

● I. S. D. S. P E R M I T ●
TO INSTALL, CONSTRUCT, ALTER OR REPAIR
AN INDIVIDUAL SEWAGE DISPOSAL SYSTEM

Permit: EH-09-029

New: Y
Repair: N
Alteration: N
Addition: N

ROUTT COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH ● P.O. BOX 770087 ● STEAMBOAT SPRINGS, CO ● 970-870-5588

This permit effective only on premises located at: **24355 RAWHIDE TRAIL C**

Legal description of property: TR IN LOTS 2, 3 & 4 & TR IN SE4NE4 □ SEC 6-3-85 TOTAL 35.01 AC

Parcel Id.: 960062006

Lot No.:

Owner: GEIGER, TIM

Applicant: GEIGER, TIM

Address: P O BOX 774

Address: PO BOX 774

OAK CREEK CO 80467-0774

OAK CREEK CO 80467

Phone: 970-846-8006

Phone: 970-846-8006

As authorized and required by Chapter 25, Article 10 C.R.S., permission is hereby granted to the owner or a Routt County licensed ISDS installer to construct or repair an I.S.D.S. system at the property indicated above. All work must comply with the specifications on this permit and the Guidelines on Individual Sewage Disposal Systems - Revised 1988 - Colorado State Board of Health, 5 CCR 1003-6. This permit expires one year from date of issue.

SPECIFICATIONS

☒ Residential ☐ Commercial Other (Describe) _____

Number of bedrooms: 5

Percolation Rate: 24 MPI

Minimum Septic Tank Capacity: 1500 gallon

Tank Material: ☒ Concrete ☐ Polyethylene

Design: 1: Engineer shall certify that construction complies with permitted design.

Comments:

Notice: All Sewage *HOLDING* Tanks must be Concrete. Inspections required (24 hour advanced notice required).

Environmental Health Specialist: Jason

Date of Issue: Starker

The above individual sewage disposal system installed by _____ has received a final inspection. The system is hereby approved for use.

Environmental Health Specialist:

Date

State fee \$23.00
Fee: Percolation \$0.00
Permit \$252.00

RECEIPT

RECEIPT NUMBER:

R090000805

Routt County Environmental Health Department

P.O. Box 770087 Phone 970-870-5588

Steamboat Springs, CO 80477

Copy Reprinted on 07-01-2009 at 08:18:05

07/01/2009

APD #: EH-09-029

TYPE: EH-Ind. Sewage Disp Sys

SITE ADDRESS: 24355 RAWWHITE TRAIL C

PARCEL: 960062006

May include fees collected within the jurisdiction.

TRANSACTION DATE: 07/01/2009	TOTAL PAYMENT:	275.00
	TOTAL PAID FROM TRUST:	.00
	TOTAL PAID FROM CURRENCY:	275.00

TRANSACTION LIST:

Type	Method	Description	Amount
Payment	Check	#3833	275.00
TOTAL:			275.00

ACCOUNT ITEM LIST:

Description	Account Code	Current Pmts
I.S.D.S. Permit Fee	01-20-22-000-568	252.00
State Surcharge for ISDS	01-20-22-000-546	23.00
TOTAL:		275.00

RECEIPT ISSUED BY: SG

INITIALS: SAG

ENTERED DATE: 07/01/2009

TIME: 08:15 AM

O.K. F.I. Permit JS
6/30/09

BUILDING PERMIT # C08-09-189
PERMIT PD 275.00 OK # 3833
ET 09-029 PERC PD 3833

APPLICATION FOR INDIVIDUAL SEWAGE SYSTEM PERMIT

Tim Hepler 6/29/09

NEW ☒ REMODEL ☐ REPAIR ☐ EMERGENCY USE ☐

Name of Owner Tim Hepler 846-8006 Mailing Address PO 774 OKCreek 80467 Phone 970-846-8006

Name of Applicant Tim Hepler Mailing Address PO 774 Phone 970-846-8006

LOCATION OF PROPOSED SYSTEM:

Street Address 24355 Rumaine Trail

Legal Description

(Lot# and Subdivision if applicable)

