. PROFILE SAMPLE DEPTH 96' REPORT NO. 98-437
 SAMPLE LOCATION 1411 MEADOW TRAIL, PINEWOOD KNOLLS, DOUGLAS COUNTY

SIEVE ANALYSIS



SIEVE No.	PERCENT PASSING
3.0	
1.5	
3/4	
3/8	100
#4	96
#8	
#10	84
#40	35
#50	
#100	16
#200	11

SOIL CLASSIFICATION	
SWS	

DIAMETER OF PARTICLES IN MILLIMETERS

CLAY (PLASTIC) TO SILT (NON PLASTIC)	SAND			GRAVEL	
	FINE	MEDIUM	COARSE	FINE	COARSE

GEO-teknica Engineering

SOIL TESTS · PERCOLATION TESTS · FOUNDATION DESIGNS

P.O. Box 266
Franktown, Colorado 80116
Web: www.geo-teknica.com
Fax: 303-660-3615
Tel: 303-660-0300

**Terry Jones
1411 Meadow Trail
Franktown, CO 80116**

**DESIGN SPECIFICATIONS FOR
ONSITE WASTEWATER TREATMENT SYSTEM**

AT

**1411 MEADOW TRAIL,
PINEWOOD KNOLLS SUBDIVISION,
DOUGLAS COUNTY, COLORADO**

DESIGN NO. 98-3039-2
REPORT NO. 98-437
June 2, 1998



GENERAL

As requested, we have investigated subsurface conditions at the subject site. The purpose of our investigation was to evaluate subsurface conditions and to design an onsite wastewater treatment system (OWTS).

SITE CONDITIONS

The site is a vacant lot located at **1411 Meadow Trail in Pinewood Knolls Subdivision, Douglas County, Colorado**. The location of the site, percolation tests and proposed OWTS are presented in Figure 1. The slope at the proposed field is approximately 15% to the northwest.

PROPOSED CONSTRUCTION

A 5-bedroom residence is proposed as indicated on Figure 1. The base sewage loading for a 5-bedroom dwelling is 750 gallons per day (GPD), (1440 GPD with a 1.5 safety factor and design loading factors for garbage grinder and washing machine).

SUBSURFACE CONDITIONS

Subsurface conditions were investigated by one profile test hole and five percolation holes, as indicated on Figure 1. Subsurface conditions encountered consist of 6' of very clayey sand to 6' overlying sandstone to 10'. No free water was encountered in the profile pit. Percolation rates ranged from 80 to 480 minutes per inch (MPI). The average percolation rate is 144 MPI.

RECOMMENDATIONS

Due to the failed percolation rate, we recommend a low pressure shallow trench OWTS be installed in the natural soils. We recommend the OWTS be designed based on a percolation rate of 180 MPI, which is an application rate of 0.18 gallons/square foot/day (GAL/SF/DAY). This application rate utilizes slow rate soil absorption. The OWTS should be designed for a base sewage load of 750 GPD with appropriate design factors. A low pressure shallow trench disposal system design based on an application rate of 0.18 GAL/SF/DAY and a base sewage load of 750 GPD is presented on Figures 2 through 5. As indicated on Fig. 2, the disposal field has an area of 8775 square feet (SF) in 9 sections. We recommend a minimum of 2-1000 gallon, 2-compartment septic tanks. From the second chamber of the second septic tank effluent will be pumped to the drip irrigation disposal field through 9 distribution valves. **The pump will be a 1 HP Zoeller D284 to overcome 25' elevation head and flow at 75 GPM or equal.** Dosing will be done by pumping of effluent from the final chamber of the septic tank. A minimum of 150 gallons per dose will be pumped to distribute effluent through a minimum of 33% of the disposal field. **The OWTS installer must be approved by this office before work begins on this system.**

If more bedrooms are added the system will have to be increased to accommodate the new sewage load which will mean an increase in tank size and field size. The installation of a properly sized OWTS to serve future buildout can be cost effective. The proposed septic tank configuration will serve up to a 5-bedroom residence.

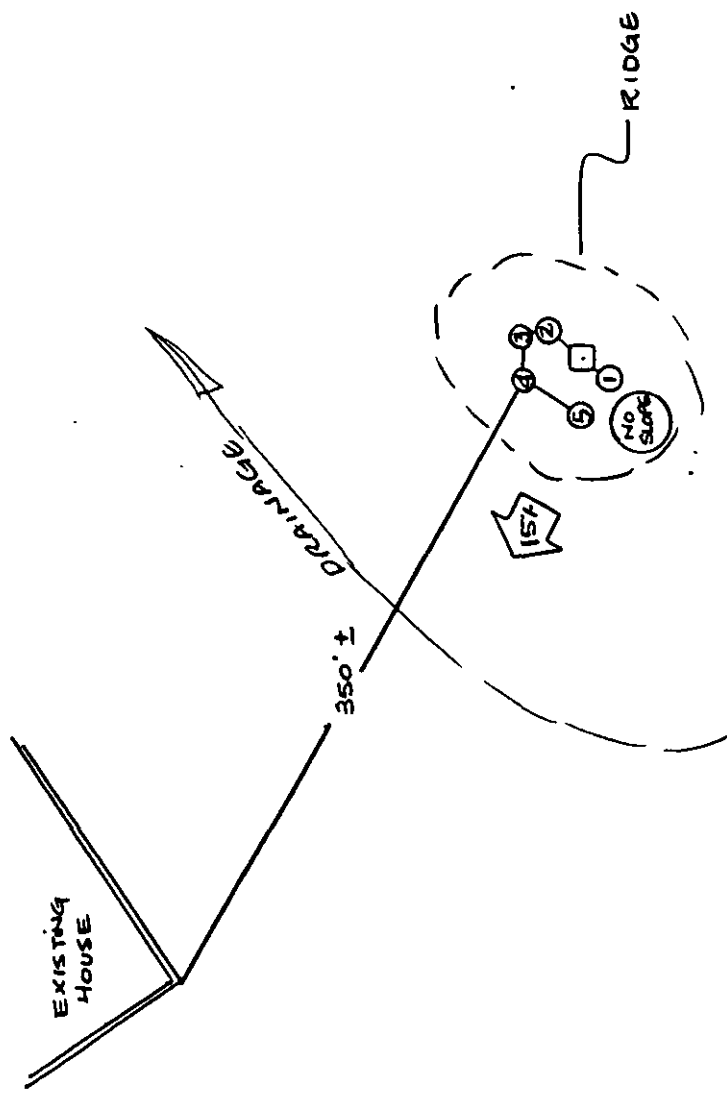
We recommend the surface of the field be seeded after installation of the drip irrigation system. A good native grass cover will prevent erosion. We recommend a seed mix such as a "Foothills, Pasture, or Prairie" mixes available at local seed stores. These mixes do not require irrigation and develop a growth 10 to 15 inches high. No automatic sprinkler system should be installed over the field.

