



February 23, 2022

Rita Donham & James Burgess
P.O. Box 33
Cora, WY 82925

Job Number: 20-11636

Subject: On-Site Wastewater Treatment System
Observations, Donham-Burgess Residence, 27875
US Highway 40, Routt County, Colorado.

Rita and James,

As requested, NWCC, Inc. (NWCC) visited the project site on August 21 and 24, September 24, October 14 and 16 and November 10, 2020 to observe the construction of the On-site Wastewater Treatment System (OWTS) for the Donham-Burgess Residence located at 27875 US Highway 40 in Routt County, Colorado. NWCC completed the OWTS Evaluation and Recommendations report for the existing residence and barn, currently under construction, under this job number and dated February 20, 2020.

At the time of our site visit on August 21 and 24, 2020, the owner, was in the process of placing the 4-inch diameter piping (ASTM 3034; SDR 35) from the barn septic tank to upstream of the existing septic tank, located west-southwest of the existing Soil Treatment Area (STA). The piping appeared to meet the minimum grade requirements. The piping had not been connected to the inlet pipe of the existing septic tank. The new septic tanks for the barn and the existing residence had not been placed at this time.

At the time of our site September 24, 2020, the owner had extended the existing STA 18 feet to the northeast. The extents of the existing STA had been exposed and the existing STA was constructed with dimensions of 18 feet by 52 feet, for a total area of 936 square feet. The extension of the STA was 18 feet by 18 feet for an addition of 324 square feet. The owner had placed 6 to 12 inches of washed gravels with three 4-inch diameter perforated pipes extending from the existing perforated pipes. After the extension, the STA has a total area of 1,260 square feet. A new inspection pipe was also added to the new STA. We advised the owner that a minimum of 18 inches of soil cover should be placed over the gravel bed system after the washed rock and barrier material had been placed over the perforated pipes.

At the time of our site visit on October 14, 2020, the installer had placed a 1,000-gallon (2-compartment) concrete septic tank to the west-southwest of the barn, which is currently under construction. The 4-inch diameter piping (ASTM 3034; SDR 35) from the barn to the septic tank had also been constructed at the time of our site visit. The piping appeared to meet the minimum grade requirements. The inlet and outlet 'T' connections in the first and second compartments of the septic tank visually appeared to be properly constructed at the time of our site visit. The 4-inch diameter piping (ASTM 3034; SDR 35) from the barn to the septic tank had also been constructed at the time of our site visit. The piping appeared to meet the

minimum grade requirements. The owner had also installed a new 1,000-gallon single compartment concrete septic tank upstream of existing septic tank for the existing residence. The owner had also placed the piping between the two septic tanks. The piping from the barn septic tank had also been connected to the new piping. At the time of our site visit on October 16, 2020, we discussed with the owner that effluent filters should be installed in the outlet 'T' of second chamber of the original septic tank and the new septic tank for the barn.

We also advised the installer that a minimum of 12 inches of soil cover should be placed over the septic and dosing tanks and a minimum of 24 inches of soil cover should be placed over the solid piping, when completed. The disturbed areas must be re-seeded. The risers on the septic/dosing tanks must be raised to the finished ground surface.

At the time of our site visit on November 10, 2020, the OWTS had been backfilled. It appeared that sufficient cover had been placed over the piping, tanks and soil treatment area. The lids for the septic and dosing tanks were accessible at the finished ground surface. An as-built drawing taken from field measurements of the system is presented in Figure #1.

Based on our part-time observations, it appears that the portions of the system, which were completed and observed at the time of our site visits, had been constructed in general accordance with the design previously completed by our firm, with the noted exceptions. We believe that the system should function properly with proper care and maintenance, as outlined below, if the components backfilled or not completed at the time of our visits were properly constructed. It should also be noted that the STA is larger than required by our design. Based on our calculations, the new OWTS will be adequate for the proposed 5 bedroom residence and barn. In addition, the septic tanks and STA, as constructed, will be adequate for an additional two bedrooms in the barn or added to the existing residence, for a total of seven bedrooms.

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

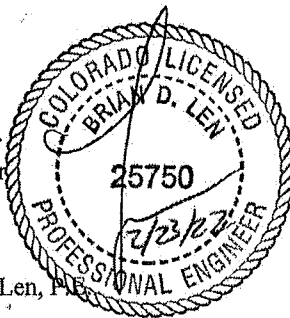
- 1) **Septic Tank:** The scum and sludge accumulation in the septic tank should be monitored yearly. Once the scum or sludge thickness reaches 25% of the chamber depth, the septic tank should be pumped. A pumping frequency of 1 to 3 years is likely at the design flows. Depending on use, pumping may only be required every 3 to 5 years.
- 2) **Effluent Filters and Pumping System:** The effluent filters in the septic tanks should be cleaned when the septic tanks are inspected or as required. The effluent pump should be checked semi-annually to ensure the pump is functioning properly. If the high water alarm sounds, the pumps and floats should be inspected and serviced immediately. A backup pump is recommended to be stored on-site to allow for timely replacement.

