EL PASO COUNTY DEPARTMENT OF HEALTH AND ENVIRONMENT Permit # ON 0006744
INDIVIDUAL SEWAGE DISPOSAL SYSTEM INSPECTION FORM Date 31 October 2005
#6201004003

APPROVED: Yes ✓ No ____ Environmental Health Specialist: J. Christensen

Address 13925 Staffshire Ln. 80908 Owner Acuff Homes
Legal Description Lot 53, Cathedral Pines, Fil #1
Residence ✓ # Bedrooms 6 Commercial ___ System Installer R+R Ditching

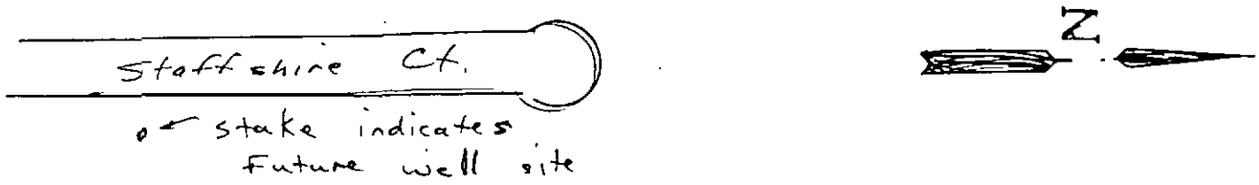
SEPTIC TANK:
Commercial ✓ Noncommercial ____ Construction Material Concrete Capacity Gallon 1500 / 1000 - pump in 2nd chamber

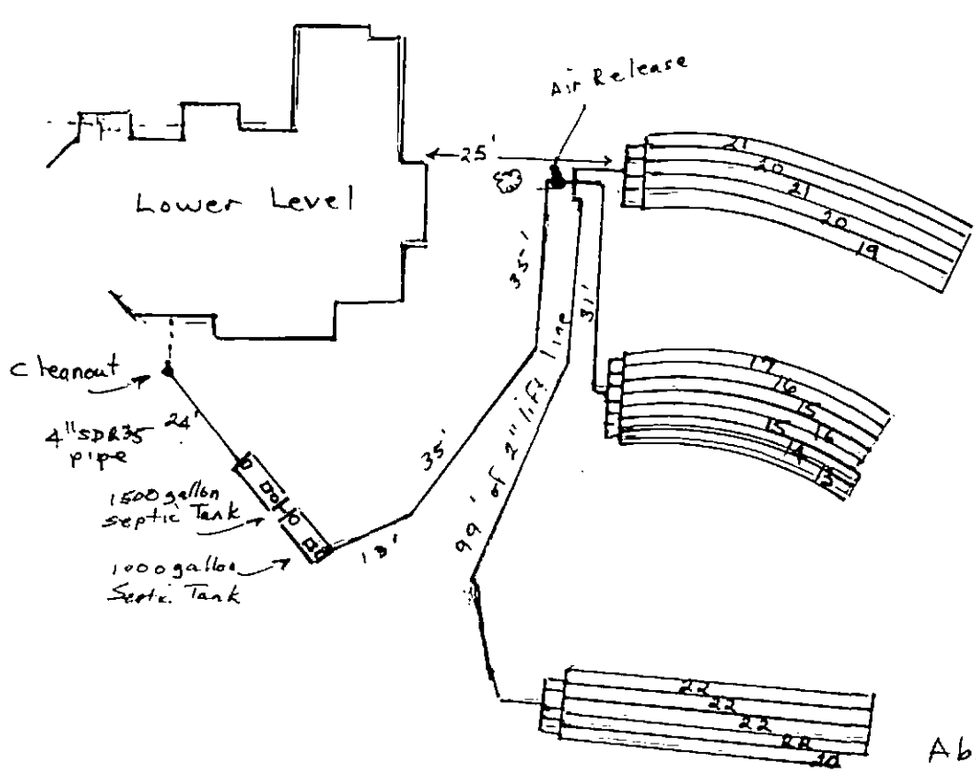
DISPOSAL FIELD:
Trench: Depth (Range) ____ Width ____ Total Length ____ Sq. Ft. ____
Bed: Depth (Range) ____ Length ____ Width ____ Sq. Ft. ____
Depth of Rock ____ Under PVC ____ Type of cover on Rock ____

DRYWELLS: # of Pits ____ Rings (Pit 1) ____ Rings (Pit 2) ____ Working Depth #1 ____ #2 ____
Size (L x W) #1 ____ #2 ____ Total Sq. Ft. ____

ROCKLESS SYSTEMS:
Standard Chamber: Type Quick 4 #Chambers 315 Sq. Ft./Chamber 9.2 (Bed) ✓ Trench ____
High Profile Units: Type Chamber ____ #Chambers ____ Sq. Ft./Chamber ____ Bed ___ Trench ___
Reduction Allowed 35 % Sq. Ft. Required 4320 Depth (Range) 12" - 18"
Sq. Ft. Installed 3150 Equivalent Sq. Ft. Installed with Reduction 4846
Engineer Design (Y) N Engineering Firm Colorado Engineering
Approval letter provided? (Y) N
Well installed at time of septic system inspection? Y (N) Public Water? ____
*Approval will be revoked if in the future the well is found to be within 50 feet of the septic tank and/or 100 feet of the disposal field.

NOTES: Foundation poured. House sewer stub out approx 4' deep. Concrete risers on both inlet & outlet manhole covers of both septic tanks. Alarm & wiring to be installed by licensed electrician





Absorption Bed: 101 Quick 4 chambers

Absorption Bed: 106 Quick 4 chambers

Absorption Bed: 108 Quick4 chambers

EL PASO COUNTY

DEPARTMENT OF HEALTH AND ENVIRONMENT

301 S Union Blvd, Colorado Springs, Colorado 719-575-8636

INDIVIDUAL SEWAGE DISPOSAL SYSTEM PERMIT

OWNER NAME:	ACUFF HOMES			**PERMIT NUMBER:**	ON0006744
ADDRESS:	13925 STAFFSHIRE LN			**DATE PERMITTED:**	9/23/2005
CITY.STATE.ZIP:	COLORADO SPRINGS	CO	80908		
INSTALLED BY:				**PHONE NUMBER:**	7195409227

This permit is issued in accordance with 25-10-107 Colorado Revised Statues. PERMIT EXPIRES upon completion-installation of sewage-disposal system or at the end of twelve (12) months from date of issue- whichever occurs first-(unless work is in progress). If both a building and an ISDS permit are issued for the same property and construction has not commenced prior to the expiration date of the building permit, the ISDS permit shall expire at the same time as the building permit. This permit is revokable if all stated requirements are not met.
Sewage disposal system to be installed by an El Paso County Licensed System Contractor or the property owner.

THIS PERMIT DOES NOT DENOTE APPROVAL OF ZONING AND ACREAGE REQUIREMENTS.

Rosemary C. Baker-Martin

DIRECTOR, EL PASO COUNTY DEPARTMENT OF HEALTH AND ENVIRONMENT

PERMIT EXPIRATION DATE :
Expires twelve months from date of issue

Bruce Wallace 5783127

ENVIRONMENTALIST / PHONE NUMBER*

* NOTE: FOR INSPECTIONS CALL 575-8699 BEFORE 8:30 A.M. OF THE DAY TO BE INSPECTED.
(WEEKENDS & HOLIDAYS EXCLUDED)
LEAVE THE ENTIRE SEWAGE DISPOSAL SYSTEM UNCOVERED FOR FINAL INSPECTION.

