County of Routt
COLORADO

136 6th Street, 2nd Floor, Steamboat Springs, CO 80487
Phone: (970) 870-5588

PERMIT FOR ON-SITE WASTEWATER SYSTEM - NEW

Date: **9/16/2019**

Permit No. S-19-151

Parcel ID: **943302001**

Tank Type:

Permit Fee: **$300.00**

Minimum Tank Size:

Service Location: **30857** **COUNTY ROAD 53, HAYDEN**

Bedrooms:

Type of Work: **On-Site Wastewater System - New**

Owner Name: **MORAN GST TRUST, THE**

Type of Occupancy: **Residential**

Owner Address: 1101 N BUSINESS 45, STE D

CORSICANA TX 75110

Work Description: **New construction 4 bd barn/bunkhouse. Soil type 3. Chambered trench/dosed system. 1,250 gallon plastic septic tank and a 500 gallon dosing tank with auto siphon**

As authorized and required by 25-10-101, et seq. C.R.S., permission is hereby granted to the owner or a Routt County On-Site Wastewater Treatment System (OWTS) installer to construct or repair an OWTS system at the property indicated above. All work must comply with the specifications on this permit and the Routt County On-Site Wastewater Treatment System Regulations. This permit expires one year from the date of issue.

Applicant: **Mike Charchalis** Phone# **(970) 629-2839**

Address: **958 Alta Vista Dr** City/State/Zip: **Craig** **CO** **81625**

NOTICE: All tanks and vaults must meet Design Criteria as specified in Section 43.9 of the Colorado Department of Public Health and Environment Water Quality Control Commission On-Site Wastewater Treatment system Regulation #43 (5 CCR 1002-43). Inspections required (24 hours advanced notice required). Call (970) 870-5588

9/16/2019

Environmental Health Specialist Date

The above individual on-site wastewater system has received a final inspection. The system is hereby approved for use.

Environmental Health Specialist Date

OWTS notes 30857 CR 53

New construction 4 bedroom Barn/Bunkhouse. Soil Type 3. Chambered trench/dosed system. 1,250 gallon plastic septic tank and a 500 gallon dosing tank with auto siphon.

Missing information:

- Graphic soil log, to scale
- Date of soils investigation.
- Location of soil observations (test pits and profile hole are not identified in submitted documents).

Don't include in NOB

BUILDING PERMIT #

PERMIT PD #300 —

#2658

APPLICATION FOR ON-SITE WASTEWATER TREATMENT SYSTEM PERMIT

NEW X EXISTING/UNPERMITTED____ REMODEL/REPAIR____ EMERGENCY USE____

Name of Owner Carroll Moran Mailing Address PO Box 209, Chatfield, TX 75105 Phone

Name of Applicant Mike Charchalis Mailing Address 850 ALTA VISTA DRIVE, CRAIG, CO 81625 Phone 970-629-2839

LOCATION OF PROPOSED SYSTEM: Street Address 30857 CR 53, HAYDEN, CO

Legal Description ~~LOTS 11, 12, 15 & 16 SEC 19-6-88, NWNE4, LOTS ... PART OF NE4NE4 ... SEC 30-6-88~~ Parcel ID# ~~943002001~~ 943301001

(Lot# and Subdivision if applicable) (this # can be found in the Assessor's Office)

Size of Lot ~~500.37 ACRES~~ 100.94 ☑ Residential ☐ Commercial ☐ Other (Describe)

Number of: Bedrooms 4

Water Supply: ☑ Private Well ☐ Private Spring
☐ Public (give name of supply)

An appropriate plot plan must accompany this application showing required information. An applicant must submit a complete application that is consistent with section 43.4.B.3 of The Department of Public Health and Environment Water Quality Control Commission Regulation 43 'On-Site Wastewater treatment system regulation 5 CCR 1002-43' to the local public health agency, prior to installing, altering, or repairing a system. 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 on-site wastewater treatment system is hereby submitted. The on-site wastewater 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 to on-site sewage disposal systems.)