The owner must realize an OWTS is different from public sewer service. The owner must be aware of and assume responsibility for maintenance of the system. The system is relatively maintenance free, but the owner must have the septic tanks pumped. We recommend the tanks be pumped every two years. There are daily considerations, such as not putting plastic or other nonbiodegradable material into the septic system. Water use must be monitored so toilets are not allowed to run when seals malfunction. To illustrate the point, it should be noted a running toilet will consume in excess of 1000 gallons per day, if allowed to run. As the system is designed for 750 GPD, an excess 1000 GPD loading could irreparably harm the system. No discharge from water softeners, spas, or pools should be directed to the OWTS.

LIMITATIONS

Our investigation, layout, and recommendations are based on data submitted. If conditions different from those described in this report are encountered, we should be notified to evaluate the effect of the changes on the proposed OWTS. If modifications to our recommendations are made by local health departments, we should be contacted to evaluate the impact to our OWTS recommendations.

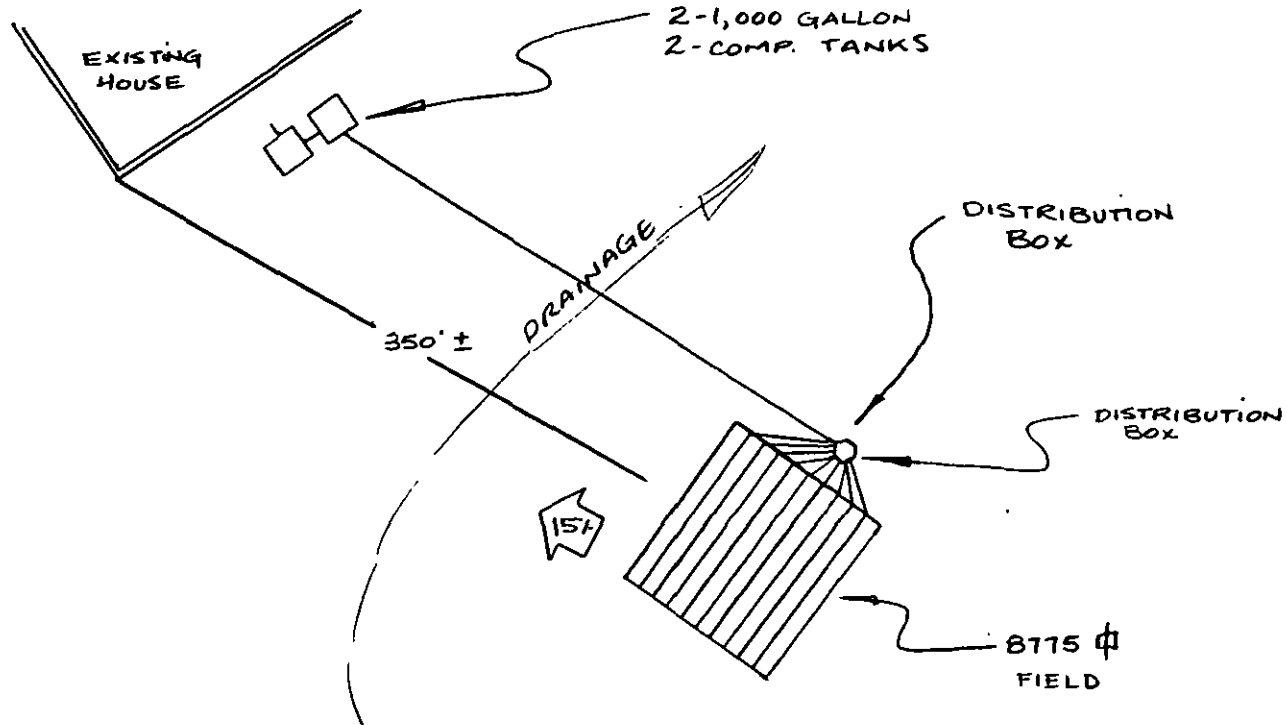
Location Map



- △ Foundation Soil Test Borings
- Percolation Test Holes
- Soil Profile Hole
- ⊗ Unsuitable Soil Profile Hole

Figure 1

Location Map







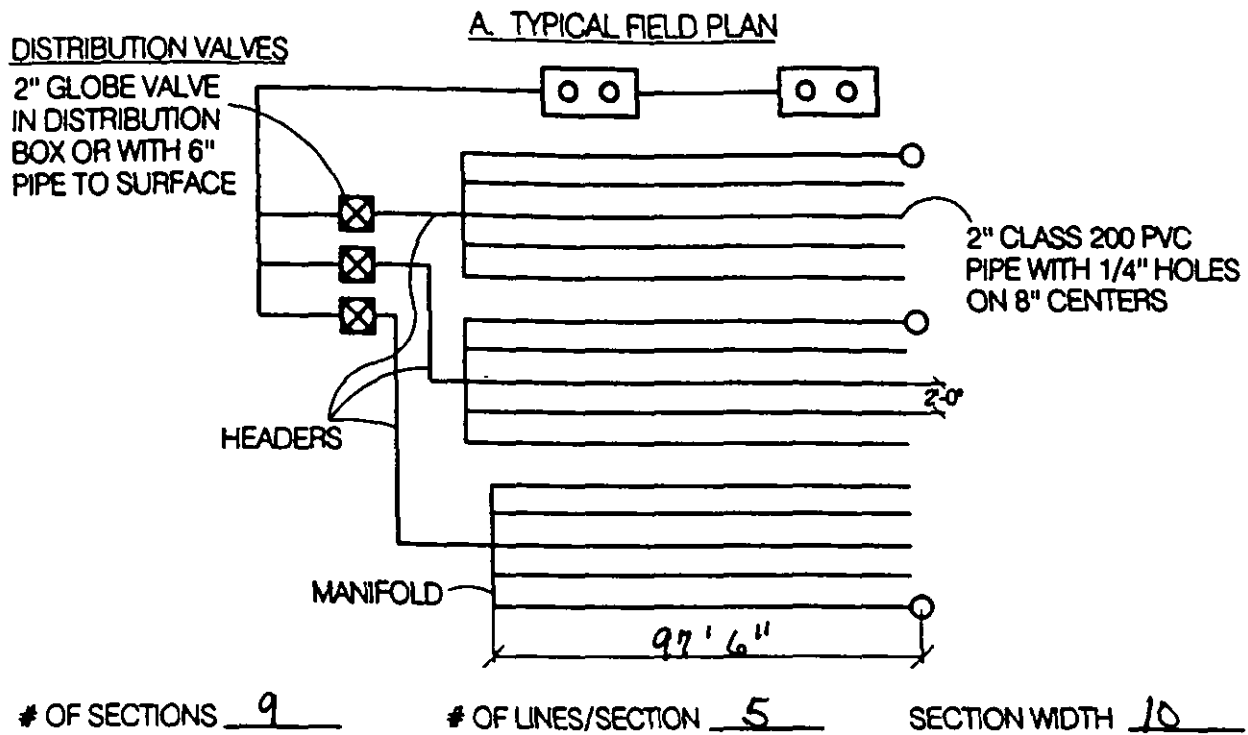
-  Foundation Soil Test Borings
-  Percolation Test Holes
-  Soil Profile Hole
-  Unsuitable Soil Profile Hole