WATER SOURCE: WELL

MINIMUM SEPTIC TANK SIZE : _____ GALLONS **MINIMUM ABSORPTION AREA REQUIRED** _____ SQ FT

PLANNING DEPARTMENT ☑ **ENUMERATION** ☑ **FLOOD PLAIN** ☑ **WASTEWATER** N/A

COMMENTS:

INSTALL LEACH FIELD ACCORDING TO ENGINEERS DESIGN AND IN AREA OF PERC TEST. MAXIMUM DOSE OF PUMP STATION IS 500 GALLONS TO KEEP THE REQUIRED 2000 GALLONS FOR SEPTIC TANKS. AN ENGINEERS APPROVAL LETTER MUST BE RECEIVED BEFORE FINAL APPROVAL CAN BE GIVEN.

The Health Office shall assume no responsibility in case of failure or inadequacy of a sewage-disposal system, beyond consulting in good faith with the property owner or representative. Free access to the property shall be authorized at reasonable time for the purpose of making such inspections as are necessary to determine compliance with requirements of this law.

FOR ADMINISTRATIVE USE ONLY

Permit Ready: 10-4-05 MW Called _____ Mailed

Final Inspection Requested: BY: Lynn - R+R Date Called In: 10/31/05 7:25 AM

Phone # 535-9999 Septic Site will be ready: ASAP

Inspector _____ Record I.D. 6744

EL PASO COUNTY DEPARTMENT OF HEALTH & ENVIRONMENT

301 South Union Boulevard • Colorado Springs, CO • 80910-3123 • (719) 575-8635 • Fax: (719) 578-3188

**ALL PAYMENTS ARE DUE AT TIME OF SUBMITTAL IN CASH OR CHECK*

APPLICATION FOR AN ON-SITE WASTEWATER TREATMENT SYSTEM PERMIT

☒ NEW CONSTRUCTION ☐ MINOR REPAIR ☐ MAJOR REPAIR/ADD

Owner Acuff Homes (Warren) Daytime Phone 540-9227

Address of Property 13925 Staffshire Lane City & Zip CS 80908

Legal Description Lot 53 Cathedral Pines Filing #1

Owner's MAILING Address P.O. Box 38295 City, State & Zip Colo Springs, Co 80937

Lot Size 2.5 Acres Tax Schedule # 62010-04-003

Type of Building: ☒ Frame ☐ Modular ☐ Mobile ☐ Commercial ☐ Manufactured ☐ Other _____

Water Supply: ☒ Well or Spring ☐ Cistern ☐ Public Inside City Limits: ☐ No ☐ Yes-City _____

~~☒ MAIL PERMIT~~ OR ☒ PICK UP PERMIT ☐ THERE IS AN ADDITIONAL RESIDENCE ON THIS PROPERTY

MAXIMUM POTENTIAL NUMBER OF BEDROOMS 6

Percolation Test Attached (Y) N Basement (Y) N Garbage Disposal (Y) N Clothes Washer (Y) N

I have supplied a plot plan as described on the back of this form. I acknowledge the completeness of the application is conditional upon such further mandatory and additional tests and reports as may be required by the Department to be made and furnished by an applicant for purposes of evaluating the application, and issuance of the permit is subject to such terms and conditions as deemed necessary to ensure compliance with rules and regulations adopted pursuant to C.R.S. 25-10-107 et. seq. I hereby certify all represented to be true and correct to the best of my knowledge and belief, and are designed to be relied on by the El Paso County Department of Health and Environment in evaluating the same for purposes of issuing the permit applied for herein. I further understand any falsification or misrepresentation may result in the denial of the application or revocation of any permit granted based upon said application and in legal action for perjury as provided by law.

OWNER'S SIGNATURE _____ Date 9-20-05

You will be notified by telephone when your permit is ready for pick up. Please allow a minimum of 10 days for new septics.

DEPARTMENT OF HEALTH USE ONLY

~~1000 GALLONS~~ Minimum Tank Capacity | _____ Minimum Absorption Area | 9-21-05 Date of Site Inspection

REMARKS Install Leach Field according to engineers design and in area of perc Test. Maximum dose of pump station is 500 Gallons To Keep the required 2000 Gallons for Septic tanks. ~~location of perc Test does not match plot plan drawings~~ An Engineers Approval Letter must be received before Final approval can be given.

EHS INSPECTOR _____ DATE 9-21-05 (APPROVED) DENIED

FEES AS OF 02/23/2005:

NEW CONSTRUCTION **$407.00 + Planning Department Surcharge of $118.00. = $525.00**
MAJOR REPAIR/ADDITION **$448.00**
MINOR REPAIR/ADDITION **$154.00**

DATE TO PLANNING / WASTEWATER: _____

DATE TO FLOODPLAIN/ENUMERATIONS _____

PLEASE COMPLETE THE BACK OF THIS FORM

07-22-05

1) We require an original of your **PERCOL. ON (PERC) TEST** with an original p ssional engineer's (PE) stamp and signature as well as a plot of the percolation test hole locations with measurements from a fixed reference point.

2) **PROPERTY ADDRESS OR LOT NU T BE POSTED AND CLEARLY VISIBLE FROM ROAD. PERC HOLES MUST BE CLEARLY MA ED C N ADDITIONAL CHARGE FOR A RETURN TRIP TO THE SITE MAY BE ASSESSED.**

3) A **PLOT PLAN** must be drawn (not to scale) on an **8 ½ x 11** sheet er. The plot plan must include:

1) a north bearing
2) property lines
3) property dimensions
4) all buildings (proposed or existing)
5) proposed septic system site
6) alternate septic system site
7) driveway (proposed or existing and name of adjoining street)

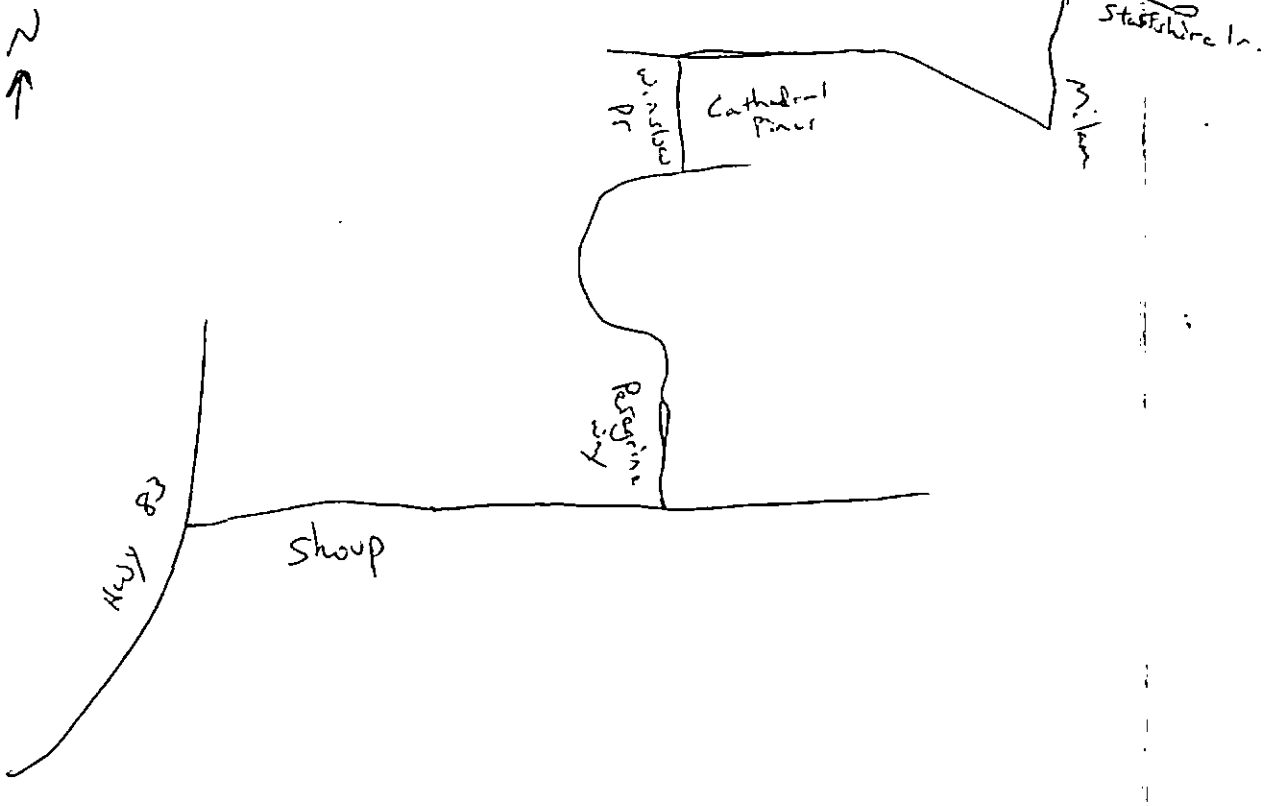
4) Initial any of the following features that apply to your property and **INCLUDE them on your PLOT PLAN.**