Signature of Applicant [signature] Date 9/9/2019

PLOT PLAN

Name MORAN GST TRUST, THE Address 30857 COUNTY ROAD 53 , HAYDEN, CO

Location of proposed system:

Street Address 30857 COUNTY ROAD 53 , HAYDEN, CO

Legal Address [illegible]

PLOT PLAN MUST INCLUDE THE FOLLOWING INFORMATION: (LOCATE BY MEASURED DISTANCES)

1. Property lines and dimensions.
2. Proposed and existing water wells on subject property and adjacent property.
3. Domestic water service lines.
4. Proposed and existing building, driveways and other structures.
5. Streams, lakes, ponds, irrigation ditches and other water courses.
6. Proposed and existing waste disposal facilities.

SUBMIT A REVISED PLOT PLAN TO CONSTRUCTION IF INSTALLATION IS TO BE CHANGED FROM ORIGINAL PLAN.

Minimum Distances Between Components of an On-site Wastewater Treatment System and Physical Features

Table 7-1 **Minimum Horizontal Distances in Feet Between Components of an On-Site Wastewater Treatment System Installed After *November 15, 1973 and Water, Physical and Health Impact Features***

	Spring, Well,[1] Suction Line	Potable Water Supply Line	Potable Water Supply Cistern	Dwelling Occupied Building	Property Lines, Piped or Lined Irrigation Ditch	Subsurface Drain, Intermittent Irrigation Lateral, Drywell, Stormwater Infiltration Structure	Lake, Water Course, Irrigation Ditch, Stream, Wetland	Dry Gulch, Cut Bank, Fill Area (from Crest)	Septic Tank
Septic Tank, Higher Level Treatment Unit, Dosing Tank, Vault	50[2]	10[2]	25	5	10	10	50	10	--
Building Sewer or Effluent Lines	50[2]	10[2]	25[2]	0	10[2]	10[2]	50[2]	10[2]	--
STA Trench, STA Bed, Unlined Sand Filter, Sub-surface Dispersal System, Seepage Pit	100[3]	25[2]	25	20	10	25	50[3]	25	5
Lined Sand Filter	60	10[2]	25	15	10	10	25	10	5
Lined Evapo-transpiration Field or Outside of Berm of Lined Wastewater Pond	60	10[2]	25	15	10	10	25	10	5
Unlined Sand Filter in Soil With a Percolation Rate Slower than 60 Minutes per Inch, Unlined or Partially Lined Evapotrans-piration System, Outside of Berm of Unlined Wastewater Pond, or System Not Relying on STA for Treatment Other than Aerosol	100	25[2]	25	15	10	25	25	15	10
Vault Privy	50	10[2]	25	15	10	10	25	10	--
Slit Trench Latrine, Pit Privy	100	50[2]	25	N/A	25	25	100	25	N/A
System Not Relying on STA for Treatment and Utilizing Aerosol Methods	100[3]	10[2]	50	125	10	0	25[3]	10	10

NOTE: The minimum distances shown above must be maintained between the OWTS components and the features described. Where soil, geological or other conditions warrant, greater distances may be required by the local board of health or by the Water Quality Control Commission pursuant to section 25-8-206, C.R.S. and applicable regulations. For repair or upgrading of existing OWTS where the size of lot precludes adherence to these distances, a repaired OWTS shall not be closer to setback features than the existing OWTS, as reviewed and approved by the local public health agency. Components that are not watertight should not extend into areas of the root system of nearby trees.

1 Includes infiltration galleries permitted as wells by the Division of Water Resources.

2 Crossings or encroachments may be permitted at the points as noted above provided that the water or wastewater conveyance pipe is encased for the minimum setback distance on each side of the crossing. A length of pipe shall be used with a minimum Schedule 40 rating of sufficient diameter to easily slide over and completely encase the conveyance. Rigid end caps of at least Schedule 40 rating must be glued or secured in a watertight fashion to the ends of the encasement pipe. A hole of sufficient size to accommodate the pipe shall be drilled in the lowest section of the rigid cap so that the conveyance pipe rests on the bottom of the encasement pipe. The area in which the pipe passes through the end caps shall be sealed with an approved underground sealant compatible with the piping used.

3 Add eight feet additional distance for each 100 gallons per day of design flows between 1,000 and 2,000 gallons per day, unless it can be demonstrated by a professional engineer or geologist by a hydrologic analysis or the use of a barrier, consisting of a minimum 30 mil PVC liner or equivalent, that contamination will be minimized. If effluent meets Treatment Level 3N and the local public health agency has a maintenance oversight program in accordance with section 14.D. of this regulation, the distance addition is not required. Flows equal to or greater than 2,000 gallons per day must be hydrologically analyzed for flow, velocity, hydraulic head, and other pertinent characteristics as means of estimating distances required to minimize contamination as part of the Division site application process.