Parcel ID# 960062006

(this# can be found in the Assessor's Office)

Size of Lot 35 Acres (X) Residential () Commercial () Other (Describe) _____

Number of: Bedrooms 5

Water Supply: (X) Private Well

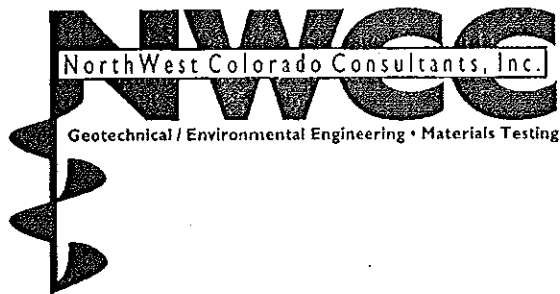
() Public (give name of supply) _____

An appropriate plot plan must accompany this application showing required information. Percolation tests and an on-site inspection must be arranged with the Routt County Department of Environmental Health after receipt of the application and plot plan. The permit, upon approval of this application may be obtained at the Routt County Department of Environmental Health with payment of the required fee.

Application for an individual sewage disposal system is hereby submitted. The individual sewage disposal system will be constructed, installed and operated in accordance with the regulations governing individual sewage disposal systems within Routt County and will comply with applicable State Regulations adopted pursuant to Article 10 of Title 25, C.R.S. 1973, as amended. The undersigned acknowledges that the above information is true and that false information will invalidate the application or subsequent permit. The owner assumes all responsibility in case of failure or inadequacy of this sewage disposal system. (*Hot tubs and Jacuzzis shall not be connected on-site sewage disposal systems.)

Signature of Applicant

Date 6/22/09



PRE-APP
CB-09-189

June 24, 2009

Tim Geiger
P.O. Box 774
Oak Creek, CO 80467

Job Number: 07-7865

Subject: On-site Wastewater System
Design, Proposed Geiger Residence, 24355
Rawhide Trail, Routt County, Colorado.

Ladies and Gentlemen:

This report presents the results of an On-site Wastewater System (OWS) design for the proposed Geiger Residence to be constructed at 24355 Rawhide Trail in Routt County, Colorado. NWCC, Inc. previously completed a Foundation Recommendations report for the proposed mobile home under this job number and dated June 22, 2007.

Proposed Construction: Based on conversations with the client and the plans provided it appears that a 5-bedroom mobile home will be placed at the site until a future residence is constructed. It is also our understanding that the future residence will also be constructed with a total of five bedrooms when completed. It should be noted that the mobile home must be removed after the residence is completed and that the OWS is not designed for both residences. The absorption field for the OWS will be located north of the existing shop building and southeast of the proposed mobile home. We also understand that a bathroom will be constructed in the existing shop.

Site Conditions: The residence is located southeast of the intersection of County Road #25 and Rawhide Trail in Routt County, Colorado. The vegetation at the site of the OWS consisted of natural grasses, weeds, deciduous brush and aspen trees.

The topography at the site is variable and the area of the proposed absorption field generally slopes moderately to strongly down to the east-northeast on the order of 8 to 15 percent.

Subsurface Conditions: A profile pit was excavated at the site of the proposed leach field on November 16, 2007. The subsurface conditions encountered in the profile pit generally consisted of approximately 24 inches of topsoil and organics overlying natural sands to the maximum depth investigated, 6 feet. The natural sands were clayey to very clayey to sands and clays, fine to coarse grained, low to moderately plastic, medium dense to stiff, moist and light brown in color. Groundwater seepage was not encountered in

the profile pit at the time of excavation and no evidence of a seasonal high groundwater table was observed in the pit.

A set of 6-percolation test holes, ranging from 12 to 36 inches in depth, was advanced in the area of the proposed OWS leach field. The percolation tests were conducted by our office on June 5, 2009 to determine the percolation rate of the natural soils. The percolation tests indicate that the upper 12 to 36 inches of natural topsoil and organic materials and upper natural sands in the area of the proposed OWS exhibited percolation rates from ranging from 13 to 40 minutes per inch (mpi) with an average percolation rate of 24 mpi.