____ Well(s) ____ Adjacent property well(s) ___ Subsoil drain
____ Cistern ____ Water line

5) Initial any of the following that are within 100 feet of your proposed septic system and **INCLUDE on your PLOT PLAN.**

_____Spring(s) _____Lake(s)
_____Pond(s) _____Stream(s)
_____Dry Gulch(es) _____Natural dr

6) **GIVE COMPLETE DIRECTIONS TO THE PROP TY FRO HIGHWAY**



Colorado Engineering & Geotechnical Group, Inc.

CASTLE ROCK
15 South Gilbert Street
Castle Rock, CO 80106
Phone: (303) 688-9475
Fax: (303) 814-2454

MONUMENT
19375 Beacon Lite Road
PO Box 1295
Monument, CO 80132
Phone: (719) 488-2145
Fax: (719) 488-2895

WOODLAND PARK
321 West Henrietta
PO Box 5816
Woodland Park, CO 80866
Phone: (719) 687-6077
Fax: (719) 687-6151

SERVING EASTERN COLORADO SINCE 1995

E

NOVEMBER 16, 2005
JOB NUMBER: 052-0430

#6201004003
10/31/2005

PAUL R. BRYANT, P.E.

VICKIE L. GIBSON, P.E.

KEN WU, P.E.

STEVEN C. JACOB, P.E.

ENVIRONMENTAL HEALTH SERVICES
EL PASO COUNTY DEPARTMENT OF HEALTH
301 SOUTH UNION BLVD.
COLORADO SPRINGS, CO 80910

RE: FINAL INSPECTION ON-SITE WASTEWATER SYSTEM, 13925 STAFFSHIRE LANE, LOT 53 FILING 1, CATHERAL PINES, EL PASO COUNTY

To Whom It May Concern:

We inspected the installation of the engineered septic system at the above address during construction as well as the finished product. It has been installed in accordance with the engineered plans and specifications. This includes having the proper size septic tank, the proper grade on all pipes and sections of the absorption field, the correct depth, size and configuration of the absorption field, and the backfill around and over the field. Topsoil and native grasses have not yet been established, this remains the responsibility of the owner and/or builder. Erosion of the backfill may occur until a normal vegetative cover is established. At the time of the final inspection, backfill was soft; settlement may occur over time. Corrective actions are the responsibility of the owner/builder.

The system is ready for final certification from the El Paso County Health Department.

Sincerely,

Randy Swepston

Randy Swepston, REHS

COLORADO REGISTERED
Paul R. Bryant, P.E.
29932
NOV 16 2005
PROFESSIONAL ENGINEER

- SOIL TESTING & ANALYSIS
- PERCOLATION REPORTS
- FOUNDATION DESIGN
- SEPTIC DESIGN
- STRUCTURAL DESIGN
- STRUCTURAL CODE PLAN CHECK
- RESIDENTIAL DESIGN
- HOME INSPECTIONS
- PROFESSIONAL CONSULTATION
- EXPERT TESTIMONY
- GEO-HAZARD SURVEYS
- DRAINAGE REPORTS

SERVING:

- DOUGLAS COUNTY
- EL PASO COUNTY
- FREMONT COUNTY
- PARK COUNTY
- TELLER COUNTY
- SUMMIT COUNTY

Structural • Geotechnical
RMG
ENGINEERS

Job No. 108679

June 29 2005

Acuff Homes, Inc.
P.O. Box 38295
Colorado Springs, CO 80937

Re: Additional Percolation Testing
13925 Staffshire Lane
Lot 53, Cathedral Pines Filing #1
Colorado Springs, Colorado

Reference: Percolation Testing by RMG Engineers dated June 8, 2005, Job No. 108288

Re-Percolation Test by RMG Engineers dated June 27, 2005, Job No. 108427

Gentlemen:

As required, personnel of RMG Engineers, Inc. have performed percolation testing at the above referenced site. This letter presents the results of our testing.

The percolation testing was performed on June 23 and 24, 2004. The locations of the percolation holes are shown in Figure 1. The soils encountered in the profile and percolation holes consisted of silty sand overlying low permeable Dawson sands and sandstone. No groundwater was encountered in the profile hole which was drilled to 10 feet. The low permeable Dawson sands and sandstone were encountered at 6 feet in the profile hole. The percolation test results are shown in Figure 2.

Based upon the field testing, an average percolation rate of 73 minutes per inch was determined. Due to slow percolation rate, a designed septic system or additional percolation testing at another location is required. The absorption field should be sized based on the number of bedrooms and anticipated usage. The septic tank and absorption field should be designed and installed in accordance with El Paso County Health Department regulations.

Soils encountered in the excavation for the septic field may vary significantly from those soils encountered in the profile hole and the percolation holes drilled as part of our percolation test. Portions of the field may be located 75 feet or more from the percolation test location. Therefore, percolation rates and depth to bedrock and groundwater may be significantly different from the percolation test results reported in this letter and may adversely affect the performance of the septic system. If soils or groundwater conditions encountered in the septic field differ from those reported in the percolation test, RMG Engineers should be notified immediately.

I hope this provides the information you requested. Should you have any other questions, please do not hesitate to call.

Cordially,

Michael J. Gackle, P.E.

COLORADO REGISTERED MICHAEL J. GACKLE 27015 PROFESSIONAL ENGINEER

MJG/ead

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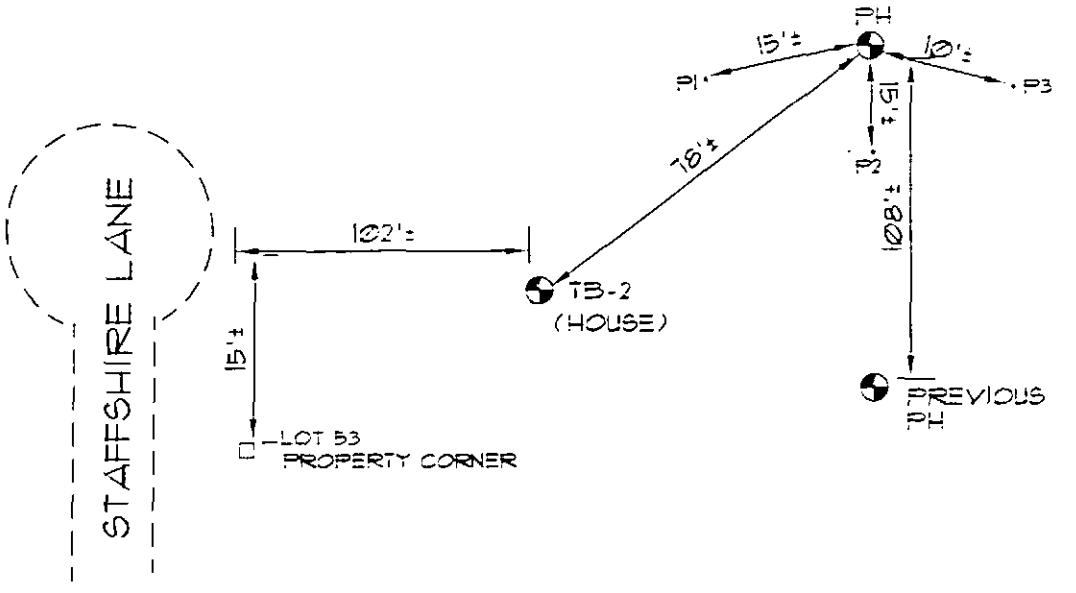
2570 ... Parkway · Colorado Springs, CO 80918 · (719) 548-0600 · Fax (719) 548-0223
P.O. Box 4038 · 202 Main Street · Suite #22 · Frisco, CO 80443 · (970) 668-4530 · Fax (970) 668-4589