100.94 Acre Parcel on Lonesome Bear Ranch, Routt County, OWTS Calculations

Proposed Barn and Bunkhouse:

4 Bedrooms = 7 persons @ 75 Gallons/ day/ person= 525 Gal./day design flow

Minimum tank size = 1,250 Gallons, with 2 chambers and an approved effluent filter plus a 500 Gallon Dosing Tank with a Fluid Dynamics, Inc., #216 Auto-siphon, giving average 30 gpm flow for an approx. 250 gallon dose.

Leach Field Sizing : 'Infiltrator' Quick 4 chambers in center fed trenches.

Long Term Acceptance Rate (LTAR) = 0.35 Gal./ sq. ft. / day into Type 3 Soil, sandy clay loam (per Bear Valley Design, Ltd., letter, dated 6/27/19)

(525 Gal./day) x (.7 (reduction factor for use of chambers)) x (.9 (reduction factor for dosing)) / (0.35 Gal./day/ sq. ft.) = 945 sq. ft. (required absorption area)

System will be designed to use 'Infiltrator' 'Quick 4' chambers. Said chambers provide an effective absorption area 48" x 34". (48 x 34)/144 = 11.33 sq. ft./ chamber

945 sq. ft./ (11.33 sq. ft./ chamber) = 84 chambers required (4 rows of 21), center fed

Bear Valley Design, Ltd.

Engineers - Consultants

P. O. Box #770475
STEAMBOAT SPRINGS, COLORADO, 80477-0475
MOBILE: (970) 879-5454
E-MAIL: <bearbvd@mindspring.com>

June 27, 2019

Mr. Carrol Moran
PO Box 209
Chatfield, Texas, 75105

Subject: Soil investigation and LTAR evaluation for a two buildings and an Onsite Wastewater Treatment System (OWTS) on a 100.94 acre tract of land on the Lonesome Bear Ranch in T5N R868W, in Routt County, Colorado.

Dear Mr. Moran,

Per your request, we performed a soil investigation and evaluation on the subject site earlier in June of this year. The investigation was performed for the purpose of providing soil design parameters for the foundations for a steel building and for a residence, and the evaluation was performed the purpose of designing an Onsite Wastewater Treatment System (OWTS) for use by the steel building (which will include a bunkhouse).

The proposed steel structure is anticipated to be of typical, single story, red iron steel framed construction, including a slab on grade main floor and a bunkhouse upper floor, all to be founded on reinforced concrete stem walls which bear upon reinforced concrete spread footers. The proposed residence is anticipated to be of typical wood framed construction, with a slab on grade lower (walk-out) lower floor, a main floor and an upper floor. The building site is located on top of a hogback with slopes downward to the north, aouth, and east, and a slope upward to the west. The vegetation on the site consists of grass and oak brush. Although the building site is nearly level, the slopes downward to the south and east are relatively steep, and the slope upward to the west is fairly steep.

Three test pits and a profile hole (four pits total) were advanced on the lot, three in the relatively flat area where the buildings are expected to be situated. The profile hole was advances somewhat downslope to the north of the proposed building pad, in the logical location for the OWTS absortion field. The pits were advanced using a crawler mounted excavator.

All three test pit revealed 12 to 24 inches of very slightly moist, medium brown sandy, slightly silty loam, topsoil overlying a native, moderately dense, very slightly moist medium sand subsoil which extended to the maximum depth explored of eight feet.

The fourth test pit (the profile hole) revealed approximately 30 inches of similar, moderately moist topsoil overlying subsoils similar to those exposed in the first three test pits, but less dense, and containing small amounts of silt and clay . The profile hole was advanced to a depth of nine feet, and revealed no signs of free ground water and no bedrock.

No bedrock or free water was encountered in any of the four test pits.

Our experience with similar soils, taken together with our observations in the test pits, have led us to form the opinion that the moderately dense sand subsoil observed in the first three test pits will provide stable bearing for the foundations of both of the proposed structures. We also concluded that the site and the subsoil observed in the profile hole are, in fact, suitable for the installation of an OWTS with a leach field of the type of design detailed below.