System Design: Based on our understanding of the proposed construction, the topography of the site, the soils encountered in the test pit and the percolation test results, a modified trench absorption system utilizing Standard or EQ36 Infiltrator chambers placed in the upper 12 inches of natural topsoil and organic materials has been designed for this site.

The OWS design presented below is based on the total anticipated number of bedrooms and appurtenances for the structure, as well as the average percolation rate for the natural soils. Considering the anticipated construction, we have calculated a peak effluent flow of 1,313 gallons per day (gpd) for the system. Based on the percolation results, a minimum absorption area of 1,286 square feet is required for conventional trench or bed absorption systems.

Using a 40% reduction in the required absorption area with Infiltrator chambers, we have calculated that the system can be constructed using seventy-eight (78) Quick-4 Standard Infiltrator chambers. As an alternate, we have calculated that the system can also be constructed using seventy-three (73) Quick-4 EQ36 Infiltrator chambers. We recommend that the trenches for the chambers be placed a maximum of 12 inches below the natural ground surface. In addition, we recommend that a distribution box be installed to ensure that equal flow is distributed to all of the chambers. We also recommend that the base and sides of the chambers be covered/wrapped with a ¼-inch galvanized steel or synthetic mesh to help prevent rodent intrusion. A minimum of 18 inches of soil cover should be placed over the chambers in accordance with the chamber manufacturer's recommendations.

A septic tank with a minimum capacity of 1,500-gallons is required for a five-bedroom residence. Due to the subsurface conditions encountered at the site, we recommend that a concrete septic tank be used. An effluent filter must be installed in the downstream outlet 'T' of the septic tank. We recommend that the tank be placed to allow access for pumping. Generally a septic tank can be pumped from 100 feet away with a maximum lift of 10 feet; however, a local pump contractor should be consulted in regards to the tank maintenance access.

We recommend a dosing system be used to distribute effluent to the seepage bed. The dosing system should consist of a minimum 400-gallon concrete dosing tank installed downstream of the septic tank with an automatic dosing siphon, if sufficient grade is available. We recommend a Fluid Dynamics FD417 automatic dosing siphon. An alternate would be to use a FLXX 2,000-gallon three-compartment septic tank

with the siphon installed in the downstream compartment. We recommend the floats in the dosing tank be set to provide a dose of between 125 and 150 gallons per dose.

If sufficient grade is not available to use a siphon, a float activated pump system will be required. The effluent pump should consist of an approved commercial grade, float-activated effluent pump installed in the dosing tank. Either system should have a high water alarm system installed in the residence to warn the owner in the event of a pump or siphon malfunction. A secondary or backup pump installed in the dosing tank is also recommended in the event of a pump failure. The piping between the pump and absorption field must be sloped to drain to the field or back to the dosing tank. A pressure relief valve (aka: "Snifter") should also be placed at the high point of the piping between the pump and field.

The system design is presented in Figures #1 and #2. The design calculations are shown in Appendix A and the specifications for the system are given in Appendix B.

Operation and Maintenance: Observing the operation and performing routine maintenance of the OWS is essential to allow proper, long term functioning of the system. We recommend that the operation be monitored periodically and a qualified, licensed maintenance contractor perform maintenance of the system.

- 1) **Septic Tank:** The scum and sludge accumulation in the septic tank should be monitored yearly. Once the scum or sludge thickness reaches 25% of the chamber depth, the septic tank should be pumped. A pumping frequency of 1 to 3 years is likely at the design flows used in this design; however, depending on use, pumping may only be required every 3 to 5 years.
- 2) **Effluent Filter and Dosing System:** The effluent filter at the septic tank outlet should be cleaned when the septic tank is inspected or as required. The effluent pumps/siphon should be checked semi-annually to ensure the pumps/siphon are functioning properly. If the high water alarm sounds, the system should be inspected and serviced immediately.
- 3) **Absorption Field:** If the system is not activated within 30 days of installation or is inactive for an extended period of time, we recommend that water be run into the Infiltrator chambers periodically (once every 30 days) to prevent rodents from nesting and burrowing in the chambers, which could result in premature failure of the system. We also recommend that the system be fenced off to vehicular traffic and livestock. The surface area around the absorption fields should be observed monthly for signs of failure, such as lush vegetation growth or ponding. Liquid levels within each run of Infiltrators should be observed through the observation/vent pipes.
- 4) **Treated Water:** We do not recommend that the water softeners or water treatment systems be connected to the OWS. The chemical and hydraulic loading from the backwash of these treatment systems may be detrimental to the OWS. If a treatment system is used, a separate dry well should be constructed for the backwash waste. In addition, chemically treated water from a swimming pool or spa must not be discharged into the OWS.