PROFILE HOLE

DATE DRILLED:
6/21/05

REMARKS:
NO GROUNDWATAR ON 6/22/05

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	SOIL TYPE
					SAND, SILTY, LIGHT BROWN, MEDIUM DENSE, MOIST
			25	8.1	
5					
					WEATHERED SANDSTONE, SILTY, REDDISH BROWN, VERY DENSE, MOIST
10			50/12"	6.3	



REFERENCE
NOT TO SCALE
◔ DENOTES APPROXIMATE LOCATION OF PROFILE HOLE

Colorado Springs (Main Office)
2910 Austin Bluffs Parkway
Colo. Spgs., CO 80918
Voice (719) 548-0600
Fax (719) 548-0223

Summit County
202 Main Street #22
Post Office Box 4038
Frisco, Colorado 80443
(970) 668-4530 Fx (970) 668-4589

Structural • Geotechnical
RMG
ENGINEERS

PROFILE HOLE LOG AND LOCATION DIAGRAM

JOB. No. 108679

FIG. No. 1

DATE 6/28/05

Client: Acuff Homes, Inc.

Test Location: 13925 Staffshire Lande
Lot 53, Cathedral Pines, Filing #1
Colorado Springs, Colorado

Date Holes Prepared: 6-23-05 Date Holes Completed: 6-24-05

Percolation Holes

Hole No. 1
Depth: 30-3/8"

Hole No. 2
Depth: 30-5/8"

Hole No. 3
Depth: 29-5/8"

Trial	Time (Min.)	Water Level Change (In.)	Trial	Time (Min.)	Water Level Change (In.)	Trial	Time (Min.)	Water Level Change (In.)
1	10	1/2	1	10	1/8	1	10	--
2	10	1/4	2	10	1/4	2	10	1/4
3	10	1/8	3	10	1/4	3	10	1/4
4	10	1/8	4	10	1/4	4	10	--

Perc Rate (Hole #1) (Min./In.)	Perc Rate (Hole #2) (Min./In.)	Perc Rate (Hole #3) (Min./In.)
80	40	100
Average Percolation Rate (Min./In.)	73	

PROFILE HOLE

Date Test Boring/Pit Completed: 6-23-05

Depth	Visual Classification	Remarks
0-6'	Silty sand	No groundwater was encountered in the profile hole. Low permeable sand and bedrock was encountered at 6 feet.
6'-10'	Low permeable Dawson sands.	

Required area of absorption field: *Sq. Ft./gpd Sewage Volume.
Required area of absorption field: *Sq. Ft./Bedroom.

Remarks: *Due to the slow percolation rate, a designed septic system is required at this location.

COLORADO REGISTERED MICHAEL J. GAGNE 27015 PROFESSIONAL ENGINEER

Observer: Andi Dillard By:

perc water.doc
RMG Engineers, Inc.
2910 Austin Bluffs Parkway
Colorado Springs, CO 80918

Figure #2
JobNo.108679

NOTES, COMMENTS AND GENERAL SPECIFICATIONS FOR THE INSTALLATION, OPERATION AND MAINTENANCE OF SEPTIC SYSTEMS

ACUFF HOMES
13925 STAFFSHIRE LN
LOT 53, CATHEDRAL PINES FILING #1
EL PASO COUNTY, COLORADO

INTRODUCTION: The individual septic system is not at all like a municipal sewer connection. A connection to a public sewer virtually guarantees you will be able to send an almost unlimited quantity of water, sewage and anything else down the drain with no particular problem. However, with a septic system (more properly known as an Individual Sewage Disposal System, or ISDS, the amount of liquid we can send down the drain is distinctly limited. The limiting factors are mostly the size of the system and the percolation rate of the soil in which the absorption (or leach) field is installed. Seemingly minor or even obscure factors such as how we wash our clothes and the way we perform our daily routines can have significant effects on the functioning of a septic system. In this paper, we will attempt to explain some of the more important aspects of your septic system so you may have the best chance of attaining and maintaining a long-lived, trouble-free system.

INSTALLATION: Perhaps the most important element of a successful septic system is proper installation. No amount of careful design and operation can overcome a poorly built system. Generally, a licensed installer will be familiar with the various regulations relating to installation. If you perform your own installation, you absolutely must become familiar with certain specific county regulations. Check with your County Health Department well in advance of beginning your installation to get the information and permits you will need to proceed. If you install an engineered septic system, be aware the design is not a detailed, step-by-step guide. Many details of construction are omitted for simplicity of design, but are nevertheless required by county regulations. Ask the engineer or Health Department for clarification if you are uncertain. A good installer will additionally be a careful, conscientious craftsman who will go beyond the minimums required by the county to provide a quality piece of work. Some of the big items you should watch for in the installation of your system are: The soil under the septic tank should be very well compacted to prevent settling of the tank. The pipes should never go uphill unless a pump is installed. The various lines of the distribution (leach) field should be dead level. If different levels of the absorption field are used, there should be a device which will effectively distribute the effluent between the various levels. The soil at the bottom of the field should never be compacted; it should, after leveling, be roughened slightly to enhance the passage of water into it. If a mound system is installed, the mound sand should be lightly compacted, usually by sprinkling with water, to reduce settlement after the system is placed into operation.

GENERAL OPERATION: Practice water conservation as much as is practical. Repair leaking faucets and toilets immediately; they can add hundreds of gallons per day of water usage. Avoid long showers, run dishwashers only when full, and run washing machines when full or at reduced water settings.

Don't use the toilet as a trash can. Flushing a Kleenex or cigarette butt is wasteful of water and serves to shorten the system life by adding unnecessary water to it. Do not, under any circumstances, dump non-biodegradable materials, such as greases, plastics, etc., down your toilet or drain. Absolutely, never place harmful chemicals, such as pesticides, paint thinner, oil, antifreeze, etc. down the drains. These will kill the beneficial bacteria that treat the wastewater. Limit the use of bleaches, disinfectants and toilet bowl cleaners, as they will kill bacteria as well.

Divert surface water from driveways, hillsides, and roof drains well away from the septic system. Make sure outlets from sump pumps and foundation drains don't drain toward the system.

CAUSES OF FAILURE: Most septic systems work well for many years; others, both engineered and non-engineered, fail relatively soon after installation. Many times, the source of the failure is difficult to identify and it is generally recognized that certain number of systems will fail despite our best intentions. This is because septic system design is not an exact science - there are too many variables and outside influences, which cannot be controlled or sometimes even predicted for us to do much more than make educated guesses. System failure may result from too much water being used, leach field clogging may have occurred, or the system may be operating at lower efficiency for a variety of complex reasons. The following discussion should acquaint you with some of the more common sources of system failure. Knowledge of these sources should help you avoid them.