- 3) Soil Treatment Area: We recommend that the STA be fenced off to vehicular traffic and livestock. The surface area around the STA should be observed monthly for signs of failure, such as lush vegetation growth or ponding. Liquid levels in the STA should be observed through the inspection pipes.
- 4) Treated Water: We do not recommend that the water softeners or water treatment systems be connected to the OWTS. The chemical and hydraulic loading from the backwash of these treatment systems may be detrimental to the OWTS. 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 OWTS.
- 5) General Notes: The owner should be aware that the operation of the OWTS 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 soil treatment area.

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

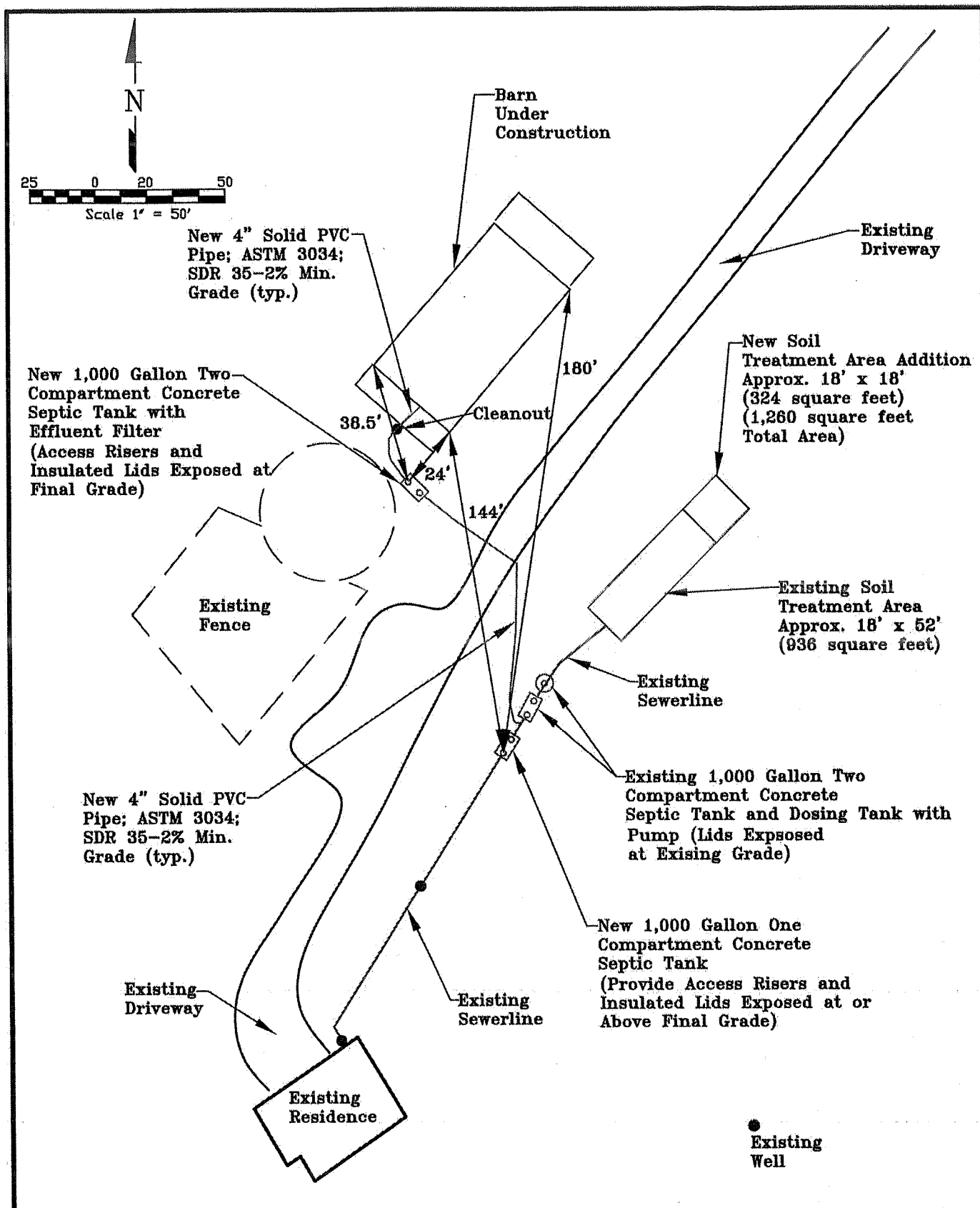
Sincerely,
NWCC, INC.

Timothy S. Travis, P.E.
Senior Project Engineer



Reviewed by Brian D. Len, P.E.
Principal Engineer

cc: Routt County Department of Environmental Health



Title: OWTS - AS BUILT	Date: 2/23/2022	 North West Colorado Consultants and Engineers Geotechnical / Environmental Engineering - Materials Testing (970) 878-7888 • Fax (970) 878-7891 2580 Copper Ridge Drive Steamboat Springs, Colorado 80487
Job Name: Donham-Burgess Residence	Job No.: 19-11636	
Location: 27875 US Highway 40, Routt County, Colorado	Figure: #1	