- 5) General Notes: The owner should be aware that the operation of the OWS is different from a public sewer service. Plastic and other non-biodegradable materials should not be placed into the system. Water use should be monitored so fixtures are not allowed to run if a seal malfunctions. Allowing fixtures to flow continuously to prevent water lines from freezing or a malfunctioning faucet or toilet can consume in excess of 1,000 gallons per day. Excessive flows could flood and cause premature failure of the system. No plastic or landscaping that requires additional irrigation should be placed over the absorption field.

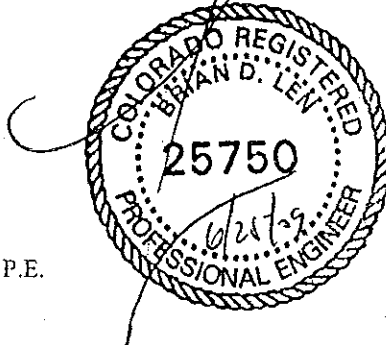
Limitations: The procedures and design criteria used in this design was obtained from the EPA "Design Manual - On-site Wastewater Treatment and Disposal Systems", 1980, the Colorado Department of Health "Guidelines for Individual Sewage Disposal Systems" (rev. 2000) and the Routt County "Individual Sewage Disposal System Regulations" (February, 1999). The wastewater disposal system design presented is based on currently accepted design procedures and the proposed features and usage of the facilities. If the usage of the facilities or addition of new facilities to those proposed in the building changes, the OWS design will also most likely change. It should also be noted that all on-site wastewater disposal systems require periodic maintenance as noted above. The failure of the owner to provide proper periodic inspection and maintenance of the system can lead to premature failure of the system.

Please be advised that Colorado law requires that a permit must be obtained prior to the construction, alteration, or use of an on-site wastewater system. In addition, the client must retain our office to observe the construction/installation of the on-site wastewater system. If you have any questions concerning this report or our recommendations, or if we may be of further service, please contact this office.

Sincerely,
NWCC, INC.

Timothy S. Travis, P.E.