– EXCESS WATER USE: The occupants of the house may be using too much water. The septic system sizing formula was developed decades ago when water use habits resulted in generally much less water use than is common today. Most county health regulations require the field be upsized to reflect usage of clothes washers and garbage disposals, but enforcement of the requirement is generally based on whether the builder says these items will be installed or not. Installation of a clothes washer after the fact can severely overload a system, if it was not sized initially for that water use. Additionally, the presence of teenagers in a house, with their often two or more showers per day, is not reflected anywhere in any regulation. In an effort to keep septic system prices down, installers often install the minimum system required by the county. Builders and homeowners, under budgetary pressure, are generally very reluctant to install any more than what is needed to meet code. Even engineered systems are usually not a great deal larger than required by code, as the price for larger systems escalates rapidly. Generally, smaller systems have a shorter life span than larger systems.

– CLOGGING: Another source of failure is clogging of the field by solid or greasy material washed out of the septic tank. Solids (which are not always large, dense objects like sand, eggshells, coffee grounds and the like but which are often more of a soupy, only-slightly-heavier-than-water consistency) are meant to accumulate in the bottom of the tank, with greases floating to the top. Septic tank performance is based on water slowly moving through the tank, allowing solids to sink and greases to surface. If peak periods of water use occur where virtually the entire water budget for the day is expended, such as washing two or three loads of clothes combined with all members of the household bathing and flushing within a two hour period (a typical weekend morning in many households), then turbulent conditions can exist which will wash solids and greases out of the tank. If these materials enter the leach field, clogging will occur which will render the entire system either less effective or completely worthless. The damage is generally irreversible. There is no way to reliably determine whether this type of washout and subsequent clogging has occurred, but it is safe to say it happens to some degree with almost all septic systems at some point in their lifetimes. Regular tank pumping, at intervals not exceeding one to two years, depending on the individual system, can help decrease the likelihood of this type of trouble. Limiting periods of peak water use, by spacing out water use, will also help.

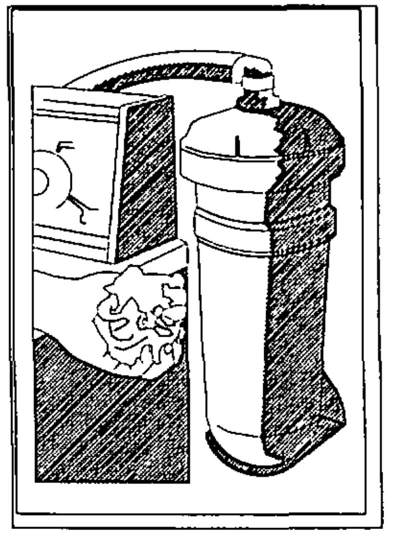
– PERCOLATION TEST LIMITATIONS: Another potential failure point evolves from the fact that percolation tests (or perc tests) are, at best, very rudimentary estimates of future performance of the septic system. For the test, clean water is poured down three shallow holes for a specified period of time; the rate at which the water seeps in the ground is thought to be reflective of long-term septic performance. However, the test doesn't measure several things: It doesn't measure the rate at any points other than those specifically tested; soil just outside the test points may be markedly different than where tested. There is no mechanism for reliably verifying the perc rate at other locations except by performing more tests, which would drive the test price way up and anyway is not required by the county. Another thing not quantifiable is the fact that the septic system is essentially a biologic machine. There are huge numbers of complex interactions between the various biodegradable and non-biodegradable constituents of the sewer water, the physical, and chemical, organic and mineral makeup's of the various soil components within the leach field, and the incredible number of aerobic and anaerobic bacteria, which inhabit the entire septic system. Certain laundry soaps or household chemicals may have no effect on one septic system, but may cause poor performance in another, due to changes in the chemical and biological makeup of the leach field. The rate at which water moves between soil particles can change over months or years as soil reacts to the continuous influence of water and bacterial action. There is no reliable way to predict these effects; the standard perc test totally ignores the issue.

– COMPACTION: Another cause of failure is compaction of the field after installation. Sometimes, people will view the green grass over the top of the septic field as a choice piece of pasture. Hoofed animals exert great pressure with their feet, and grazing over the top of a septic field will generally result in compaction of the soil sufficient to render the system useless. Vehicle traffic over the surface will cause similar problems with compaction; system crushing can also occur. Vehicles (other than hand operated units) and hoofed animals are absolutely not compatible with septic systems. Most counties' health regulations specifically advise against vehicular and animal traffic over the field.

SUMMARY: In conclusion, a septic system is not at all like a public sewer. Unlimited amounts of sewage may not be placed into them with impunity. Careful installation, with strict attention to detail is essential to long-term success of the system. Even the best installation of a well-designed system does not guarantee success. Surface drainage must be carefully maintained to avoid inadvertent flooding of the septic system. Water conservation is essential, as is the avoidance of placing poisons into the system. Individual septic systems are subject to a wide variety of system failures that simply do not occur in normal, city sewers. The probable cause of most system failures is a combination of factors. Most people use a lot of water; minimum systems are often just not up to the task but upsized systems are generally not installed due to budgetary constraints. Most families tend to peak load their septic systems. Septic tanks are not designed to handle large quantities of water all at once; infrequent tank pumping increases the problems associated with large peak flows. Certain soaps, cleansers, and other materials, which make their way down the drain, may have adverse reactions with bacteria in the septic system. Many fields at one time or another are used as parking lots, pastures or worse. There often is really no way to say for sure that any one particular thing caused failure. It is generally recognized there are a certain number of systems that will fail for no good, identifiable reason. The best way to avoid failure is to treat your septic system as a valuable investment worthy of protection. Minimize the liquid load, minimize the solid load, and be careful about what goes down the drain.

THE SEPTIC PROTECTOR™

The Septic ProtectorW+2122 is a patented, re-useable filter that attaches to your washing machine discharge hose and removes the non-biodegradable fibers like polyester and nylon, sand, hair and pet fur before they go down the drain and plug your septic system and drainpipes. Even Laundromats and government facilities are using the Septic ProtectorW+2122.
This product is now being used by and/or recommended by: Universities; State Water Quality Agencies; Professional Contractors; Homeowners; Laundromats; Engineering and Consulting Firms; Entire Communities and Neighborhoods; Environmental Agencies; and Mobile Home Parks.