Figure 1

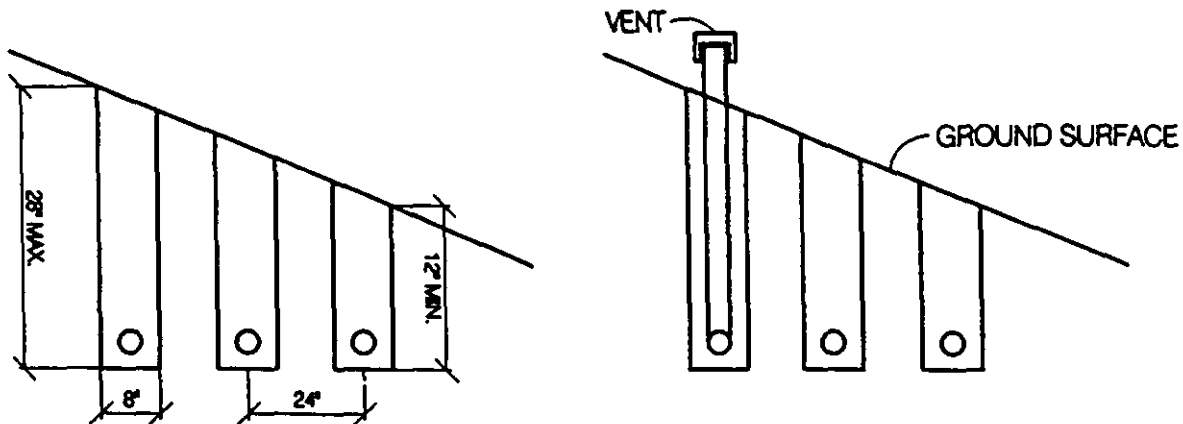
GEO-tekhnica
SOIL TESTS PERCOLATION TESTS FOUNDATION DESIGNS

98-437

DETAIL OF DISTRIBUTION LATERALS



B. TYPICAL FIELD CROSS-SECTION



C. SPECIFICATIONS

TREATMENT UNIT

1. TWO 1000 GALLON 2 COMPARTMENT SEPTIC TANKS WITH PUMP IN SECOND CHAMBER OF SECOND TANK.
2. PUMP 1 HP ZOELLER OR EQUAL
3. ALARM/CONTROL LOCATED BY OWNER
4. # OF RISERS TO SURFACE 9
5. DRAIN BACK TO PUMP; FIELD
6. OTHER _____

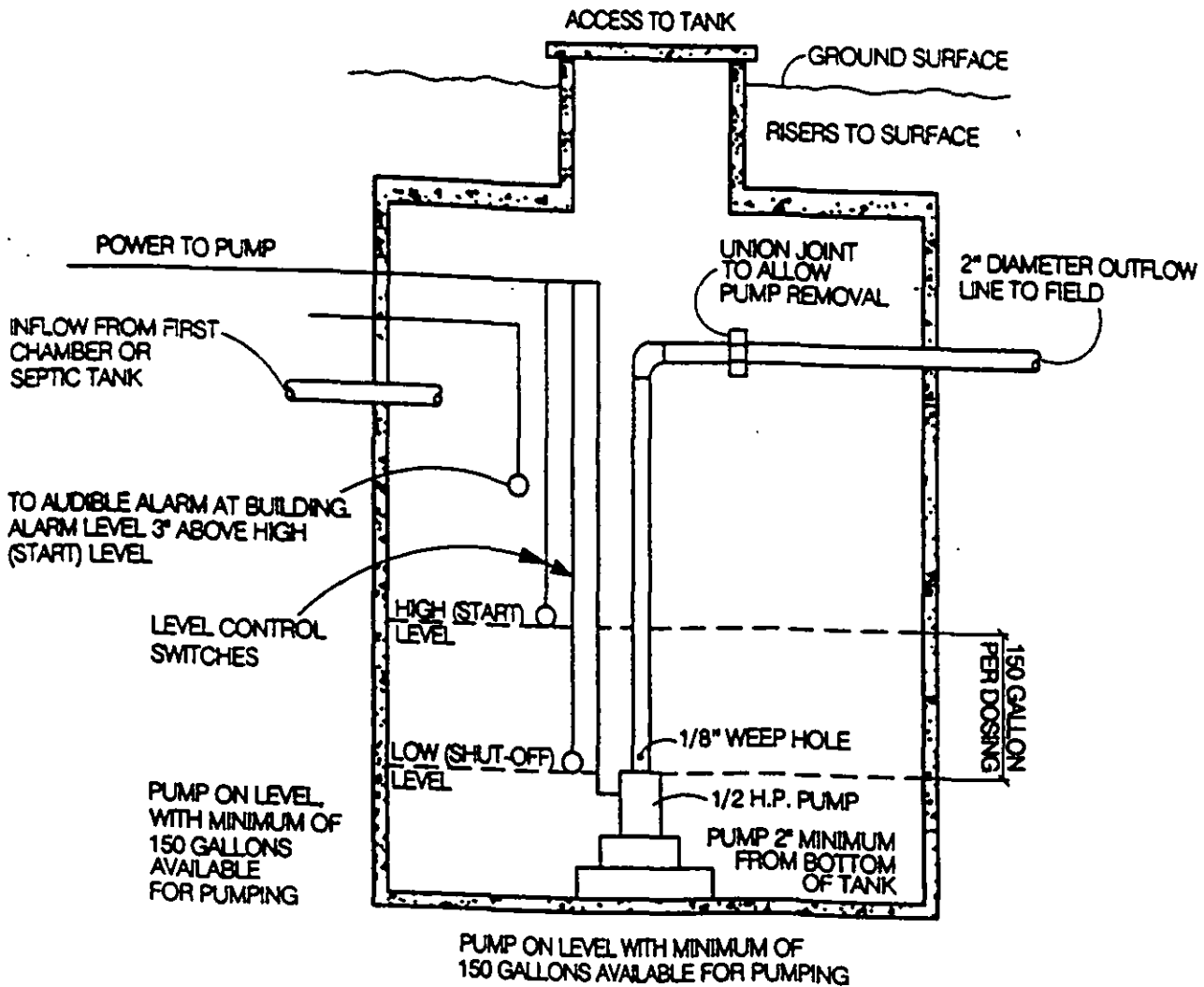
DISTRIBUTION FIELD

1. BEDROOMS 5 (Q GAL.) 750
2. DESIGN PERCOLATION RATE (MPI) .180
3. DISPOSAL RATE (R GAL/SF/DAY) .18
4. REQUIRED AREA OF FIELD 8775
5. DESIGN FIELD AREA (SQ. FT.) 8775
6. LINEAR FT. (PIPE) 4388
7. OTHER _____

NOTE: 1 HP ZOELLER D 284 OR EQUAL REQUIRED TO OVER COME 25' ELEVATION HEAD. PUMP TO DISCHARGE AT A RATE OF 75 G.P.M.