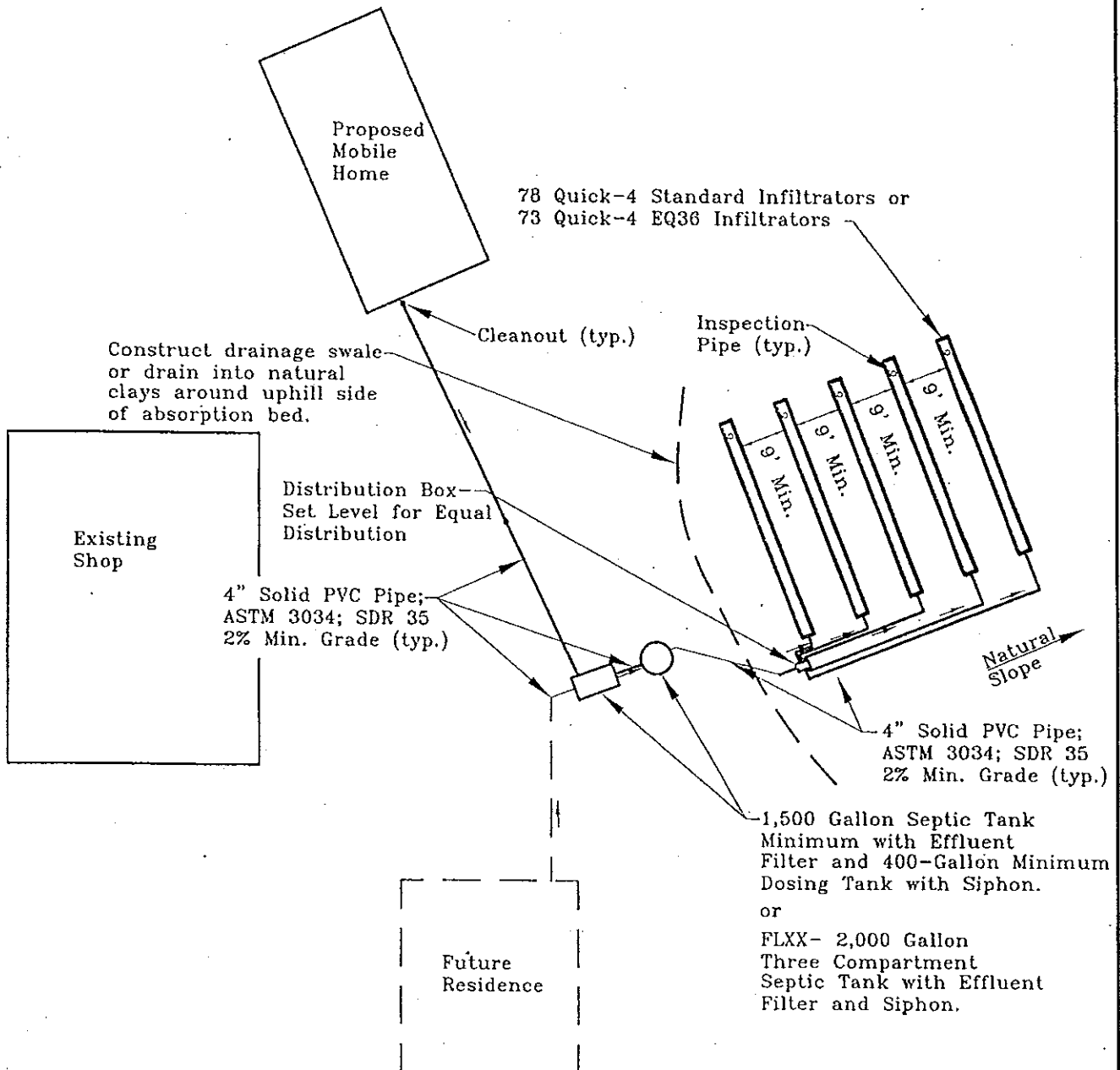
Reviewed by Brian D. Len, P.E.





NOT TO SCALE

* Note: Actual System Layout & Construction
May Require Adjustments in the Field Due to
Variations in Topography and Vegetation.