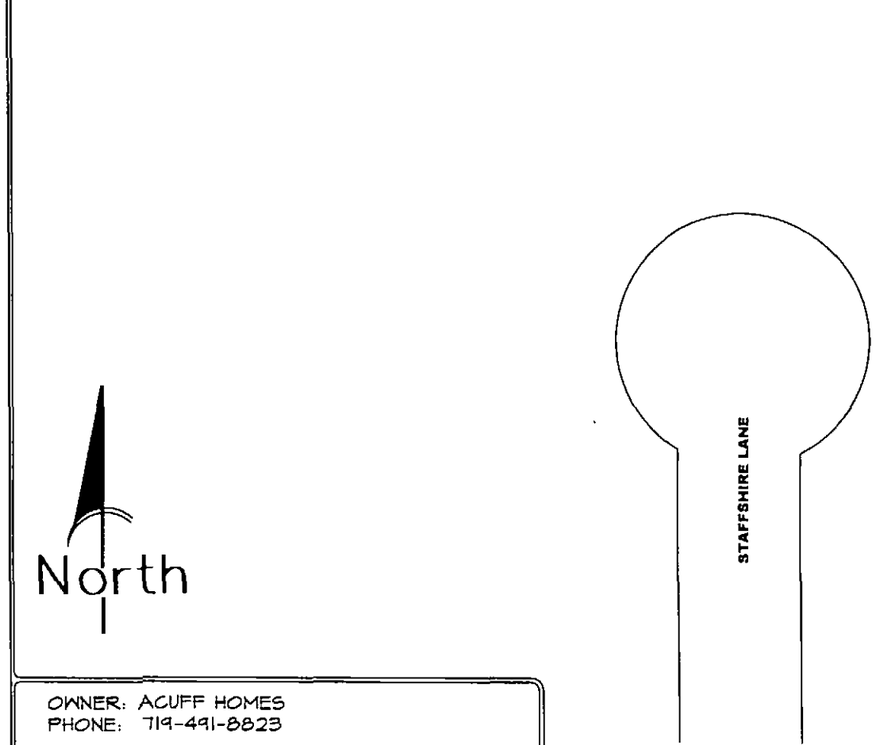
Some Government Agencies have stated "This product is long overdue" and would like to make the Septic ProtectorW+2122 a code requirement! Why? Because it works!
-- The Septic ProtectorW+2122 comes with extra hose, clamps, fittings, and a mounting bracket for easy installation (you supply the 2 screws that hold the bracket on the wall). Most homeowners can install the unit in 10-15 minutes.
-- The Septic ProtectorW+2122 comes with a bracket for mounting on the wall near the washing machine. All necessary hose, clamps and fittings are included. (You supply the 2 screws that hold the bracket to the wall).
-- These are examples of typical installations, however, because not all laundry rooms are the same you may have to modify your set-up.
-- The Septic ProtectorW+2122 comes with a 160 micron filter that you empty out over a garbage container every 1-3 weeks and will last 1-3 years. Replacement bags are $12.95. Most will order a second bag to save on shipping charges.*
-- Or, you can use the optional 30 micron cartridge filter which you clean with a garden hose every 2-3 weeks and replace every 6-12 months at $24.95. We recommend the 160 micron filter for most people because it is easier to use, lasts longer, costs less, and in most cases is more than adequate to protect your system.

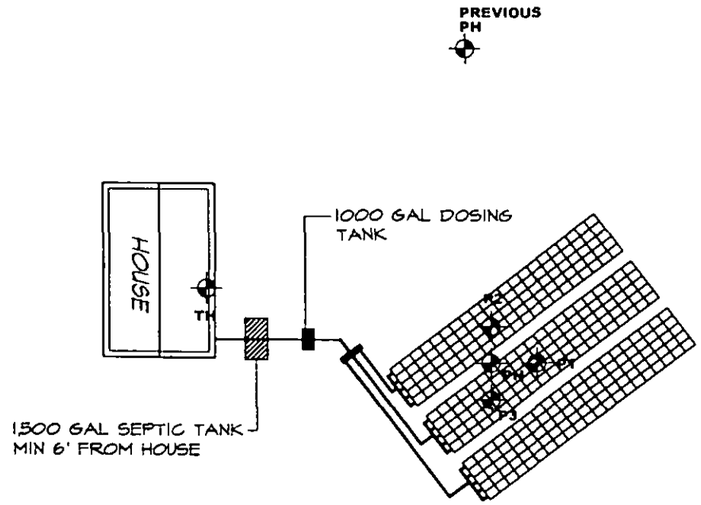
Colorado Engineering & Geotechnical Group, Inc.
19975 Beacon Lite Road
Monument, CO 80132
(719) 488-2145

JOB NO: 052-0430	
SCALE: NOT TO SCALE	
SHEET: 1 OF: 5	
DRAWN BY: CEGG	
DATE: 15 MAY 2005	
CHECKED BY:	
DATE:	

COLORADO REGISTERED PROFESSIONAL ENGINEER 33249 7/15/05

SEPTIC DESIGN





OWNER: ACUFF HOMES
PHONE: 719-491-8823

LEGAL DESCRIPTION: 13925 STAFFSHIRE LN, LOT 53 CATHEDRAL PINES, FILING #1, EL PASO COUNTY

STREET ADDRESS: 13925 STAFFSHIRE LN

ZONING: N/A

EASEMENTS: N/A

AREA OF LOT: N/A

COLORADO ENGINEERING AND GEOTECHNICAL GROUP, INC. HAS PROVIDED THIS DESIGN IN ACCORDANCE WITH THE STANDARDS OF PRACTICE COMMON TO THE AREA HOWEVER, AS WITH ALL UNDERGROUND ABSORPTION FIELDS, GUARANTEE FROM FAILURE IS IMPOSSIBLE. EVEN WITH PROPER INSTALLATION, AS OUTLINED FOR THIS PROPOSED CONSTRUCTION, THERE REMAIN MANY UNCERTAINTIES, AND DIFFICULTIES CAN STILL ARISE IN THE OPERATION OF THE SYSTEM IN THE FUTURE. PROPER DESIGN, CONSTRUCTION AND MAINTENANCE CAN ASSIST IN MINIMIZING UNCERTAINTIES, BUT CANNOT ENTIRELY ELIMINATE THEM. COLORADO ENGINEERING AND GEOTECHNICAL GROUP, INC. PROVIDES NO WARRANTY OF THIS DESIGN OR INSTALLATION.

NOTE: REST ONE BED AND OPERATE 2 BEDS AT ONE TIME ALTERNATE EVERY 6-12 MONTHS.

THIS SEPTIC HAS BEEN DESIGNED BASED UPON RECOMMENDATIONS PUBLISHED BY RMG ENGINEERS, INC. (REPORT# 108427, ISSUED JUNE 27, 2005). COLORADO ENGINEERING & GEOTECHNICAL GROUP, INC. IS NOT RESPONSIBLE FOR VERIFYING THE ACCURACY OF THIS REPORT AND CAN NOT BE HELD LIABLE FOR PROBLEMS OR ISSUES ARISING FROM CONDITIONS NOT MENTIONED IN THE REPORT. IT IS REQUIRED THAT THIS OFFICE BE IMMEDIATELY NOTIFIED IF FIELD CONDITIONS VARY FROM THE FINDINGS IN THE PERCOLATION REPORT.

SEPTIC SYSTEM COMPONENTS:

TANK: 1-1,500 GAL SEPTIC TANK
1-1000 GAL DOSING TANK

ACUFF HOMES

13925 STAFFSHIRE LN
LOT 53, CATHEDRAL PINES FILING #1
EL PASO COUNTY, COLORADO

NOTES:

1. MANY DETAILS OF CONSTRUCTION ARE OMITTED FROM THESE DRAWINGS FOR CLARITY. THE INSTALLER MUST REFER TO LOCAL REGULATIONS CONCERNING OTHER INSTALLATION REQUIREMENTS GRADE SURROUNDING AREA TO DRAIN AWAY FROM FIELD.

2. MAINTAIN 2.0% MIN AND 3.0% MAX GRADE ON PIPE FEEDING SEPTIC TANK & SUMP. MAINTAIN 1% MIN GRADE ON PIPE FROM FIELD BACK TO SUMP.
A SUMP & PUMP MAY BE REQUIRED IF GRAVITY FEED TO THE FIELD CAN NOT BE OBTAINED. PIPE GRADE TO BE VERIFIED.

3. HOMEOWNER IS RESPONSIBLE FOR PERMIT. CONTRACTOR MUST OBTAIN APPROVAL OF ENGINEERED SYSTEM FROM THE COUNTY HEALTH DEPARTMENT. OWNER/CONTRACTOR MUST VERIFY SETBACKS AND OBTAIN UTILITY CLEARANCES PRIOR TO CONSTRUCTION.