FIGURE 3

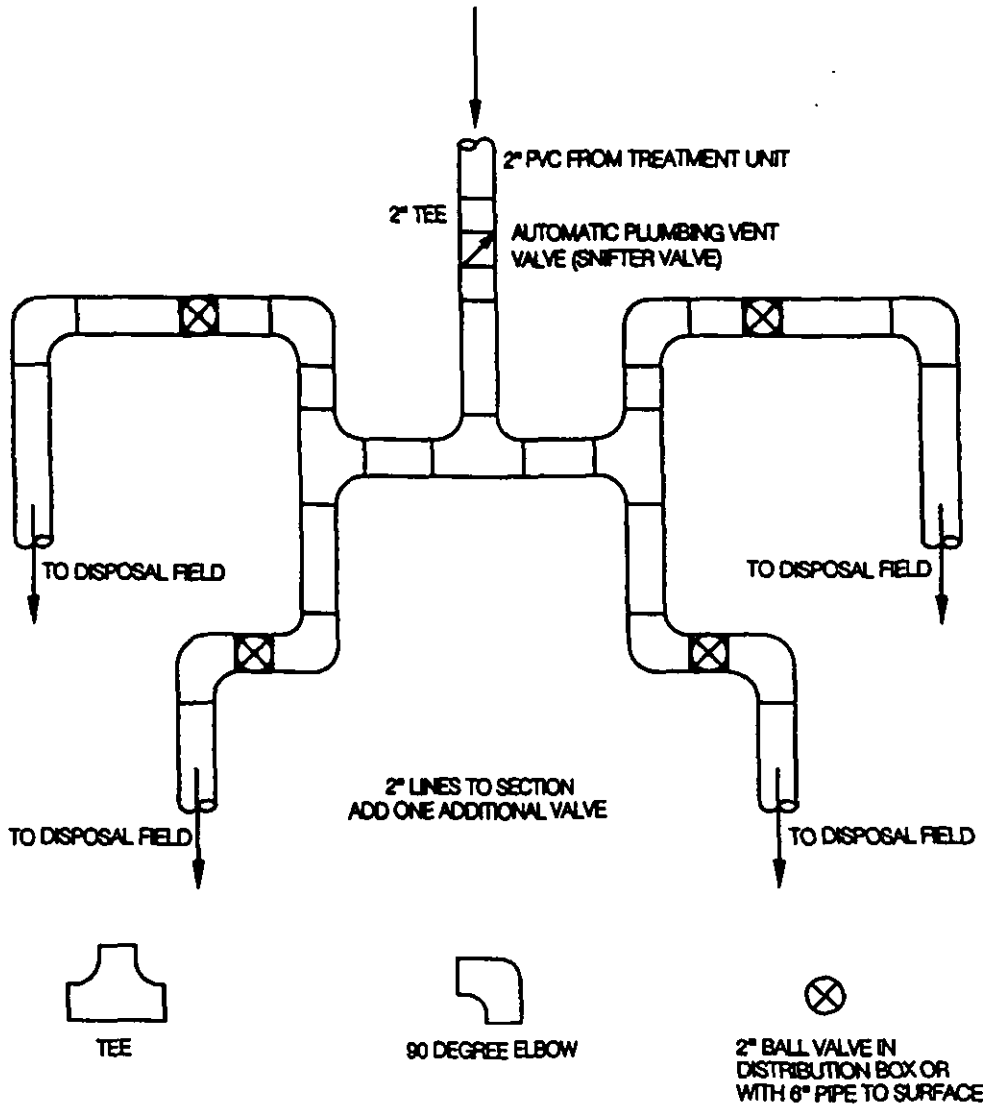
PUMP CHAMBER DETAIL



SECOND COMPARTMENT OF SECOND 1,000 GALLON
TANK OR SEPARATE 500 GALLON CHAMBER

FIGURE 4

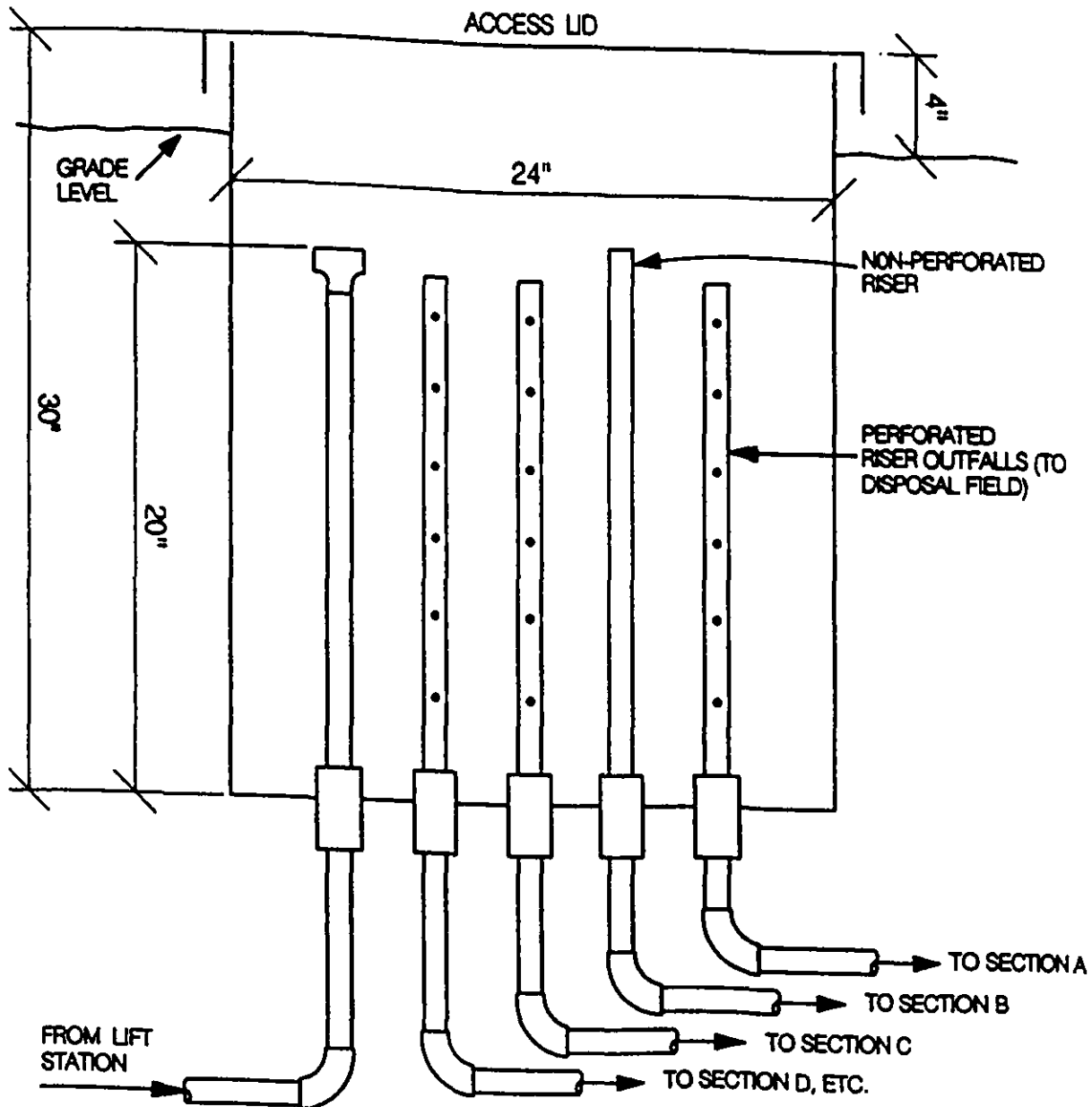
DETAIL OF DISTRIBUTION VALVES



IN ORDER TO EXTEND THE LIFE OF THE FIELD, WE RECOMMEND THAT ONE SECTION OF THE FIELD BE CLOSED AT ALL TIMES TO ALLOW DRYING OF THAT FIELD. THIS CAN BE ACCOMPLISHED BY SEQUENTIALLY CLOSING THE VALVE TO ONE SECTION OF THE FIELD EVERY SIX MONTHS.