Title: O.W.S.-INFILTRATOR SITE PLAN

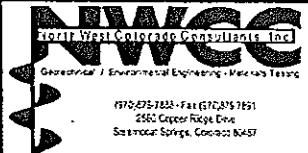
Date: 6/23/09

Job Name: Proposed Geiger Residence

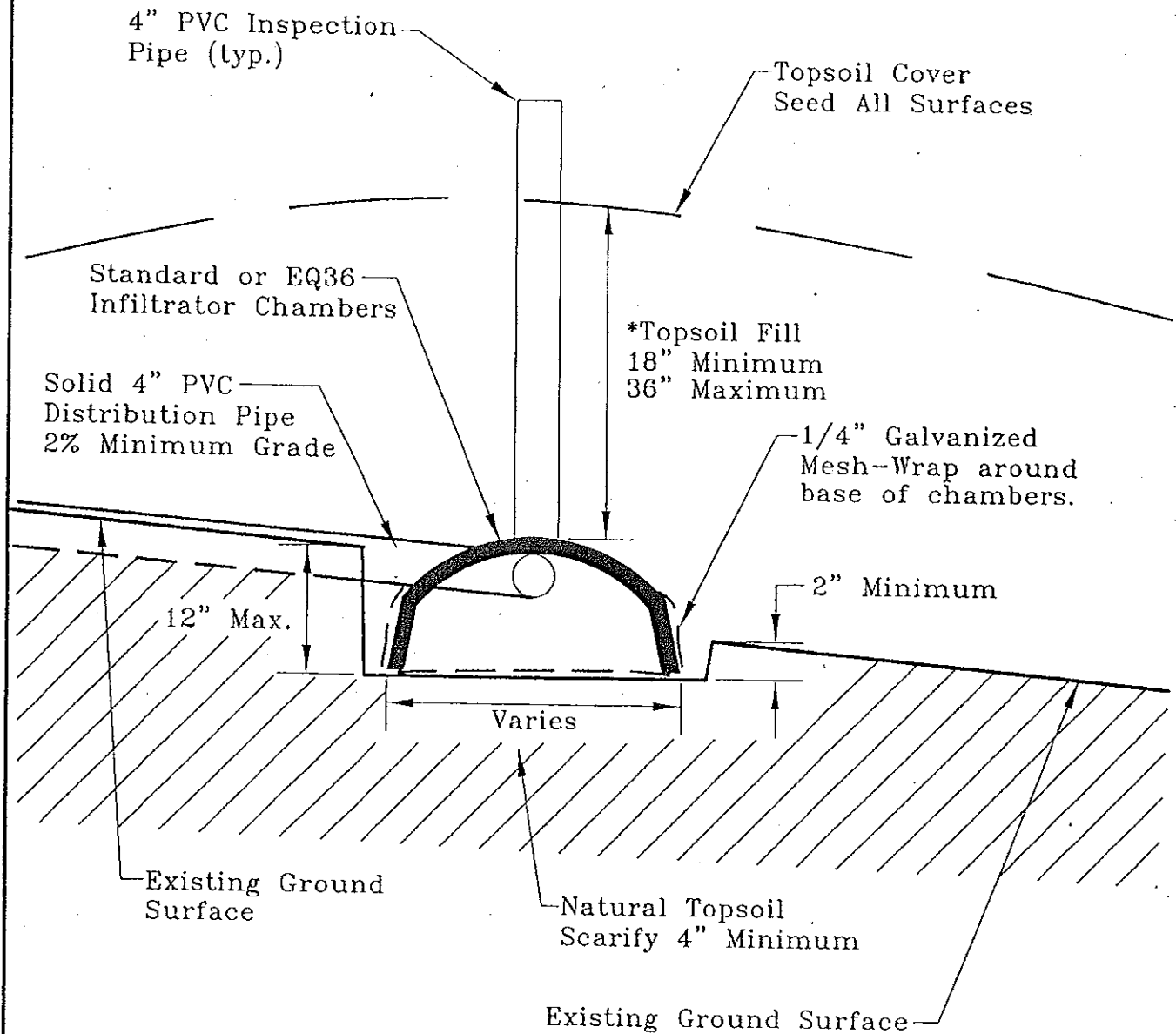
Job No. 07-7865

Location: 24355 Rawhide Trail, Routt County, Colorado

Figure #1



* The chambers should be backfilled in accordance with the manufacturer's recommendations.



Title: INFILTRATOR SYSTEM CROSS SECTION	Date: 6/23/09	
Job Name: Proposed Geiger Residence	Job No. 07-7865	
Location: 24355 Rawhide Trail, Routt County, Colorado	Figure #2	

APPENDIX A

SUMMARY OF DESIGN CALCULATIONS

A. Sewage Volume Calculations

1) 5 Bedrooms: 5 x 150 gpd/bedroom

2) Total Average Flow 750 gpd

3) Peak Factor x 1.75

4) Peak Flow for Design..... Q = 1,313 gpd

B. System Sizing

1) Minimum absorption area = $Q (t^{1/2})/5 = (1,313)(24)^{1/2}/5 = 1,286 \text{ ft}^2$

2) Less 40% for Standard or Quick-4 Infiltrator Chambers: $1,286 \times 0.60 = 772 \text{ ft}^2$

3) No. of Quick-4 Std. Infiltrator Chambers: $772 \text{ ft}^2/10 \text{ ft}^2/\text{chamber} = 77.2 \text{ chambers} \Rightarrow$ use 78 Quick-4 Standard Infiltrator chambers.