4. VEHICULAR OR HOOFED ANIMAL TRAFFIC OF ANY KIND OVER ANY PART OF SYSTEM MAY CAUSE PREMATURE FAILURE AND IS PROHIBITED. THE USE OF SO-CALLED "SEPTIC REMEDIES" CAN RESULT IN SEVERE DAMAGE TO THE SYSTEM. WE SPECIFICALLY RECOMMEND AGAINST THEIR USE.

SPECIAL NOTES SECTION

NOTE: IT IS STRONGLY RECOMMENDED THAT THE OWNER INSTALL "THE SEPTIC PROTECTOR" WHICH IS ATTACHED TO THIS DESIGN.

REQUIRED INSPECTIONS (ENGINEER)

1: ENGINEER TO VERIFY FIELD LOCATION AND REMOVAL OF TOPSOIL AT TIME OF CONSTRUCTION.

2: ENGINEER WILL INSPECT THE INSTALLATION OF PIPE/GRAVEL BED, SEPTIC TANK, ETC. PRIOR TO BACKFILL.

3: ENGINEER TO INSPECT THE FIELD AFTER BACKFILL TO INSURE MIN COVER, CROWNED TOP & PROPER DRAINAGE AWAY FROM FIELD.

NOTE: THESE INSPECTIONS ARE SEPARATE FROM THAT WHICH IS REQUIRED BY THE COUNTY HEALTH DEPARTMENT. THE HOMEOWNER/CONTRACTOR MUST ENSURE ALL COUNTY INSPECTIONS ARE COMPLETED.

Colorado Engineering & Geotechnical Group, Inc.
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JOB NO:	052-0430
SCALE:	1" = 50'-0"
SHEET:	2 OF: 5
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DATE:	15 MAY 2005
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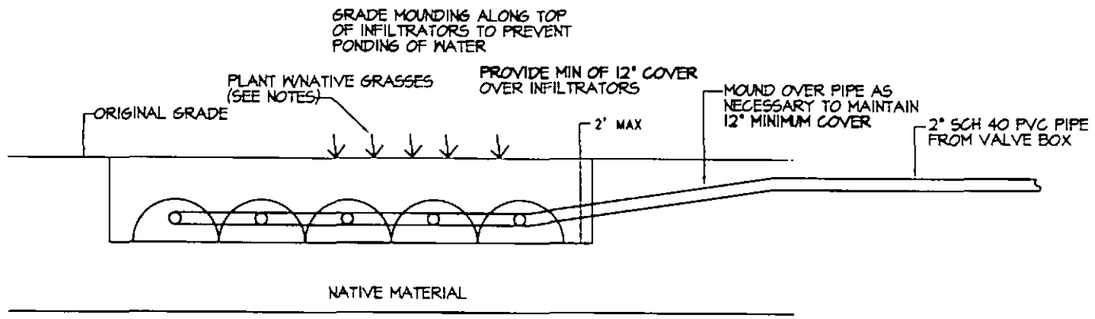
DATE:	

COLORADO REGISTERED VICKY LYNN OLSON 33249 7/15/05 PROFESSIONAL ENGINEER

SEPTIC DESIGN SCHEMATIC VIEW

SCHEMATIC VIEW IS SHOWN TO PROVIDE A CONCEPTUAL UNDERSTANDING OF THE SYSTEM LAYOUT. REFER TO SHEET 4 FOR SPECIFIC DETAILS

NOTE:
TYPICAL FOR ONE MORE BED AS SHOWN ON THE SITE PLAN. SPACED 10 FT BETWEEN BEDS.



FIELD SECTION
N.T.S

ACUFF HOMES

13925 STAFFSHIRE LN
LOT 53, CATHEDRAL PINES FILING #1
EL PASO COUNTY, COLORADO

CALCULATIONS

6 BEDROOM RESIDENCE
PERC 100 MIN/INCH

REQUIRED AREA

$$A = \frac{(\#BDRMS \times Q \times 1.5 \times 1.6)\sqrt{PERC}}{5}$$

Q = 150 GPD 1.6 = (20% GARBAGE DISPOSAL, 40% WASHING MACHINE)
1.5 = CO FACTOR

$$A = \frac{(6 \times 150 \times 1.5 \times 1.6)\sqrt{100}}{5}$$

$A = 4320$ SF

FOR BED SYSTEM (INFILTRATOR-QUICK4)

$A = 4320$ SF

$\frac{(4320)}{(9.2)} = 470$ INFILTRATORS

REDUCTIONS: MAX APPLIED

USE 315 INFILTRATORS

INSTALL 3 SEPARATE BEDS WITH 5 ROWS OF 21 QUICK 4 INFILTRATORS IN EACH BED
CONNECT EACH BED WITH A VALVE BOX & OPERATE 2 BEDS AT A TIME WHILE RESTING ONE.

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JOB NO: 052-0430	
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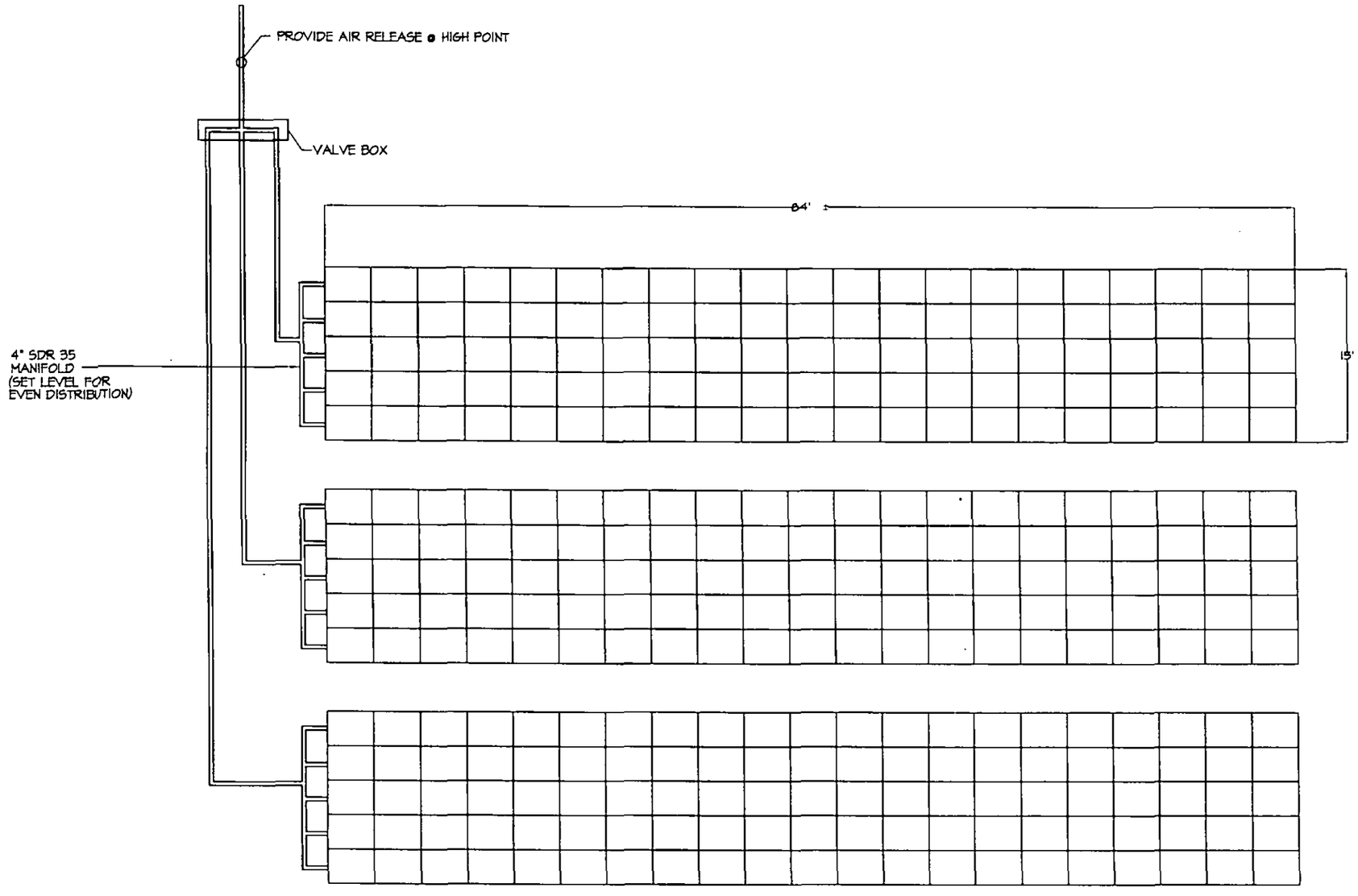
COLORADO REGISTERED LYNN S. JOHNSON 33249 PROFESSIONAL ENGINEER
7/15/05