FIGURE 5

ALTERNATE SURGE TANK DETAIL



DISTRIBUTION PIPE SHOULD SLOPE DOWNGRADE
TO LATERALS FOR FROST PROTECTION.

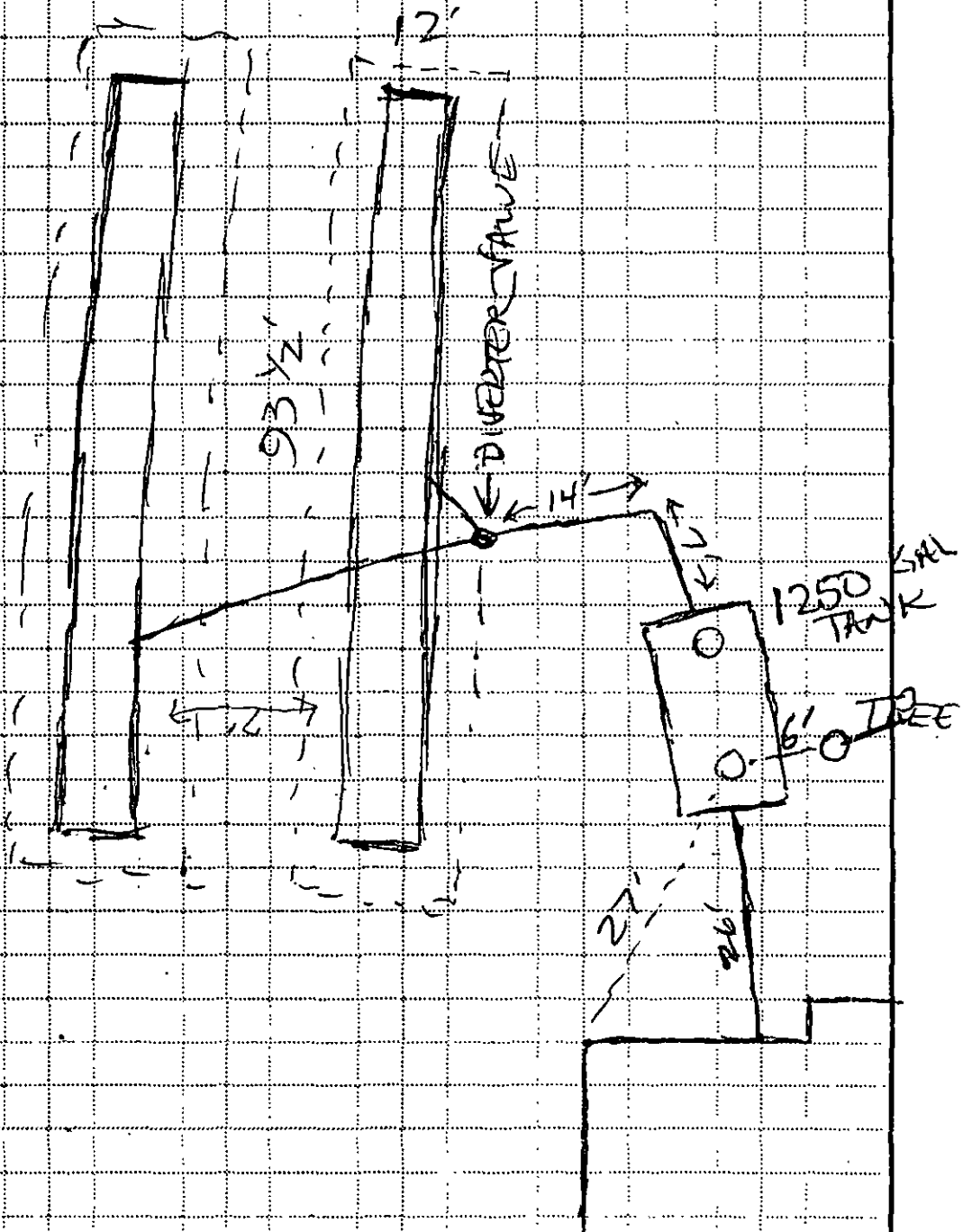
TO EXTEND THE LIFE OF THE FIELD, WE RECOMMEND ONE
SECTION OF THE FIELD BE CLOSED AT ALL TIMES TO ALLOW
DRYING OF THAT FIELD. THIS CAN BE ACCOMPLISHED BY
SEQUENTIALLY ROTATING THE NON-PERFORATED TALL
RISER TO ONE SECTION OF THE FIELD EVERY SIX MONTHS.