3A) No. of Quick-4 EQ36 Infiltrator Chambers: $772 \text{ ft}^2/10.67 \text{ ft}^2/\text{chamber} = 72.4 \text{ chambers} \Rightarrow$ use 73 Quick-4 EQ36 Infiltrator chambers.

4) Septic Tank-per Routt County Regulations: Use a minimum 1,500-gallon tank for a five-bedroom residence.

5) Minimum well, watershed and open water setback-per Routt County Regulations: 125 Feet Minimum.

6) Minimum seasonal drainage setback-per Routt County Regulations: 50 Feet Minimum

7) Minimum property line setback-per Routt County Regulations: 10 Feet Minimum

8) Minimum Waterline setback- per Routt County Regulations: 25 Feet

APPENDIX B

- 1) The Regulations of the Routt County Department of Environmental Health must be complied with during the construction/installation of the system.
- 2) Periodic construction observations must be made by the Design Engineer from NWCC, Inc. at the following points during Construction:
 - a. After subgrade excavation and septic/dosing tank installation.
 - b. After placement of chambers, but before chambers are covered.
 - c. Upon final completion of the project.
- 3) The PVC pipe, perforated or non perforated, shall conform to ASTM 3034 or better quality. The trenches shall be constructed level.
- 4) The soils beneath the pipes entering and leaving a septic or aeration tank, which has been excavated, shall be backfilled in 6 inch lifts and mechanically compacted to a minimum of 95% of the maximum standard proctor density. Cast iron pipe or PVC pipe meeting ASTM 3034 SDR 35 or schedule 40 shall be used for 5 feet on either side of the tank.
- 5) Provide a minimum of 12 inches of soil cover over the septic tank and 24 inches of soils cover over all pipes. Any piping placed under a driveway or other plowed areas should have a minimum of 48 inches of soil cover or be protected from freezing using insulation or other approved means. Special care should be taken when backfilling the system to prevent disturbance/crushing of the distribution lines and chambers. The manufacturers recommendations should be closely followed when backfilling the chambers. In addition, the distribution lines should be carefully bedded and compacted prior to placement of the pipe to minimize the settlement in these lines.
- 6) The surface drainage shall be ditched and diverted away from absorption areas.
- 7) The disturbed surfaces, mounds and berms shall be covered with topsoil and heavily seeded. Heavy farm equipment and livestock should be fenced or kept off of the Infiltrators.
- 8) Inspection pipes to be constructed of PVC pipe with the portion of the pipe penetrating the infiltrator chamber being perforated. Cleanouts must be placed in the solid distribution line at maximum intervals of 100' downstream of the septic tank and at a maximum interval of 50' upstream of the septic tank.
- 9) The owner and installer are responsible for meeting and maintaining all of the minimum setback requirements.



June 25, 2009

Tim Geiger
P.O. Box 774
Oak Creek, CO 80467

Job Number: 07-7865

Subject: On-site Wastewater System Design,
Proposed Geiger Residence, 24355 Rawhide Trail,
Routt County, Colorado.

Ladies and Gentlemen:

As requested, NWCC, Inc. has completed the design of an On-site Wastewater System (OWS) for the Proposed Geiger Residence to be constructed at 24355 Rawhide Trail in Routt County, Colorado. This design was conducted in accordance with generally accepted guidelines for the industry, the Routt County Department of Environmental Health (RCDEH) Individual Sewage Disposal System Regulations and within budget limitations. Enclosed are three copies of the OWS design report. It should be noted that a copy of this report and an application must be submitted to the Routt County Department of Environmental Health to obtain a permit.

As noted in the attached report, this office must complete periodic inspections during the construction of the system, and a final summary/as-built construction report must be submitted to RCDEH at the completion of the project by NWCC, Inc.

If you have any questions regarding this report, or if we can be of further service, please contact this office.

Sincerely,
NWCC, INC.,

Brian D. Len, P.E.
President