SEPTIC DESIGN DETAIL SHEET



INFILTRATOR MODULES
SLOPE IS LEVEL
UNDER INFILTRATORS

NOTE:
5 ROWS OF 21 QUICK 4
AS SHOWN ON THE SITE PLAN.
(SPACED 10 FT ON CENTER TYP)

FIELD LAYOUT
N.T.S.

ACUFF HOMES
13925 STAFFSHIRE LN
LOT 53, CATHEDRAL PINES FILING #1
EL PASO COUNTY, COLORADO

NOTES:

1. ALL WORK PER COUNTY HEALTH DEPARTMENT CRITERIA.
2. MANY DETAILS OF CONSTRUCTION ARE OMITTED FROM THESE DRAWINGS FOR CLARITY. THE INSTALLER MUST REFER TO LOCAL REGULATIONS CONCERNING OTHER INSTALLATION REQUIREMENTS.
3. ABSORPTION BED SHALL BE CROWNED AND COVERED WITH A MINIMUM OF 4 INCHES OF SELECT TOPSOIL TO PROVIDE A BASE FOR GOOD VEGETATIVE COVER.
4. CONTACT SOIL CONSERVATION SERVICE OR COUNTY EXTENSION AGENT FOR VEGETATION BEST SUITED FOR THE AREA.
5. PROVIDE DRAINAGE SWALE AROUND UPHILL SIDE OF FIELD.

SPECIAL NOTES SECTION

SPECIAL NOTE FOR SYSTEMS WITH SAND:
SAND FOR ABSORPTION BED TO BE IMPORTED FROM OFF SITE AS NECESSARY TO PLACE UNDER BED; ENGINEER TO APPROVE.

COMPACTION REQUIREMENTS:
FOR CUT/FILL AREAS BELOW LEACHING SYSTEMS & SYSTEMS WITH SAND REQUIREMENTS: MATERIAL SHALL BE COMPACTED TO 85% ASTM D1557 OR 90% ASTM D698. CONTACT THIS OFFICE FOR THE REQUIRED TESTING

SAFETY REQUIREMENTS:
ADEQUATE SAFETY MEASURES SUCH AS CONSTRUCTION FENCING AND CAVE-IN PROTECTION SHALL BE PROVIDED TO PROTECT AGAINST INJURY DURING CONSTRUCTION AND USE.

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JOB NO:	052-0430
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SHEET:	4 OF: 5
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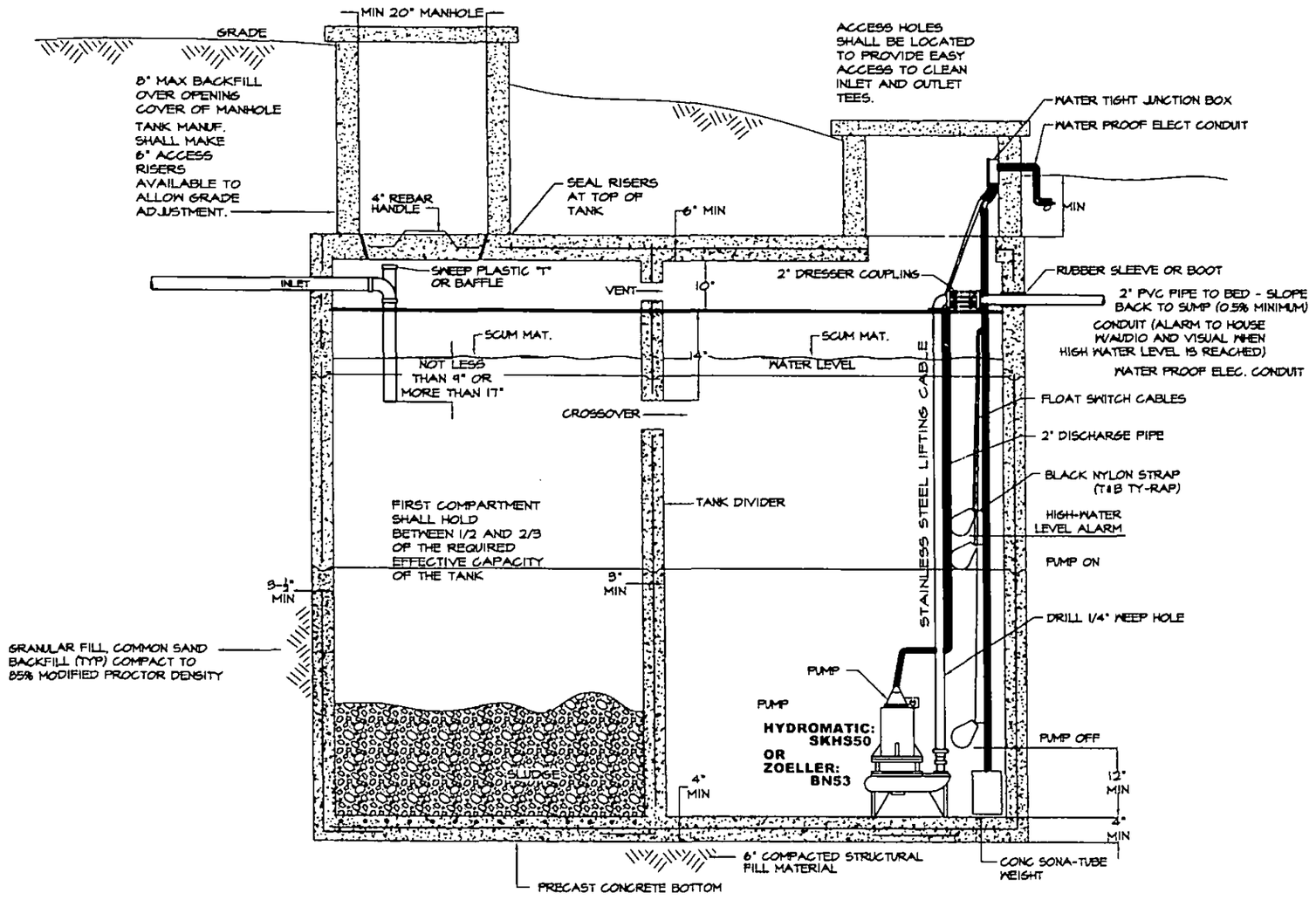
COLORADO REGISTERED
VICTOR LYNN MORRISON
33249
PROFESSIONAL ENGINEER
7/15/05

SEPTIC DESIGN DETAIL SHEET

NOTE: SUMP AND ALARM TO BE ON SEPARATE CIRCUITS



DUAL TANK SECTION

NOT TO SCALE

ACUFF HOMES

13925 STAFFSHIRE LN
LOT 53, CATHEDRAL PINES FILING #1
EL PASO COUNTY, COLORADO

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DOSEAGE: 250-300 GAL/CYCLE

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