FIGURE 5A



Onsite System
As-Built
Drawing

Property Address 1411 MEADOW TRAIL
 Permit # 10134
 Date System Completed 6/11/90/MON
 Installer's Name PATTONY EXC. INC
 Installer's License # 91-060
 Installer's Address and Phone # 375 BUCKSKIN RD - PARKER CO 80134

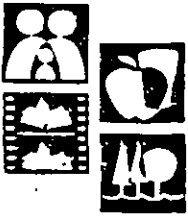


~~0.32~~

112.9

935
1870

12
935



Tri-County Health Department

Serving Adams, Arapahoe and Douglas Counties

File No. 10/34

Fiscal Control No. _____

APPLICATION TO INSTALL () REPAIR () EXPAND AN INDIVIDUAL SEWAGE DISPOSAL SYSTEM

Lot 82
Pinewood Knolls

8699992

TO BE COMPLETED BY APPLICANT

Please Print Clearly

Application Fee:

Install (New): \$150

Repair, expand, remodel: \$150.00

Legal Description/Address: 1411 Meadow Trail / Lot 82
 Owner K. B. Griffin, Inc. Installer Tony Glado Lic. No. _____ Year _____
 Address 5573 Golf Course Dr. Phone 697 4300 Address Pottery Phone _____
 Applicant KENZIE GRIFFIN Design Engineer _____ Job No. _____
 Address same Phone same Address _____ Phone _____

LOCATION OF PROPOSED FACILITY:

County Douglas City or Town (if within City or Town limits) _____ Lot size 5.8 acres

WASTE TYPE: () Domestic () Non-domestic _____

SOURCE AND TYPE OF WATER SUPPLY: () Well () Community () Other _____

If supplied by community water, give name of supplier: _____

GENERAL INFORMATION: Number of Bedrooms 4 Basement Plumbed? NO

FOR OFFICE USE ONLY

System designed for _____ gallons per day.

SOILS DATA:
Depth to bedrock 10' Depth to ground water 10' Percent ground slope: 5% to W

Percolation Rate: #1 40 #2 60 #3 30 #4 _____ #5 _____ #6 _____

AVERAGE PERCOLATION RATE 43

Is this system within a municipal sewage district? NO Distance to nearest municipal sewer line > 400

TYPE OF INDIVIDUAL SEWAGE DISPOSAL SYSTEM PROPOSED Standard FINAL DISPOSAL BY absorption

SYSTEM DESIGN INFORMATION

Minimum septic tank 1250 gallons. Minimum absorption area 2240 square feet.

Maximum depth of absorption area 4' (not to exceed depth of percolation test holes).

Filler material size: 1/2 inch to 2 1/2 inch diameter. Minimum depth of filler material below distribution pipe 6 inches. Minimum depth of filler material over pipe 2 inches. Total depth of rock to be 12" inches.

SPECIAL DESIGN Because the field is over 2,000 sq ft it MUST be closed with a dosing siphon or an alternative is install two alternating fields of 1120 sq ft each.

Will design engineer inspect the completed system? _____

I the undersigned hereby certify that all information and data provided is correct and true to the best of my knowledge. Also, I agree that the construction of this individual sewage disposal system will comply with Tri-County Health Department regulation #1-85 and all other applicable laws and regulations.

Kenzie Griffin 12/13/89
 Applicant's Signature Date
 Date system inspected and approved 6-12-90

John Kleckner 12-15-89
 Application Reviewed and Approved Date
 Public Health Sanitarian John Kleckner

Adams City
4301 E. 72nd Ave.
Commerce City, CO 80022
288-6816

Aurora
15400 E. 14th Pl.
Aurora, CO 80011
341-9370

Bellevue
7000 E. Bellevue, #301
Englewood, CO 80111-1628
220-9200

Castle Rock
961 S. Plum Creek Blvd
Castle Rock, CO 80104
688-5145

Englewood
4857 S. Broadway
Englewood, CO 80110
761-1340

Thornton
2200 E. 104th Ave., #115
Thornton, CO 80233
452-9547

5/21/90 Buried elect line in area
of fields. It will be deep
enough approx 6' deep. I met
Rongji + Amy from the elect Co.
on site. Further more I told Rongji
we want an obs. hole 4' min under
the field dug to see about rock / sand
stone evidence. CP

6/6/90 Open pit inspection made
approx 6' under the field
in North section. NO bedrock
encountered 6H



Tri-County Health Department

Percolation Test and Soils Data Form

Property address _____

Legal description lot 82, Pinewood Knolls Sub. - D.C.

Property Owner:

Name K. B. Griffin Const.

Address 5573 So. Golf Course Dr., Morrison, Co. 80465

Phone 697-4300

Note:

- Percolation Test Form, Site Plan and Grain Size Distribution Curve of the Sample must be submitted with this form.
- For all Lots <5 acres the site plan must include the entire lot. Test locations must be accurately tied to lot corners or other permanent markers.

Saturation and Swelling

- Smear surfaces removed: Yes No
- Sand or gravel added: Yes No
- Date and time pre-soak water added:
11-29-89 - 1:30
- Amount of pre-soak water added (gallons):
5
- Date and time percolation test is started:
11-30-89 - 1:00
- Did water remain in hole after the overnight swelling period:

Hole 1	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Hole 2	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Hole 3	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Percolation Rate Measurement

Percolation Rate (min./in.)	Hole 1	<u>40</u>	
	Hole 2	<u>60</u>	
	Hole 3	<u>30</u>	
	Average	<u>43</u>	

Groundwater:

- Encountered @ None feet.
- Estimated depth to maximum seasonal water table if not encountered in profile: 60'
- Is area believed to be subject to seasonal fluctuations which could result in a seasonal water table within 3' of surface?
 Yes No

Slope determination in absorption area: 5 % to the W. (direction)

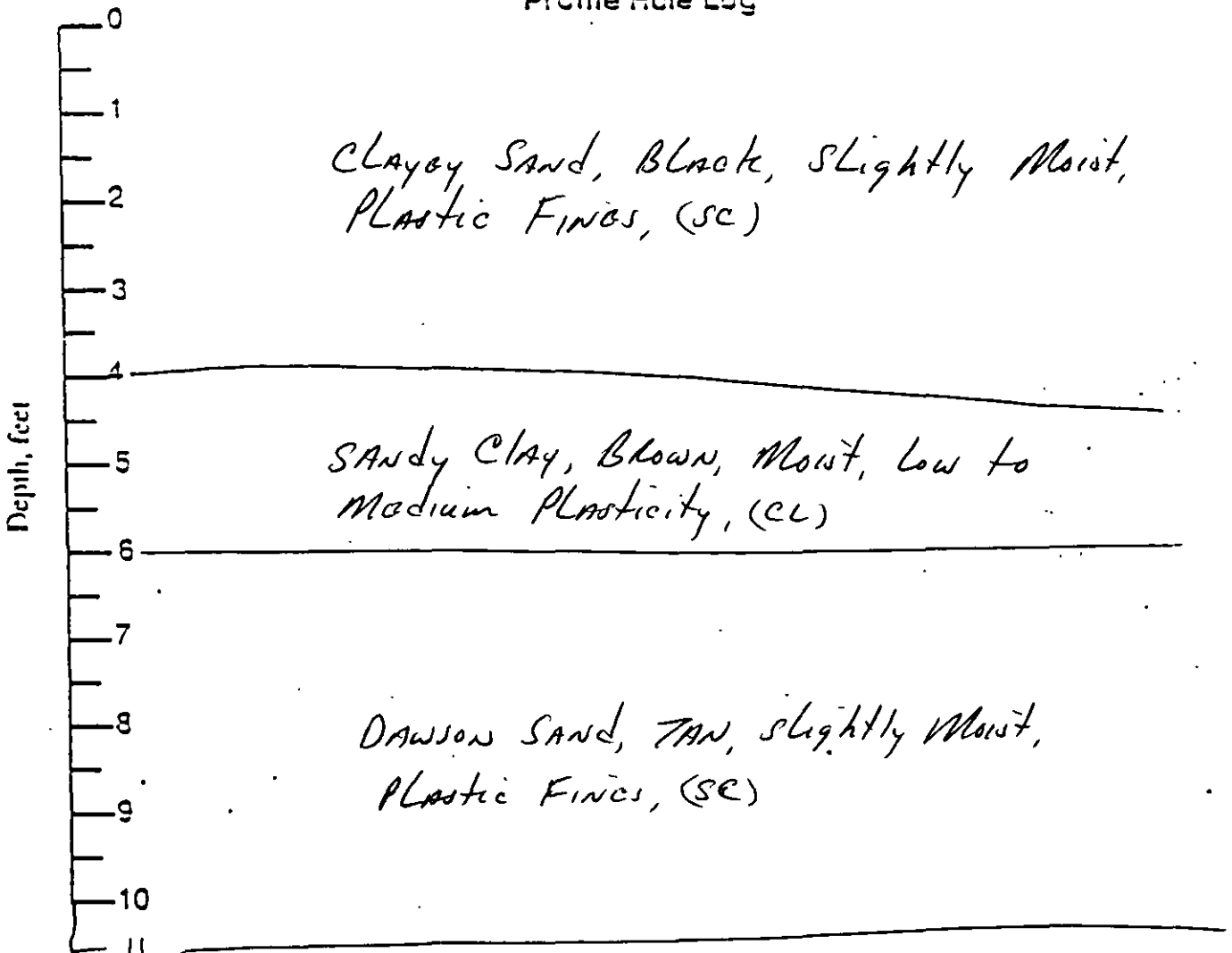
Bedrock:

- Encountered @ None feet.
- Estimated depth if not encountered in profile: 15'
- Type of bedrock: Sandstone
 Claystone Siltstone
 Other _____
- Is bedrock fractured or weathered?
 Yes No
- Is bedrock believed to be permeable? (Per. rate <50 min./in.)
 Yes No

Profile Hole Information (Cont.)

(Soils must be classified using Unified System ASTM D2487)

Profile Hole Log



Certification

I certify that the above information is correct and complete to the best of my knowledge and that all tests were performed in accordance with the provisions of Tri-County Health Department Regulation I-83 by myself or under my supervision.

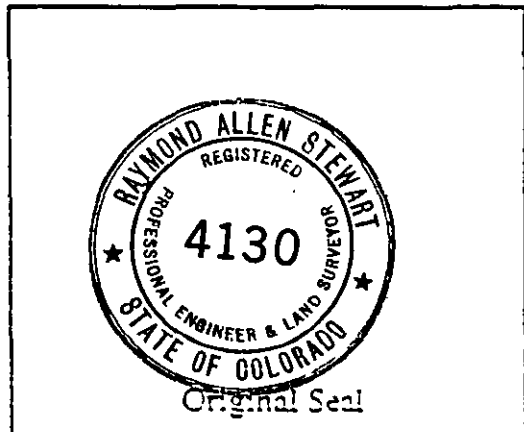
Raymond A. Stewart
Original Signature

12-9-89
Date

Colorado Soil
Company Name

5 Phelps Dr., C.R.
Address

688-9475
Phone



PERCOLATION TEST RESULTS:

On November 30, 1989, percolation tests were conducted on the site known as LOT B2, PINEWOOD KNOLLS SUBDIVISION, DOUGLAS COUNTY, COLORADO.

The percolation tests were performed in accordance with the Tri-County Health Departments Regulation No. 1-88, "Individual Sewage Disposal Systems."

The percolation rates of these tests are reported in minutes of time per inch of water drop. The field percolation rate is the average of all the test holes observed in the proposed leaching area.

SOIL PROFILE HOLE ... 11 feet deep

0'-4' Clayey Sand, slightly moist, black
4'-6' Sandy Clay, moist, brown
6'-11' Dawson Sand, slightly moist, tan

PERCOLATION TEST HOLE #1 ... 48 inches deep
Percolation rate = 40 minutes per inch

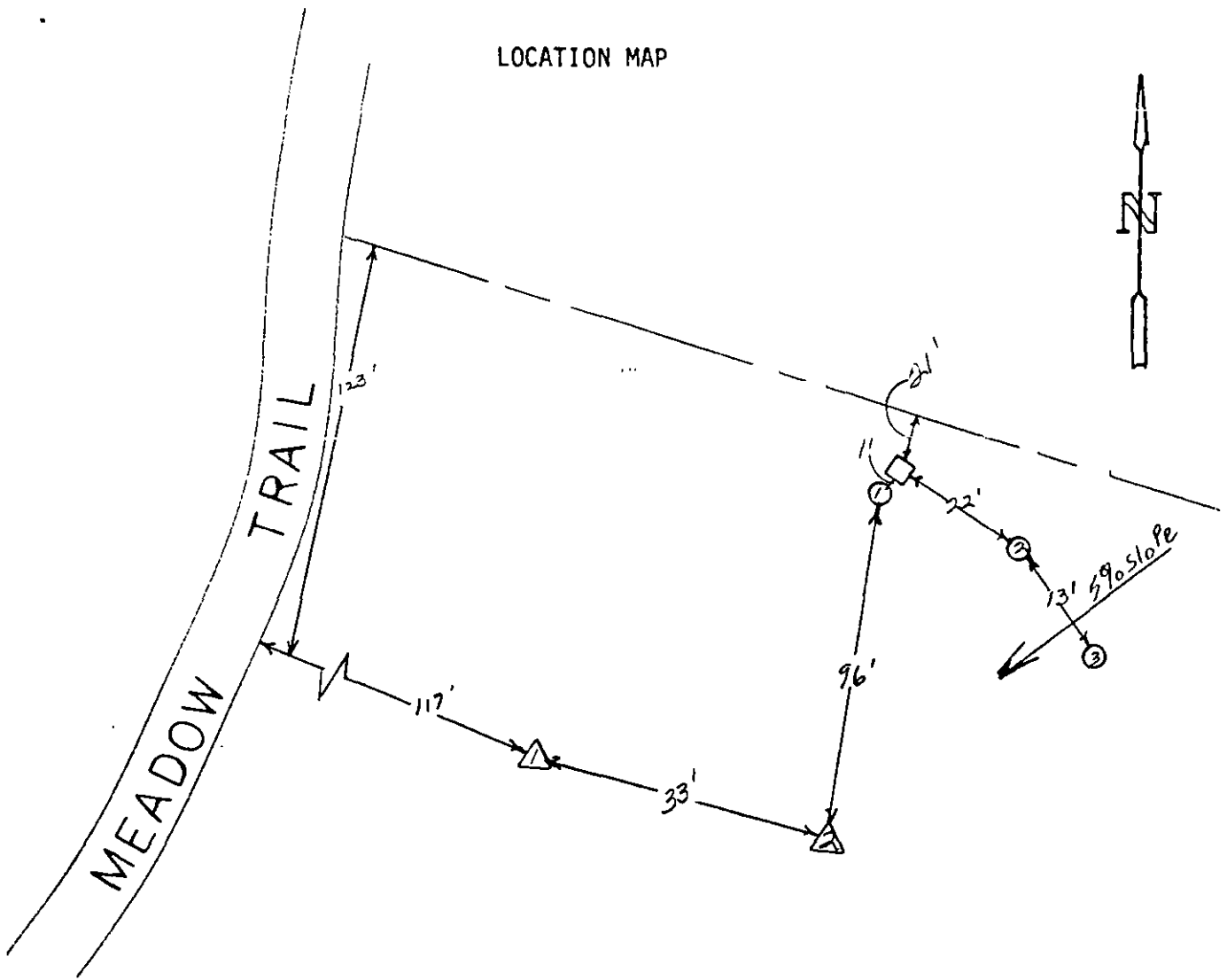
PERCOLATION TEST HOLE #2 ... 72 inches deep
Percolation rate = 60 minutes per inch