Spread footers for both of the proposed structures should be designed to bear on the moderately dense sand subsoil observed in the first three test pits, with a maximum net bearing pressure of 2.0 KSF. No minimum dead load will be necessary on any of the footers. Any retaining structures should be designed to retain pressure equivalent to that which would be exerted by a fluid weighing 40 PCF.

The footers for both foundations must be surrounded with a footer drain constructed using 4" diameter D-2729 perforated PVC pipe (with the perforations located at 4 and 8 'o'clock'), bedded and covered with ¾" screened rock, which in turn must be wrapped in a geo-fabric such as 'Mirafi' #140N. Both footer drains must run from a pair of clean-outs, have a minimum 1% slope around the foundation to a corner opposite the clean-outs, and at that point be wyed together to drain to daylight via a non-perforated 4" diameter PVC pipe. These drains must be located at a low enough grade so that it will prevent

water which might penetrate the backfill from soaking the bearing soil beneath the footers. The daylighted end of these drains should be protected from intrusion by critters by means of a screen and cobbles.

Frost protection for the foundations must be provided by maintaining a minimum of 48" of earth cover over them, measured in any direction. The finish grade should provide for a minimum of 2% slope away from the structures in all directions for a minimum of 10 feet , as well as for positive and continuous drainage away from the buildings without any ponding. Native subsoil materials will provide appropriate backfill. It is anticipated that a large portion of both buildings' perimeters will be surrounded with a graveled driving surface. Backfill not situated beneath a graveled driving surface may be capped with a maximum six inch thick layer of topsoil. The native backfill material must be placed in lifts a maximum of 10 inches thick, with each lift moistened and compacted to 93% of its Standard Proctor density.

In order to control moisture as well as to minimize heating costs for the proposed building, as well as to provide for proper curing of the concrete, all slab on grade floors must be placed directly on top of a minimum six mil thick sheet of visquene. The slabs on grade must be isolated from the subgrade by a minimum twelve inch thick layer of compacted ¾" road base gravel. This gravel fill must be isolated from the underlying material by means of a sheet of 'Mirafi' #140N (or equal). It is anticipated that the slab on grade floors will be provided with hydronic, in floor heating. In this case, underslab insulation per energy code requirements must be provided. We highly recommend the use of foam insulation provided with 'buttons' for positively locating the (O2 barrier type) Ppex tubing, and providing a layer of 'Barrier' insulating vapor barrier beneath the foam insulation.

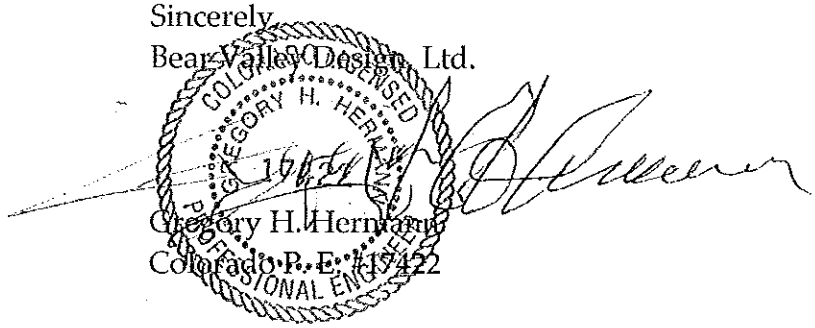
All structural elements of the building must be isolated so that the slab on grade floors are free to float with respect to the rest of the buildings. All partitions located directly above any slab on grade floors must be constructed with a minimum 1-½ inch high expansion joint, built per typical local practice, at the bottom of the framing of said partitions.

The native slightly clayey sand subsoil encountered in the profile hole classifies as a Type 3 soil per CDOPH& E Regulation #43. Therefore, absorption trenches for the proposed OWTS should be designed based on a Long Term Acceptance Rate (LTAR) of 0.35 gallons per square foot per day.

We re-emphasize that no free ground water was observed in either the profile hole or in the other test pits, and the observed subsoil in the profile hole extended more than four feet below the expected design elevation of the bottom of the proposed absorption trenches without encountering any free ground water.

Thank you for the opportunity to have been of professional service to you in this matter.

Sincerely,
Bear Valley Design, Ltd.



Gregory H. Hermann
Colorado P.E. #17422

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