PERCOLATION TEST HOLE #3 ... 72 inches deep
Percolation rate = 30 minutes per inch

FIELD PERCOLATION RATE = 43 minutes per inch

A soil sample was taken at a depth of six feet (6') from the soil profile hole and consists of 9% moisture, 0% gravel, 73% sand, and 27% minus 200 material.

LOCATION MAP



LEGEND:

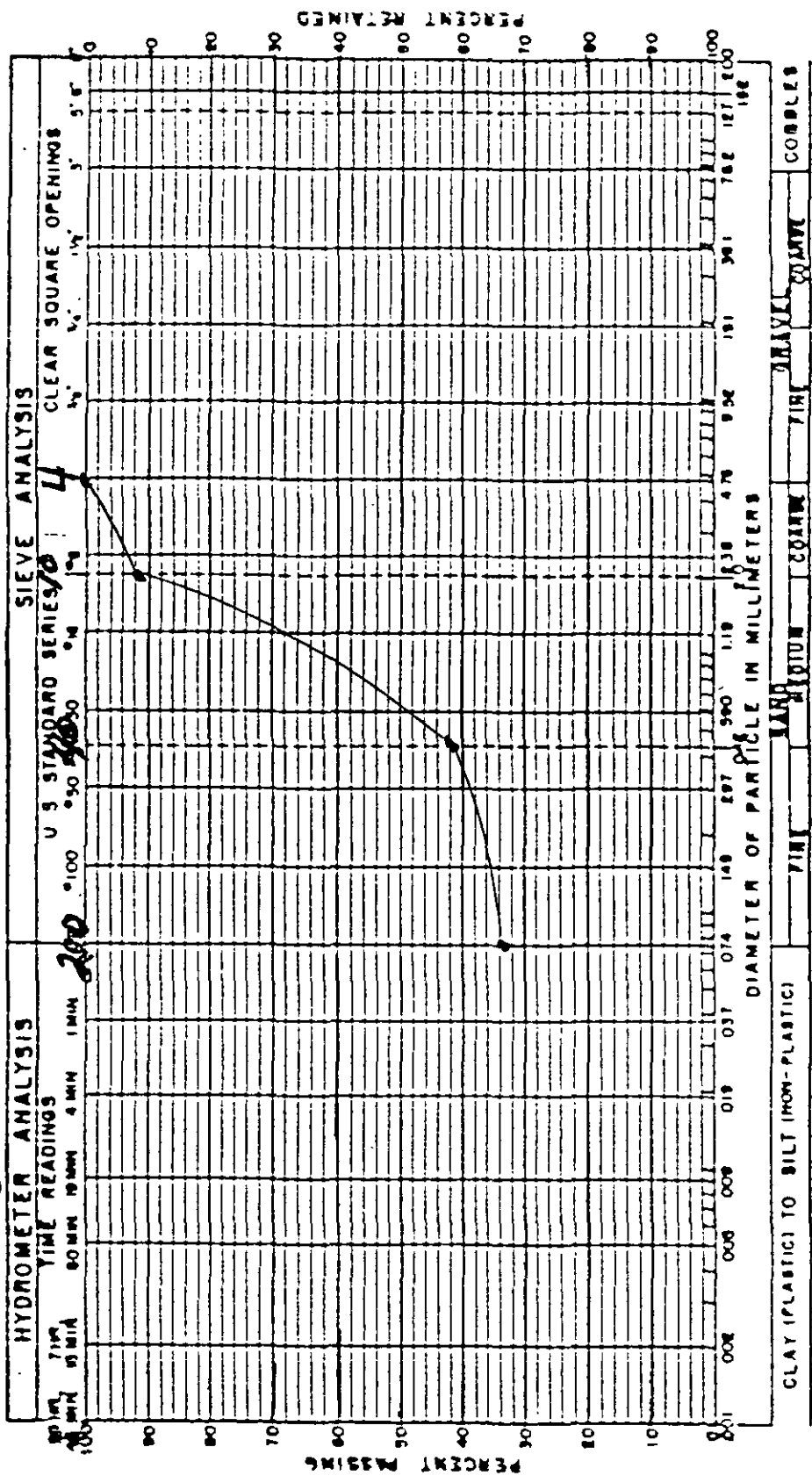
- △ FOUNDATION SOIL TEST HOLE.
- SOIL PROFILE HOLE.
- PERCOLATION TEST HOLE.

Figure 1

89-360

K. B. GRIFFIN

SPH 6-11

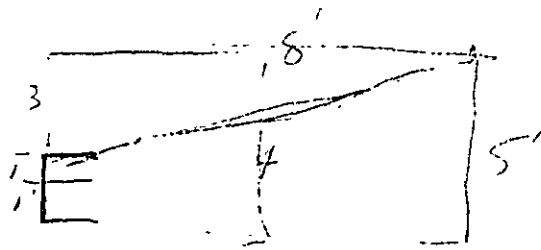


GRADATION TEST RESULTS

$$\begin{array}{r} 81 \\ \hline 12 \overline{) 100} \\ \underline{96} \end{array}$$

$$\begin{array}{r} 81 \\ \hline 12 \\ \hline 162 \\ \hline 81 \\ \hline 972 \end{array}$$

$$\begin{array}{r} 90 \\ \hline 12 \\ \hline 180 \\ \hline 90 \\ \hline 1080 \end{array}$$



$$\begin{array}{r} 92 \\ \hline 12 \\ \hline 184 \\ \hline 92 \\ \hline 1104 \end{array}$$



Scale 1"=20'

Job Address — Site Plan
 1411 Meadow Trail
 Lot 82
 Designer, Builder — Pinewood Knolls
 K.B. Griffin Corporation
 5573 Golf Course Drive
 Morrison, Ca 93465
 Phone 697-4300